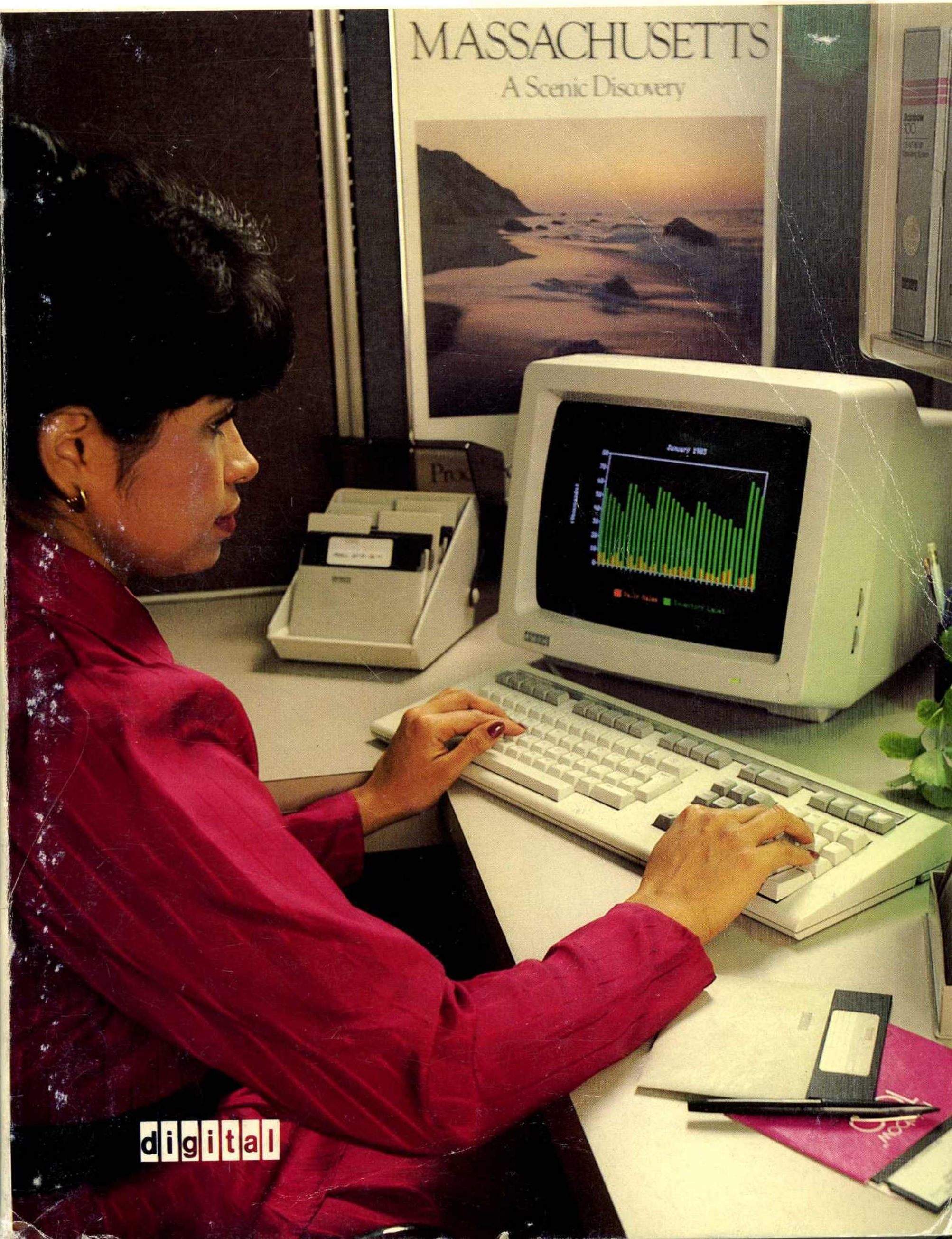
Rainbow Handbook


MASSACHUSETTS
A Scenic Discovery
January 1983
Daily Sales
Inventory Level

digital

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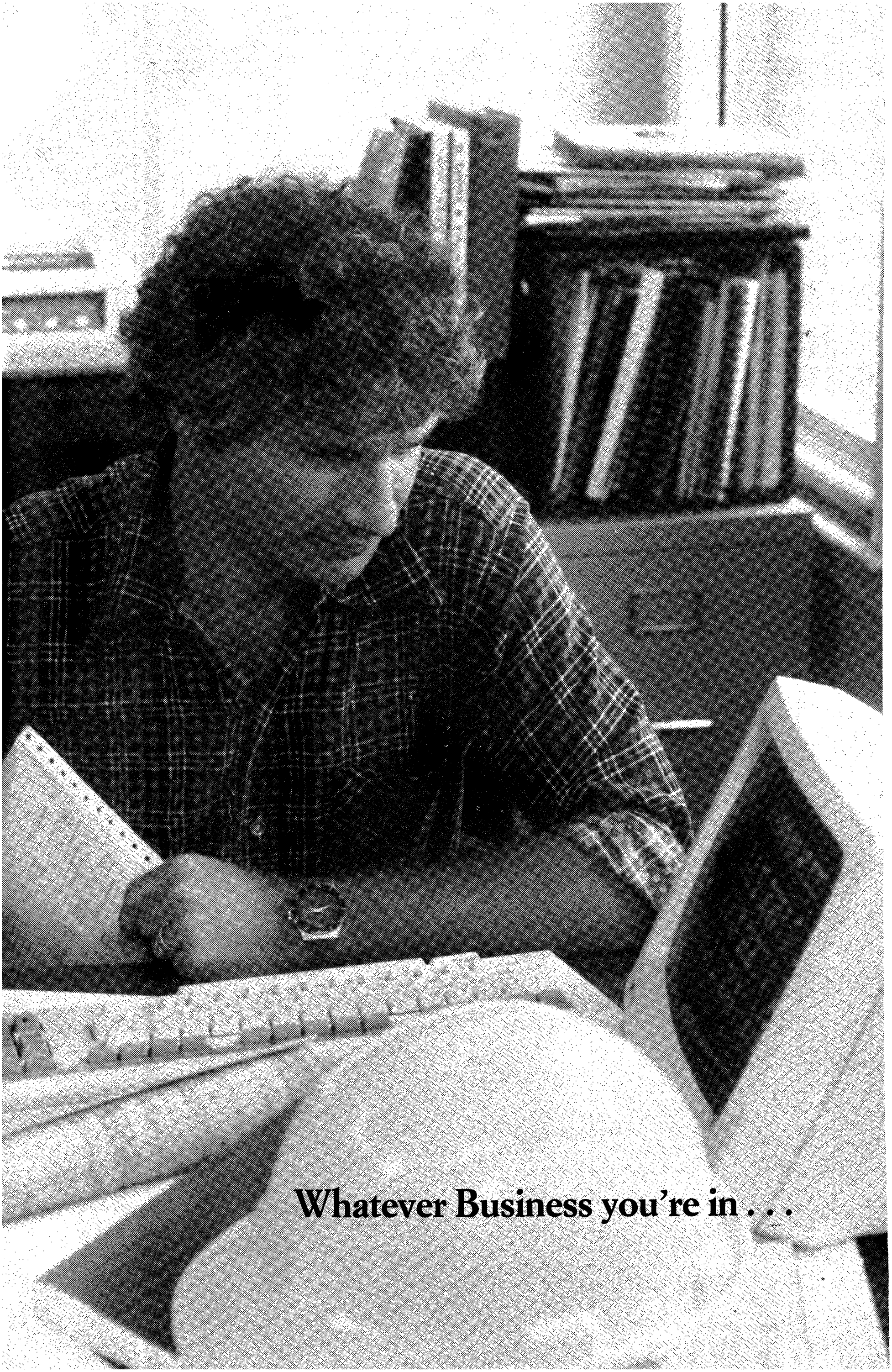
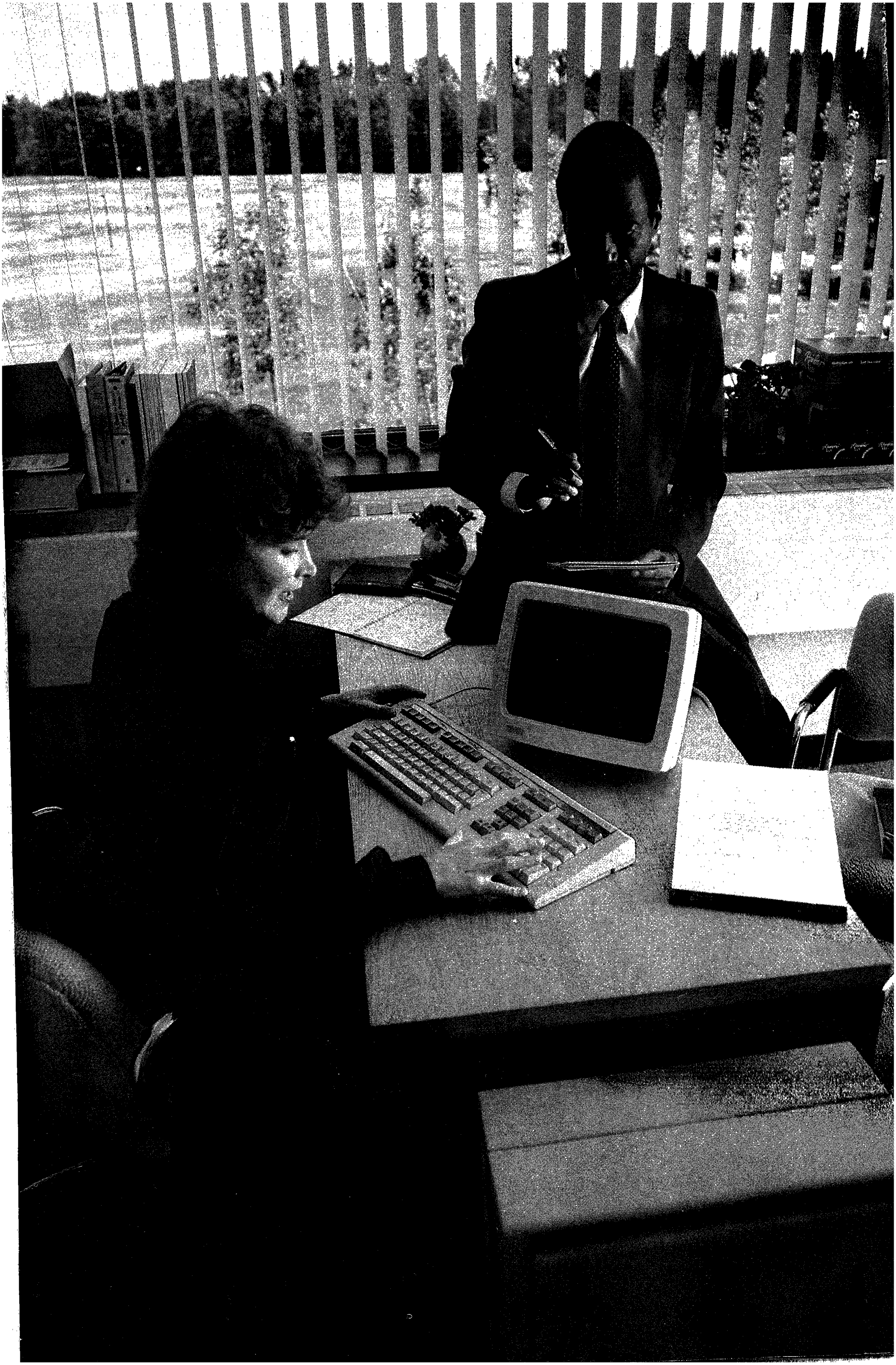
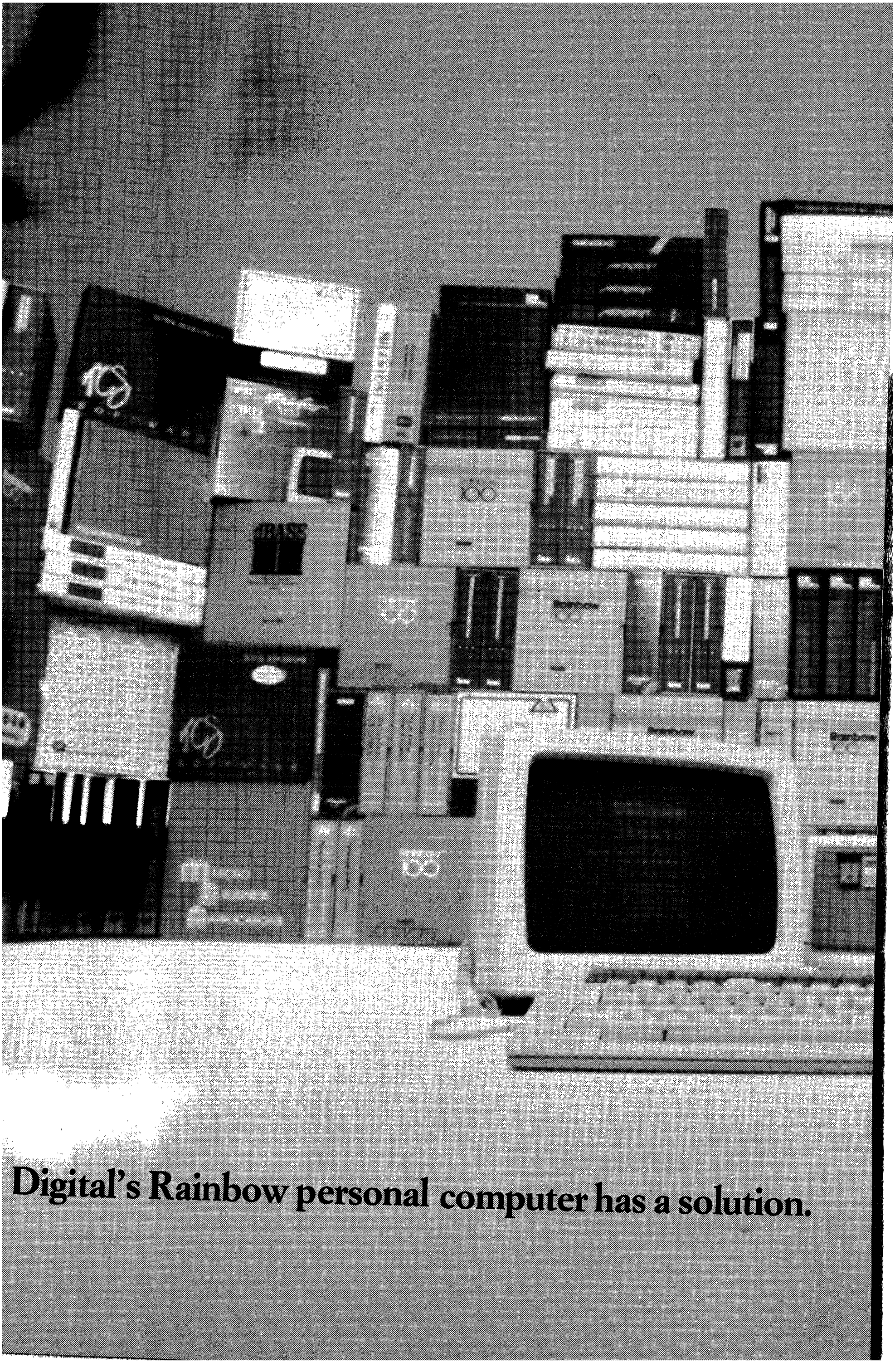


Whatever Business you're in . . .




dBASE
Rainbow
Digital's Rainbow personal computer has a solution.

micropian

Preface

How to Use This Handbook

This handbook is designed to introduce you to the features and capabilities of the Rainbow personal computer and to familiarize you with the many solutions Rainbow can bring to your business. The handbook is divided into two major parts.

Part I (chapters 1 through 6) gives you the kind of user-oriented information you need to decide if the Rainbow is the right personal computer for your business. Starting from the moment Rainbow arrives in its box—to its actual use in individual or corporate business environments, you'll find concrete examples of Rainbow's ease-of-use and exceptional performance. We've also tried to anticipate some of the questions you might have about Rainbow by including a Question and Answer chapter which responds to the questions most commonly asked by Rainbow customers. Part I also fully describes Digital's customer services and support.

Part II (chapters 7 through 9) contains the detailed technical specifications for Rainbow's system hardware, options, printers,and DCS software. A chart of available third party software, categorized by application, is also provided. The information in Part II is organized as a series of *fact sheets* which give functional descriptions, performance characteristics, prerequisites, and ordering information.

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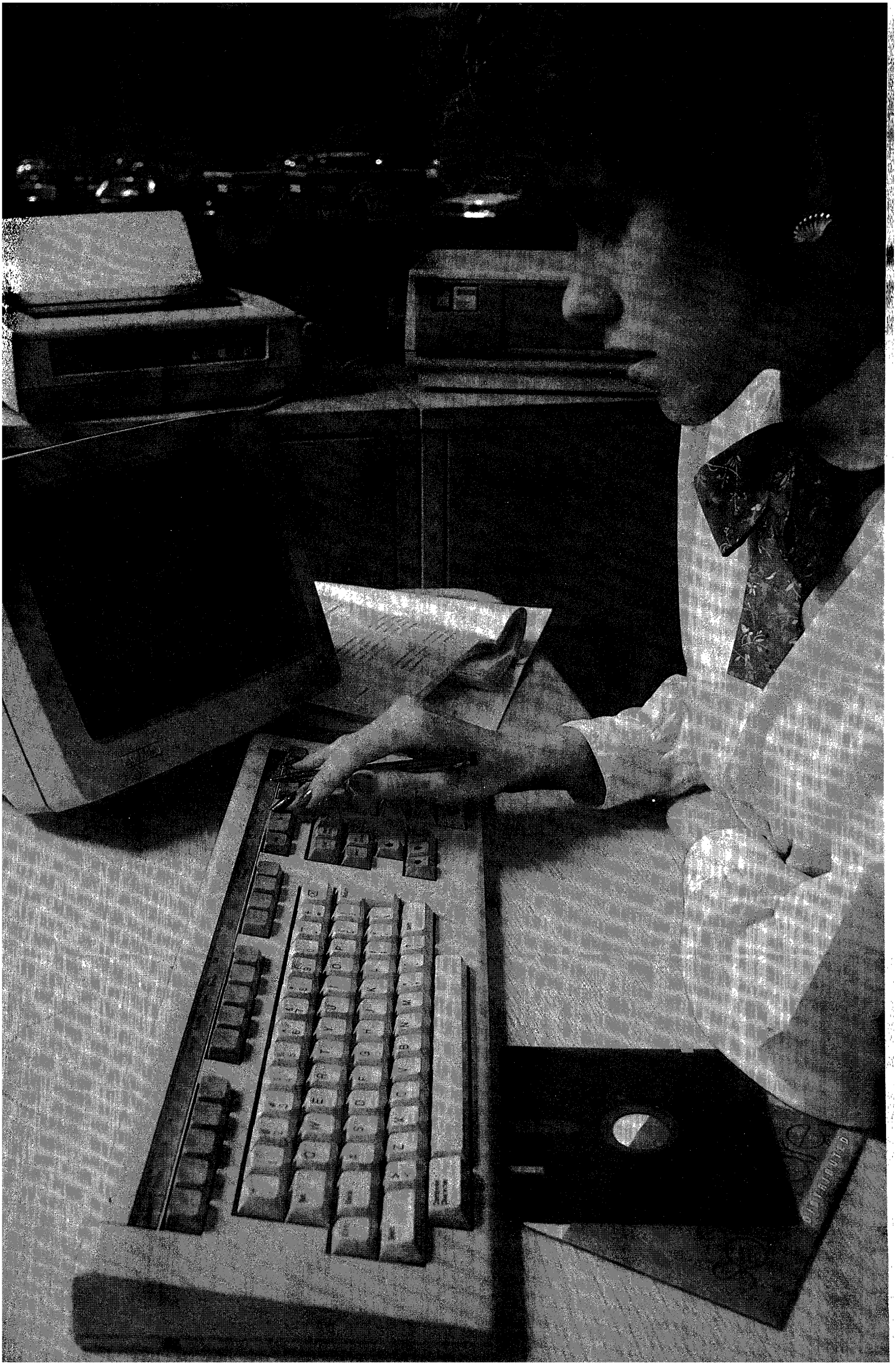
PART I



Chapter 1

Rainbow-An Asset to Any Business

Because the decision to buy a personal computer is so important to your business, you want to be certain that the one you select meets your job requirements and expectations. However, the connection between your needs and the computer's supply of processing power, Kbytes of memory, or disk capacity is not always obvious.

You need a way to translate some of these features into meaningful business applications. It helps to think of a personal computer in the same way you think of any business machine.

So, what criteria do you use to evaluate a business machine?

You want a quality-crafted tool that adapts well to your workplace to increase your productivity. You want a machine that is easy to learn and to use, requires little maintenance, and can be expanded as your business grows. But most important of all, you want a machine that includes the kind of service and support you get only from a leading manufacturer. In other words, you want a machine that will do the job well and give you the best return on your investment.

Although many personal computers on the market today have these qualities, there is another feature to consider. That feature is software—the programs that tell the computer what to do. A personal computer can meet all other selection criteria but is of little use without software.

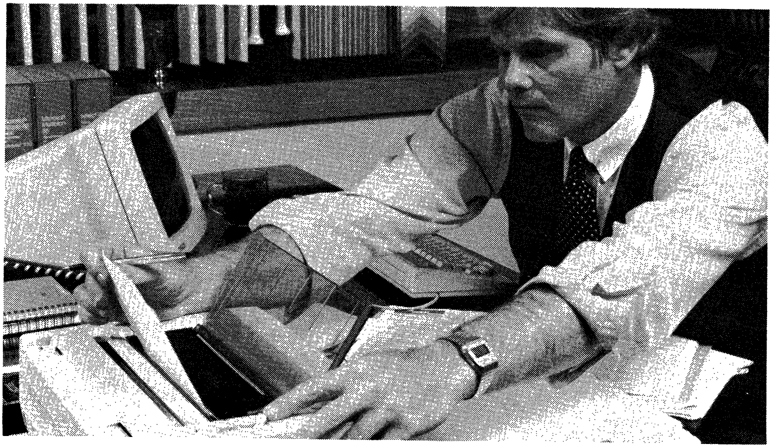
If you want a personal computer with superior design, outstanding performance, and exceptional service that runs an almost endless number of software applications, you want a Rainbow.

The superior quality and design of Digital Equipment Corporation's Rainbow Personal Computer match the scope and versatility of its software programs. Rainbow is simple to use yet sophisticated enough to handle any task.

Rainbow Comes Ready for Business

To get work done in any business, you need tools that work with you, not against you. Rainbow works the way you want to work—comfortably and efficiently. But this comfort doesn't come at the expense of aesthetics. The craftsmanship and elegant design of Rainbow enhances any work environment. Since the components are so small and lightweight, you can place them anywhere in your office without invading your work space. And, Digital's optional floorstand lets you place your Rainbow under a desk or table to free up precious space.

Rainbow is ready for business after simple installation procedures. You just plug in a few cables and turn on the power switch. So, you can use your Rainbow soon after it arrives, making you more productive from day one.



Rainbow Makes You Feel Like a Computer Veteran in No Time

With Rainbow, you won't lose valuable time trying to master your new computer because Rainbow has the best on-screen teaching aids in the industry. Both first-time and experienced users can benefit from Rainbow's Computer Based Instruction (CBI) course, "Learn Rainbow."

The course is structured so that you can learn at your own pace with lessons that are written in plain English and illustrated with animated graphics. Each lesson is summarized at the end for quick and easy reference to Rainbow commands and operations. The "Learn Rainbow" course includes menus of lessons, clear instructions, and built-in HELP functions to guide you every step of the way. Within 90 minutes, you're ready to use your Rainbow.

Rainbow Produces for You Today With an Eye Toward Tomorrow

For your business to operate at peak productivity, you have to be ready to take advantage of all resources—current and future. Rainbow is ready to help.

Rainbow runs an enhanced version of Microsoft's MS-DOS operating system. The enhancements include a RDCPM utility to make it easy for you to convert your CP/M® files to MS-DOS files, and more. The most popular MS-DOS applications have been tailored to run on Rainbow and many more applications are being added daily.

Rainbow's unique CP/M-86/80® operating system lets you use both 8- and 16-bit software applications available on the market today. You don't even have to change system diskettes because the operating system determines whether the software is 8- or 16-bit and runs it automatically.

Not only do you get to choose from the best of all software worlds, but you also get to select the Rainbow model that best meets your business needs—the Rainbow 100B or the Rainbow 100+.

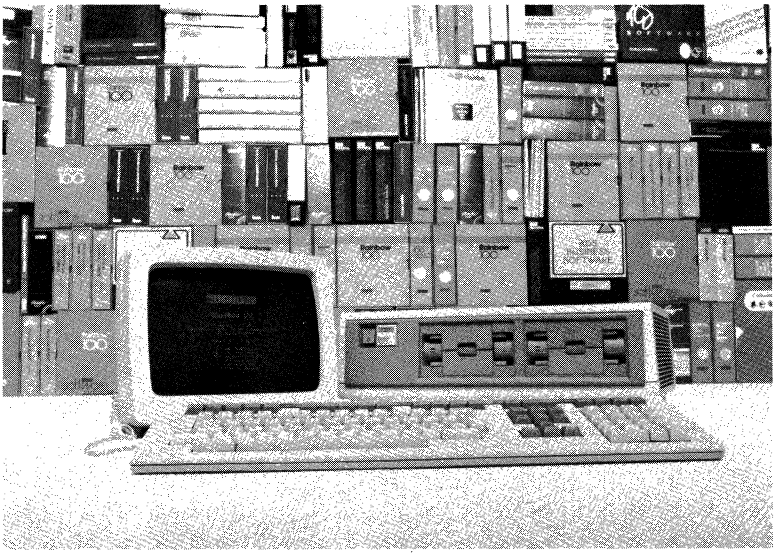
The Rainbow 100B is a floppy-based system that comes with 128 Kbytes of memory. You can expand memory to 896 Kbytes for faster database processing and to create large spreadsheet models using programs like Lotus 1-2-3. The Rainbow 100B can run more than a thousand software applications. And those applications run fast because of Rainbow's two processors that boost system throughput. Rainbow's advanced features, such as its memory-mapped video that repaints the screen as you work, give the application you're running even higher performance.

digital
Rainbow 100
100+

The Rainbow 100+ has all the outstanding features of the Rainbow 100B *plus* more. It includes an internal 10-Mbyte hard disk as a standard feature. The internal 10-Mbyte hard disk lets you transfer and access files faster and keep your programs on one hard disk. That means no more swapping floppies.

If you already have a Rainbow 100B, you can upgrade your present system to include a 10-Mbyte hard disk right in your office. The only tool you need is a small screwdriver. Since both the Rainbow 100B and the Rainbow 100+ run software on both the MS-DOS and CP/M-86/80 operating systems, the applications that run on the Rainbow 100B also run on the Rainbow 100+.

Your investment is protected because Rainbow can keep in step—both with your business as it grows—and with the new software applications as they develop.



Rainbow Has as Many Talents as You Have Tasks in Your Business

Planning, writing, organizing, and communicating are integral parts of your work—no matter what your profession may be. You need to work quickly with words and numbers to make effective business decisions. Rainbow, as its name suggests, has a broad spectrum of software to handle the many tasks that make up your business. With more software applications being developed for use by Rainbow all the time, you may run out of "tasks" before Rainbow runs out of "talent."

How does Rainbow have access to so much software? Because it works with the industry's most popular operating systems for personal computers. The choice of operating systems includes Microsoft's popular MS-DOS operating system, Digital's unique CP/M-86/80 operating system, Concurrent CP/M-86 from Digital Research, Inc., and the p-System from SofTech Microsystems, Inc.

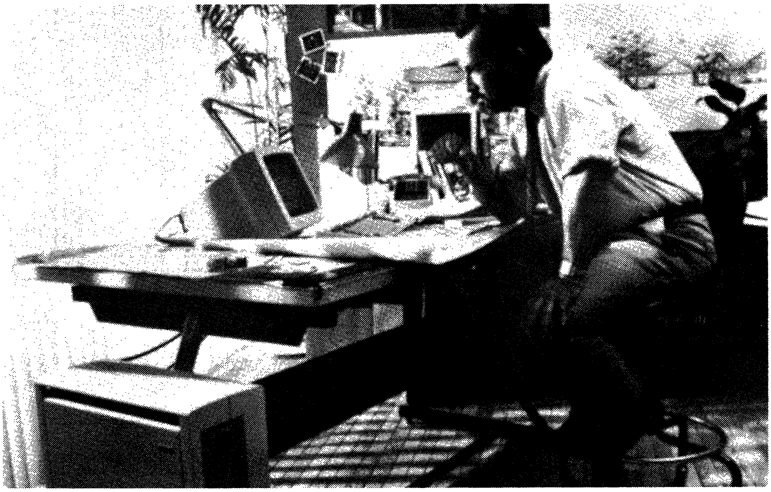
It makes sense. More operating systems mean more application packages.

More application packages mean more solutions for your business. Chapters 3 and 4 of this handbook will give you a better idea of what some of these applications are and how they solve real problems in actual business environments. The remainder of this chapter explains some of the basic functions Rainbow can perform for your business.

Forecast, Plan and Analyze with Rainbow

Whatever work you do with numbers, you can do faster and more comprehensively with Rainbow. If you're an advertising or sales manager, Rainbow can help you analyze advertising responses or do monthly sales projections. If you're a financial manager, Rainbow can perform break-even, cash-flow, or net present-value analysis.

Multiplan is a sophisticated spreadsheet program that takes full advantage of Rainbow's unique 132-column display capability—ideal for financial applications. You can view an entire 12-month display of financial data with a 13th



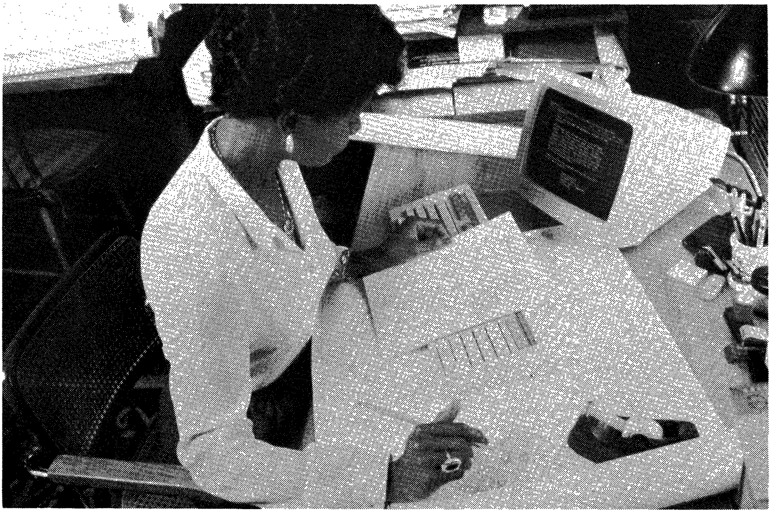
column for totals, for example. And Multiplan can display eight windows on Rainbow's screen so you can look at other parts of your spreadsheet for comparison, without losing your place.

If you're an accountant or financial analyst in small business or Fortune 1000 company, the MicroPlan-86 financial spreadsheet program can make your work less time-consuming. With MicroPlan-86's commands, you can do complex depreciation, loan analysis, internal rates of return, tax computations, and variance analyses automatically. And if you need to consolidate information from various spreadsheets such as income statements and balance sheets, MicroPlan-86 can work with several tables of information at once to tie together several sets of data.

Rainbow also supports a number of other financial programs like Lotus 1-2-3, Tax Decisions, SuperCalc, SuperCalc2, CalcStar, ProfitPlan, Money Decisions I and II, TK!Solver, and the TK!SolverPacks. These programs can be great timesavers for planning everything from taxes to loans to investments.

Write, Edit and Print with Rainbow

No matter what kind of work you do, more than likely you produce reports, proposals, letters, or memos of some kind. But, word processing needs vary from office to office. In legal offices, for example, extensive word processing is essential, whereas in other offices, simple letters or memos are all that is required. You'll want to choose a word processing package that meets your business needs, a package that is easy to learn so you won't have to labor over instruction manuals. With Rainbow, you have a choice.



If production word processing and office productivity are a must in your workplace, you'll find that the SAMNA WORD II word processing package simplifies the work you do. SAMNA uses function keys and mnemonics rather than menus or command codes. And once you start a command by touching one of Rainbow's function keys, SAMNA prompts you with the next keystroke. You won't spend much time learning how to use SAMNA's features and functions. The package is for both managers and secretaries because it combines ease-of-use with sophistication.

One of SAMNA's most impressive features is its footnoting capability. You can type a footnote, in any format you like, at the same time you type the reference to the footnote. SAMNA prints the footnote at the bottom of the page or gathers all footnotes on a separate page—whichever you prefer.

Another production word processing package for Rainbow is the WordStar word processing package. Designed for both beginners and professional users, WordStar has a set of help menus acting as guides to its commands. These menus are adjustable so you can choose whatever level of assistance you want.

WordStar gives you flexible, on-screen formatting so what you see on the screen is what you get on a printout. You can merge text from another file with just a few simple keystrokes and can edit files at the same time another file is being printed, to name just a few of its many features.

If you're a manager who wants to produce memos, reports, and letters quickly and simply, the SELECT word processing package may be the best choice for you. With SELECT, you'll find writing, editing, and revising documents quicker and easier. And, you can proofread your documents for spelling errors using SELECT's built-in dictionary. SELECT offers an interactive program "TEACH," to get you started on the program in just about 90 minutes.

Other word processing programs available for Rainbow include Electric Blackboard, Final Word, Superwriter, and Textwriter II.

Organize Information with Rainbow

Organizing and managing information—from appointment calendars to your corporation's entire personnel files—can sometimes be chaotic and frustrating. You'll want your Rainbow to take over this time-consuming task for you with a program that can handle the amount of information you deal with in your business. Once again, Rainbow offers you a selection of programs to choose from.

PFS:FILE is a program that is ideal for storing and retrieving information such as appointment calendars, customer listings, student data, patient information, and more. With PFS:FILE, you can store about 2500 simple "forms" that you design yourself on one of Rainbow's floppy disks. If you use PFS:FILE with the PFS:REPORT program, which produces tabular reports and performs arithmetic functions on your PFS files, you have an easy-to-use yet powerful information management system.

The dBASE II relational database management system can manage all of your corporation's data from payroll information, to customer data, to invoicing. It has a flexible command language so you can write programs to do time billing, job costing, accounting, reporting, and more. And once you've set up a program, untrained personnel can manage your data easily.

If your work requires organizing lists, the IMS Mailing List program can help. Use IMS Mailing List to maintain mailing lists and print addresses on labels and envelopes. You can create mailing lists from the customer and employee files used in other IMS software packages including the IMS Job and Fund Accounting packages. You can also use IMS Mailing List files with the WordStar word processing package to combine names and addresses with form letters.

Other information management packages for Rainbow available through Digital include the Condor 1 and 3 relational database management systems, the MailMerge mailing list program, and the List Manager list processing package.

Communicate with Rainbow

In today's businesses, there's a growing need to access information not readily available at your desk. Rainbow's communication capabilities and specialized software put a world of information at your fingertips. You can access information stored in large computers across the hall or across the country, from outside data sources, from hotel and airline reservation service networks, and from other personal computers.

With one keystroke, Rainbow's built-in VT102 terminal emulation allows your personal computer to communicate with other Digital computers, including VAX and PDP-11, without loading any new software. You have access to the processing power and resources of mainframes and minicomputers at no extra cost.

If you want to transfer files between a variety of hosts and operating systems, use the poly-COM communications package available for Rainbow under both the MS-DOS and CP/M-86/80® operating systems. Or, if your work involves interactive communications with an IBM host computer system, use the poly-BSC/3270 communications package which lets Rainbow emulate various members of the IBM 3270 family of display stations.

The New York Times Information Service, Dow Jones News/Retrieval, Dunn and Bradstreet Listings, and business and travel listings from the Source are as close as your Rainbow. If you'd prefer to subscribe to a single information resource, VIDTEX can link you with a videotex database of over 500 topics including financial data, international newswires, and movie and restaurant ratings.

If you want to use your Rainbow in a Local Area Network with other personal computers, you can use the Corvus OMNINET. This network not only provides a low-cost, effective communications tool, but also allows up to 64 Rainbows (or a combination of other personal computers) to share peripherals such as hard disks or printers.

Turn Words and Numbers into Pictures with Rainbow

Nothing makes a report more understandable than graphics. Rainbow's graphics option module gives your Rainbow high-resolution, bit-mapped monochrome and color graphics that are sharply defined and easy to read.

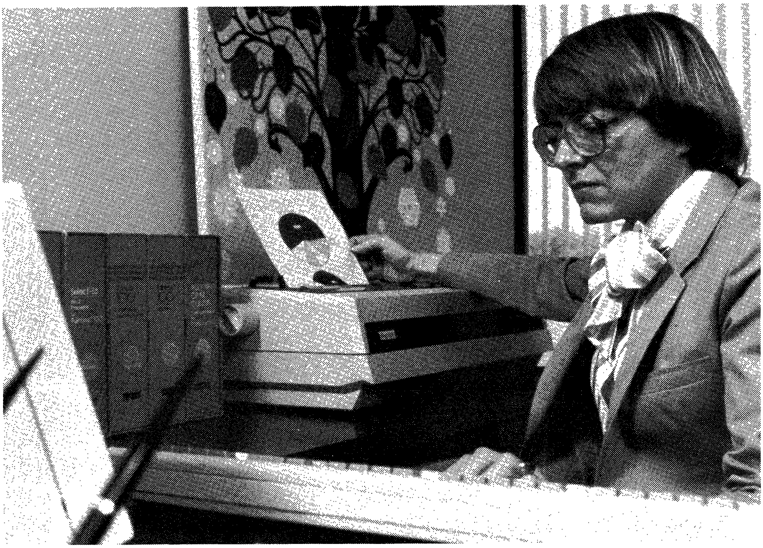
Rainbow's color monitor displays four colors at once chosen from an extensive palette of 4,096 colors in high-resoulution mode. In medium-resolution mode, it displays 16 colors at once chosen from the same extensive palette.

Both the color and monochrome monitors display text crisply in a 7-by-9 dot matrix format. With the graphics option, you can display monochrome graphics on Rainbow's monochrome monitor. These graphic displays translate to appropriate grey, green, or amber values so you can see the contrast.

GSX-86 graphics software, which is the graphics system extension for Rainbow's CP/M-86/80 operating system, is required for CP/M graphics applications, like GraphPlan-86 and Graphwriter. You can use dot-matrix impact printers and graphics pen plotters with these applications to make individual copies of your graphs or to incorporate graphics into your reports.

A number of graphics packages running on the MS-DOS operating system like Lotus 1-2-3, require the graphics option module to display high-resolution monochrome or color graphics on Rainbow's screen. These packages do not require any additional software, however.

The Rainbow ReGIS software package gives your Rainbow personal computer the ReGIS graphics capability of Digital's VT240/VT241 video terminals.



With ReGIS commands, you can draw graphics composed of lines, curves, and circles. You can include slanted text characters in the pictures if you like. If you want to include graphics in the programs you write, include ReGIS commands. Use any programming language that incorporates ASCII text, such as MBASIC-86 or MWC-86. Used with the poly-TRM program (part of the poly-COM communications package), Rainbow ReGIS software lets Rainbow emulate a Digital VT240/VT241 ReGIS terminal. This means that you have access to ReGIS programs running on a large computer system right from your Rainbow.

Rainbow Handles More Than One Job at The Same Time

Think how much more productive you could be if you could write a letter, check the spelling on another, send a memo to a colleague miles away, and print copies of a bar chart at the same time. The Concurrent CP/M™ operating system from Digital Research lets you perform up to four tasks simultaneously. While you concentrate on one, the other tasks will keep right on working.

Sometimes you need to perform several tasks together, one right after the other. Integrated applications incorporate the power of different software tools in one package. Lotus 1-2-3, for example, combines the power of three programs—a spreadsheet program, a graphics program, and information management commands into one easy-to-use package. 1-2-3 is so fast, you can call up information from the spreadsheet and graph the results in a matter of seconds.

Windowing programs, such as DESQ from Quarterdeck, offer software integration and more. DESQ is an open and flexible software integrator that works together with the MS-DOS operating system to create a windowing environment. Existing MS-DOS applications can be used on Rainbow with DESQ including Lotus 1-2-3, WordStar, and PFS:FILE. With DESQ, you can reference one or more documents visible in "windows" on Rainbow's screen. You can "put aside" a file to work on something else. Later, you can access that file instantly—just as you would the papers on your desk. You can take information from one program and incorporate it into another program in a different window.

Digital Stands Behind Every Rainbow

One of the most impressive things about Rainbow is its manufacturer: Digital Equipment Corporation. With over 25 years of experience in designing and building interactive, user-oriented computers, Digital has come to understand that you don't buy a computer, you buy the results the computer gives you.

The Digital approach to quality and reliability begins with superior design. Rigorous standards are maintained from manufacturing to service. During the manufacturing cycle, each component of the Rainbow is checked with the same stringent tests performed on our larger systems.

Every Rainbow personal computer system comes with a 90-day on-site warranty that covers both hardware and Digital-supported software. A tele-

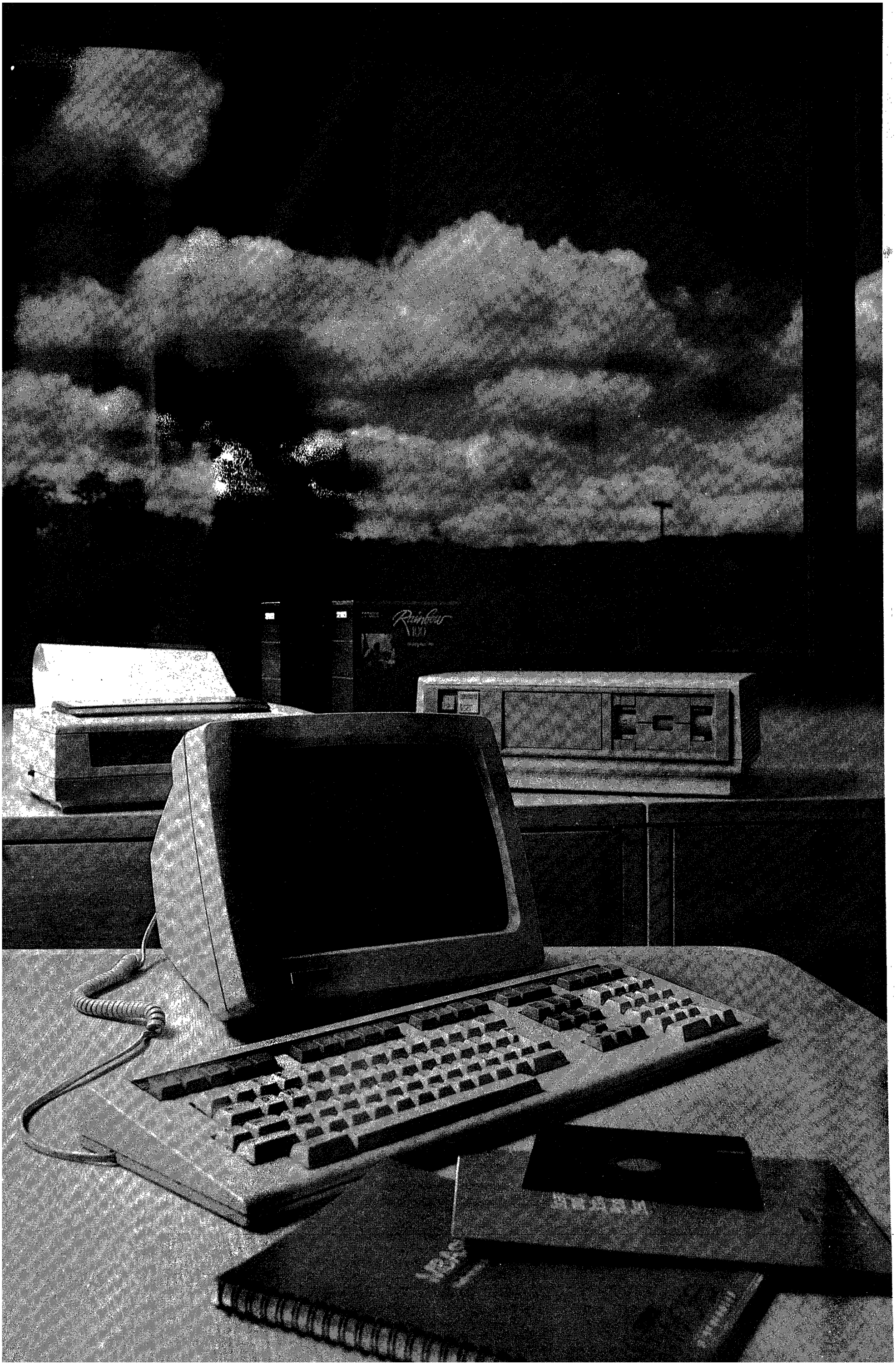
phone help line, staffed with Digital's trained support personnel, is included with the warranty to help you every step of the way. Refer to Chapter 6 for more information.

With a worldwide staff of over 20,000 service and support professionals, Digital offers a network of support services unequalled in the computer industry. Post-warranty service agreements and telephone Applications Advisory Support agreements are available from your Digital sales representative.

Educational Services offers courses and seminars to teach you how to take full advantage of your system. And, if you want to discuss matters of mutual interest with other Rainbow users, you can attend DECUS, Digital's "users group," where Rainbow users from all areas of business and academia get together to exchange information.

From Field Service to Educational Services to DECUS, Digital provides you with the support you need to get started and to maintain your system.

Now that you've been introduced to the many talents of Rainbow, it's time to become better acquainted.


Rainbow
100

Chapter 2

A Closer Look At Rainbow—From the Box to Your Desk

In Chapter 1, we told you how easy the Rainbow is to install, learn to use and operate. In this chapter, you'll be able to see for yourself.

Rainbow's outstanding design makes it so comfortable to use that you can't help being more productive. And learning to operate it is so easy that you won't have to wait even one day. In fact, you can unpack your system, load your application, and start working, all in the same morning.

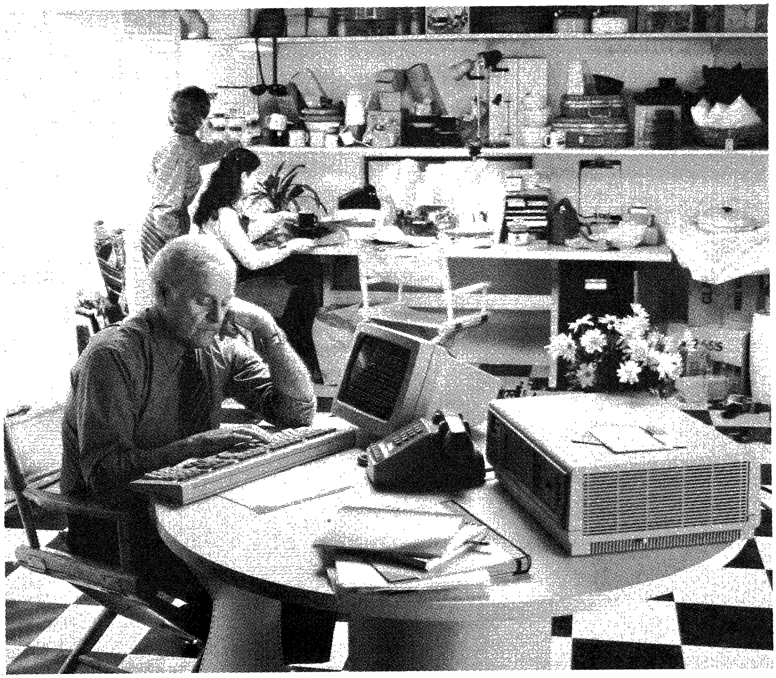
First, Here's What You Get When You Buy a Rainbow

Rainbow combines superior quality hardware with more than a thousand powerful, industry-standard software applications. Its elegant, compact styling fits easily into your workspace. Every Rainbow system includes three basic parts: a system unit, a video display, and a keyboard.

Rainbow's modular construction lets you to move your system around easily. The components are light, compact and portable. The monitor even has a pull-out carrying handle tucked under the back.

Rainbow gives you lots of possibilities for arranging your personal computer. The system takes up so little space, you can put the system box on your desk and the monitor on top. If you need more room, use the optional floor stand to place the system unit beside your desk or under a table. Rainbow is so flexible that it adapts to your workplace.

Digital not only gave Rainbow a beautiful design, but we optimized each of the system components so you can work at top efficiency. Many of Rainbow's features avoid the strain and fatigue you may find when you use other computers.



The Rainbow System Unit— The Heart and Brain of the Computer

The system unit, the central control for all the parts of your Rainbow personal computer, performs the computing tasks and stores the information you type. It contains the processors, main memory, disk drives, a printer port, and a communication port.

Processors

Perhaps the most important element of the system unit is the processor, or in the Rainbow's case—processors, contained within it. The Rainbow has two processors, a Z80 and an 8088 which boost system throughput by dividing the system's tasks. The Z80 controls the disk functions while the 8088 handles other system tasks.

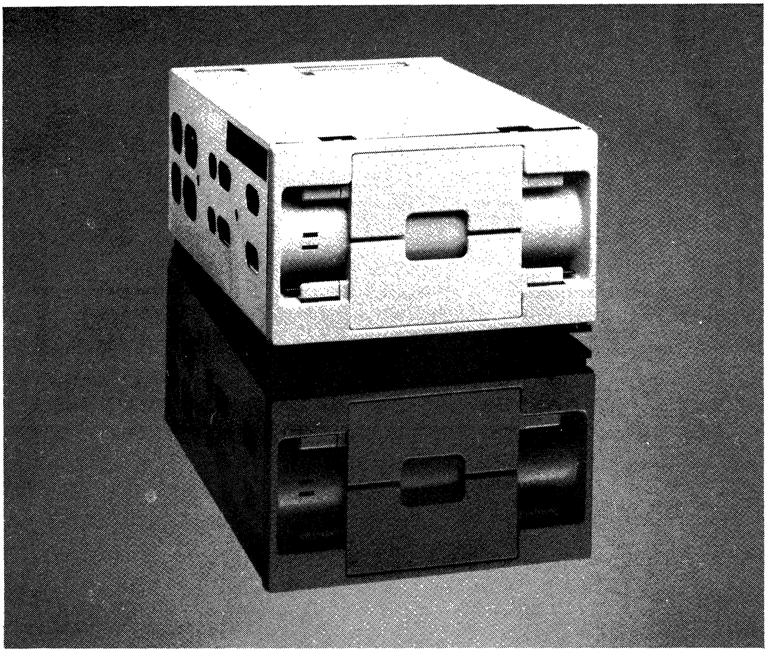
Main Memory

Both the Rainbow 100B and the Rainbow 100+ feature 128 Kbytes of main memory expandable to 896 Kbytes.

Disk Drives

The Rainbow 100B comes with 800 Kbytes of floppy disk storage in a dual-diskette drive that holds two diskettes of 400 Kbytes each. You can expand your floppy storage to 1.6 Mbytes by adding a second disk drive to the same system unit. Or, you can upgrade your Rainbow 100B to include a 10-Mbyte hard disk.

The standard Rainbow 100+ comes with the same 800 Kbytes of floppy disk storage plus an additional 10-Mbyte internal hard disk. You can upgrade a Rainbow 100B to include a 10-Mbyte hard disk at any time by purchasing an upgrade kit.



Printer Port

The printer port, which comes standard in the system unit, accepts a direct connection with Digital's LA50 Personal Printer, Letterprinter 100, and LQP02 Letter-quality Printer. This means you can choose from various speeds, draft and letter quality, and graphics printing capabilities. (See Chapter 8 for complete details on Rainbow's printers.)

Communications Port

An asynchronous/byte-synchronous communications port is a standard feature on the Rainbow. You can use your Rainbow to communicate with a remote computer either by a telephone line using a modem, or by a direct connection.

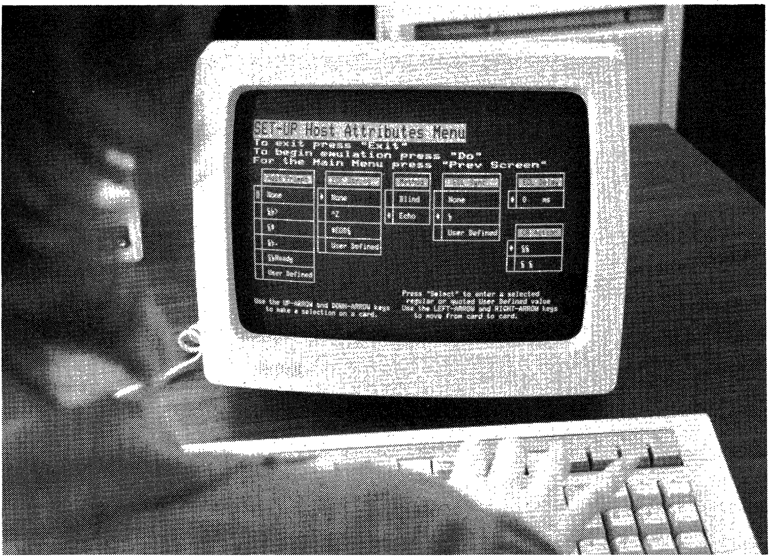
System Expansion

Both the Rainbow 100B and the Rainbow 100+ have two slots available for memory and graphics options. Each option is easy to install and you don't need to buy any expansion boxes; it all fits in the same system unit. The Rainbow 100B has a third slot for a hard-disk controller.

The Rainbow Video Monitor—Your Window to the System

The monochrome video monitor combines functional design with advanced video technology, and is available with a white, green, or amber display on black. Even though the video monitor measures a mere 11.5 inches high by 13.75 inches wide (not much more than an in/out basket) the display screen is still a standard 12 inches measured diagonally. A push-button on the side of the monitor releases a post so you can adjust the angle of the screen to where you can see it comfortably. You also can adjust the contrast and brightness as you would on your television set.

A special anti-glare coating on the display screen reduces reflections, enhances character contrast and improves readability. Screen flicker is reduced by a fast refresh rate and the high resolution characters are crisp and clear to minimize eye fatigue. Memory-mapped video brings individual characters and entire pages of text to the screen immediately after the key is pressed. This accelerates entry and editing time.



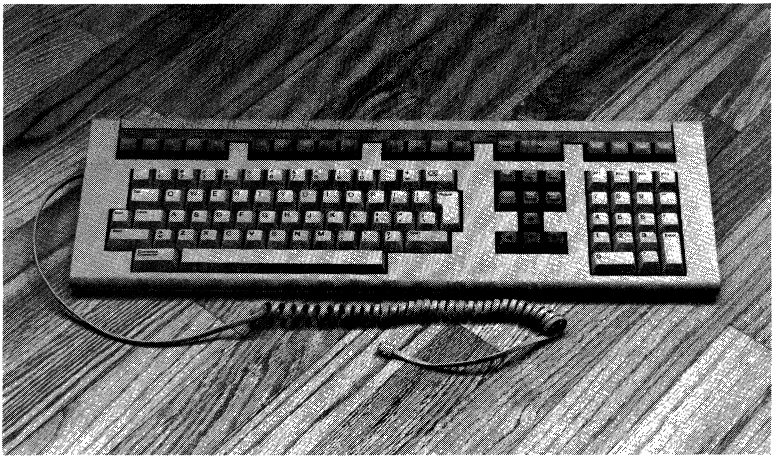
SET-UP Host Attributes Menu
To exit press "Exit"
To begin emulation press "Do"
For the Main Menu press "Prev Screen"

Rainbow incorporates all of the display characteristics of a Digital VT102 video terminal. You can choose to work with an 80 or 132 column display to suit your application. Highlight or emphasize characters on the screen by making them bold, blinking, reverse video (black on white) or by underlining them. You also can have characters with double the height and width, and full and split-screen vertical and horizontal scrolling. On-screen Set-Up menus make it easy to select and change these features with the touch of a key.

Both the monochrome and optional color monitor support high resolution bit-mapping with the graphics option, so you can design your own superior-quality graphics for charts and presentations.

The Rainbow Keyboard—Your Communication Link to the System

The keyboard's design reflects Digital's attention to detail and superior engineering. The keyboard is thin, lightweight and detachable. You can plug the six-foot coiled cord into either side of the keyboard so you can move the keyboard to wherever you type most comfortably. Rainbow's low-profile keyboard is exactly the right height for people who prefer the low-fatigue, palm-on-table typing style. The keys feel good and the keyboard is arranged to reduce errors and increase data entry speed.



Many applications are designed to take special advantage of Rainbow's keyboard. Rainbow's 105 keys are logically grouped into four categories that are easy to learn and remember. The numeric keypad on the right is laid out just like a calculator to make typing numbers fast and easy. The editing keypad is used for functions such as moving the cursor, and inserting or erasing text. A row of function keys across the top are used to perform various functions within a program. A changeable label strip above these keys clearly explains each key's purpose. The largest group of keys, the standard typing keys, is arranged like the keys on a typewriter.

Rainbow Media and Documentation—Getting You Started

Probably the last, but certainly not the least, is your software and user documentation. When you order a Rainbow you'll get a Rainbow System Kit and Installation Instructions. The kit contains easy-to-read and easy-to-follow guides and manuals to get you started and keep you going. It also includes a software box with a Rainbow Diagnostic diskette and a keyboard strip to identify the function keys.

A second kit contains the media and documentation for the MS-DOS and CP/M-86/80® operating systems and the "Learn Rainbow" computer-based instruction diskette.

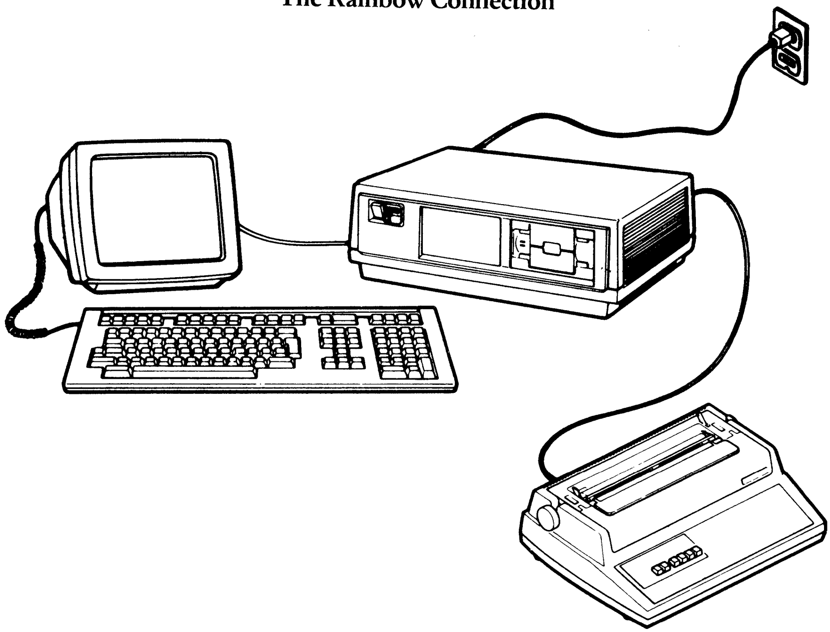
Now you've unpacked everything you need to begin putting Rainbow to work for you. Installing the Rainbow is almost as easy as taking it out of the box.

If You Have a Ballpoint Pen, You Can Install a Rainbow

Few computer vendors have engineered a personal computer as sensible and easy to install as the Rainbow. Installing a system option or upgrade kit is as simple as turning the thumbscrews and popping the component out with a ballpoint pen. Rainbow operates on the power that normally comes into your building, so you can plug a Rainbow into any standard wall outlet. The entire Rainbow system and add-ons such as printers operate reliably in your office as well as in your home.

You can install the basic system and its options without any special tools. Easy-to-follow procedures are illustrated step by step in Rainbow installation guides. We've included some of the installation diagrams and key steps in this chapter to demonstrate just how simple it is to install a Rainbow.

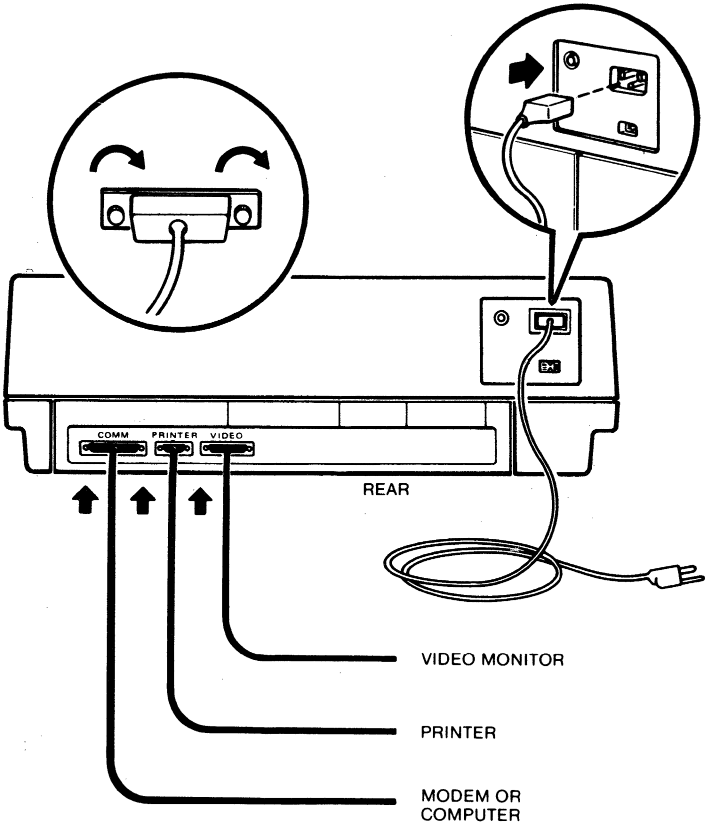
The Rainbow Connection



Basic System Components and Optional Printer

The three basic components of the Rainbow-system unit, keyboard, and video monitor-interconnect with two cables that come with the system as follows:

- The keyboard cable connects the keyboard to the video monitor.
- The video monitor cable connects the video monitor to the system unit.
- The system power cord plugs into a standard wall outlet.
- If you install a printer, the printer cable connects to the clearly labelled printer port on the system unit's connector panel.


COMM
PRINTER
VIDEO
REAR
VIDEO MONITOR
PRINTER
MODEM OR
COMPUTER

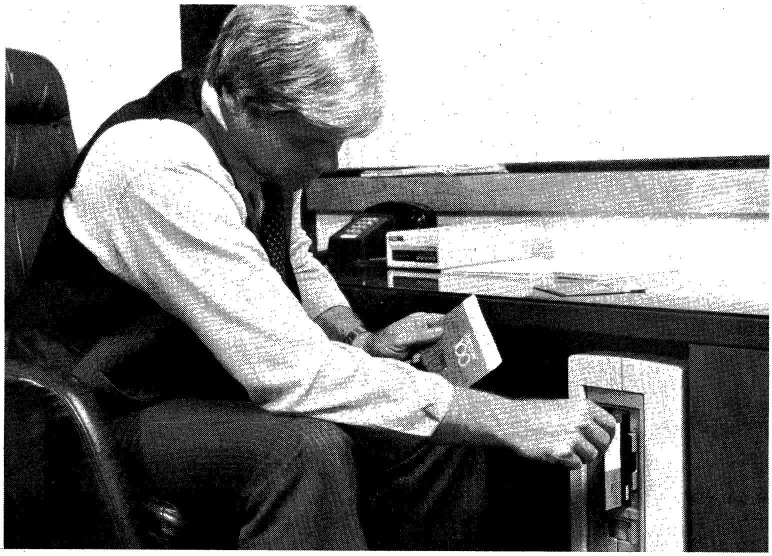
System Unit Connector Panel

Once you've decided where in your office you want your Rainbow to go, just follow these eight simple steps:

1. Place the label strip above the keyboard's function keys.
2. Plug the keyboard cable into the socket on the monitor.
3. Connect the monitor to the system unit and tighten screws.
4. Remove the cardboard from inside the disk drive and label the disk drives A and B.
5. Set the power switch to 0 (off).
6. Match the power cord and receptacle and check the voltage switch on the system unit for correct setting.

7. Plug one end of the power cord firmly into the power connector on the system unit and the other end into the wall.
8. Turn the Rainbow on by setting the switch to 1.

After a whir and a beep, the first System Menu is displayed and voila... You've just installed your first Rainbow. From box to desk in no more than an hour! And Rainbow will even check itself out for you.



Rainbow Runs Its Own Self-Test Diagnostics

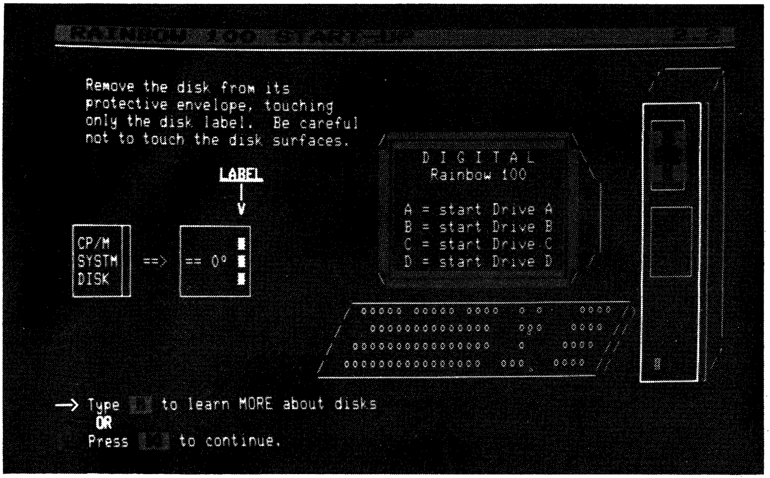
Digital has rigid quality-control programs in place to support you and your Rainbow. Extensive self-test diagnostics check the system every time you turn it on.

Additional self-testing is also available by selecting the "self test" option from the System Menu. To activate the test, you first slide a blank diskette into Drive A and a diskette into Drive B, making sure to line up the arrow on the diskette with the stripe on the disk drive, then close both doors. Next you press the "S" key on the keyboard and the word "testing" appears on the monitor. The testing process checks whether circuits are working properly. At the end of the self-test procedure, the video monitor displays the System Menu again.

Learning to Use Rainbow

You've successfully installed your Rainbow; the monitor displays the System Menu; now it's time to run your first piece of software, Learn Rainbow.

You run the Learn Rainbow software package with the CP/M-86/80® operating system. As shown on the Rainbow's main system menu, you can load the operating system in any of two possible disk drives. If you purchase the dual-diskette drive option, you can also use Drive C and Drive D. There is also a Drive W listed on the System menu for the Winchester hard disk.



RAINBOW 100 START-UP

Remove the disk from its protective envelope, touching only the disk label. Be careful not to touch the disk surfaces.

→ Type to learn MORE about disks
OR
Press to continue.

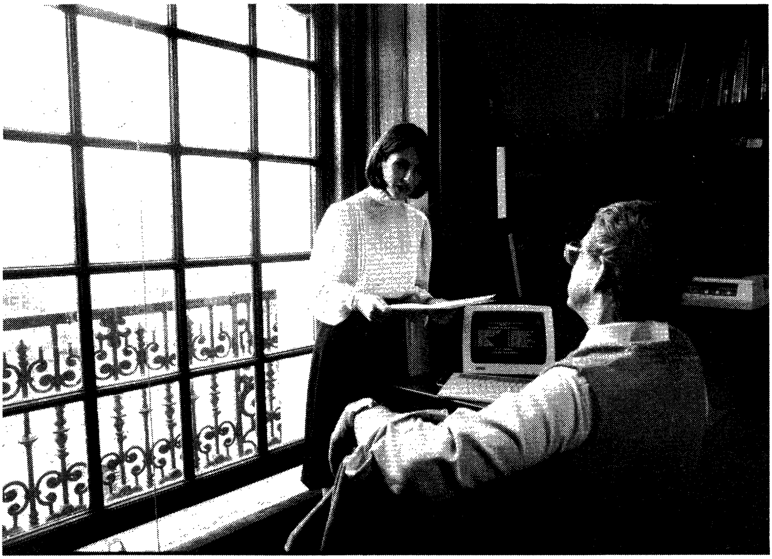
Learn Rainbow with Computer-Based Instruction (CBI)

Learn Rainbow is an easy, friendly on-screen course that teaches you everything from fundamentals of personal computing to Rainbow features. The most complete course of its kind with any personal computer, Learn Rainbow's modular design lets you learn at your own pace.

You can complete the course in just 90 minutes and if you want to jump back in for a refresher at a later time, you can review any module you want or just the summary of each module.

The System Overview diskette contains the "Learn Rainbow" course. Once you have loaded the diskette into a drive, you begin the course by typing "LEARN." You can get help at any time while taking the course by simply pressing the HELP key. To leave the course, you select the "Leave the Course" option from the Main Menu or any of the module menus. Rainbow is the friendliest tutor you could ask for.

Now that you have a better idea of how Rainbow can become a working tool for you, just wait until you see the Rainbow in action in the next two chapters. You'll wonder how you could do business without it.



Chapter 3

Rainbow for the Individual

Now that you have learned some basics about Rainbow personal computers, you are probably wondering what Rainbow can do for you. The following stories will help you answer that question.

Although the stories are not about actual businesses or people, they accurately portray a Rainbow at work in a particular professional environment. These environments include construction, law, small business management, farming, the CPA firm, and the university. Rainbow in the large corporation is covered in the following chapter.

The Family Farm

Bob and Joanne run a large farm, growing corn and soybeans, and raising hogs. Along with 300 sows, they also have 800 acres of cropland. The farm has been in the family for two generations; but because of advances in agricultural science and farming equipment, running an enterprise of this type is far more complex today than in Bob's father's time.

Bob handles the day-to-day management of the farm and Joanne manages the paperwork; together, they do the planning. Their most important planning tool is a Digital Rainbow 100B personal computer. With agricultural-specific software and the built-in terminal emulation available on the Rainbow, Joanne's workday has become a lot more productive.

Bob and Joanne looked for a personal computer that would run the software they wanted, and not a system that would control *them*. They also wanted a system that would pick up where their manual system left off, grow with the business, and support the workload. Joanne wanted something that would look good in her office and not take up a lot of room.

Looking at the Options

A neighboring tract of land is available, and Bob is interested in expanding their holding. Knowing that the major portion of the purchase money will come from the bank, Joanne takes a look at what their cash situation will be. Before Bob and Joanne bought their Rainbow 100B, financial projections such as this were based on guesswork, because neither Joanne nor Bob had the time to sit down and calculate all their options.

First, Joanne takes a look at her current account balances using a farm accounting package that maintains records in dollars, weights, and quantities. Previously, Bob and Joanne used a manual accounting system that farmers have been using for 60 years. Because the Rainbow software was so similar to the manual system, they found the transition particularly easy.

Joanne and Bob are deciding whether planting corn or soybeans would be more profitable. To help make the decision, and to see what pork bellies will be selling for, Joanne uses the Rainbow's built-in terminal emulation mode to connect to a commodities trading database for corn, soybean, and pork belly contract prices. By typing in a few words, she gets the prices she needs. While she's logged in, she also obtains a five-day weather forecast.

The next step, which used to take hours of repeated hand calculations, now takes less than an hour. Using a crop profit forecast model that she built on an electronic spreadsheet, Joanne inputs the quoted futures price for each commodity and directs the spreadsheet to recalculate the bottom line with a single keystroke. Using Rainbow, Joanne can tell at a glance which combination—hogs and corn, or hogs and soybeans—will be more profitable by harvest season. And, she can easily repeat the calculations to see the impact of changes in commodity prices, interest rates, or yields. After studying the model, Joanne and Bob can be able to determine how much they can afford for the land purchase. With an LA50 Personal Printer, Joanne obtains a printout of the results.

Software for the Farm

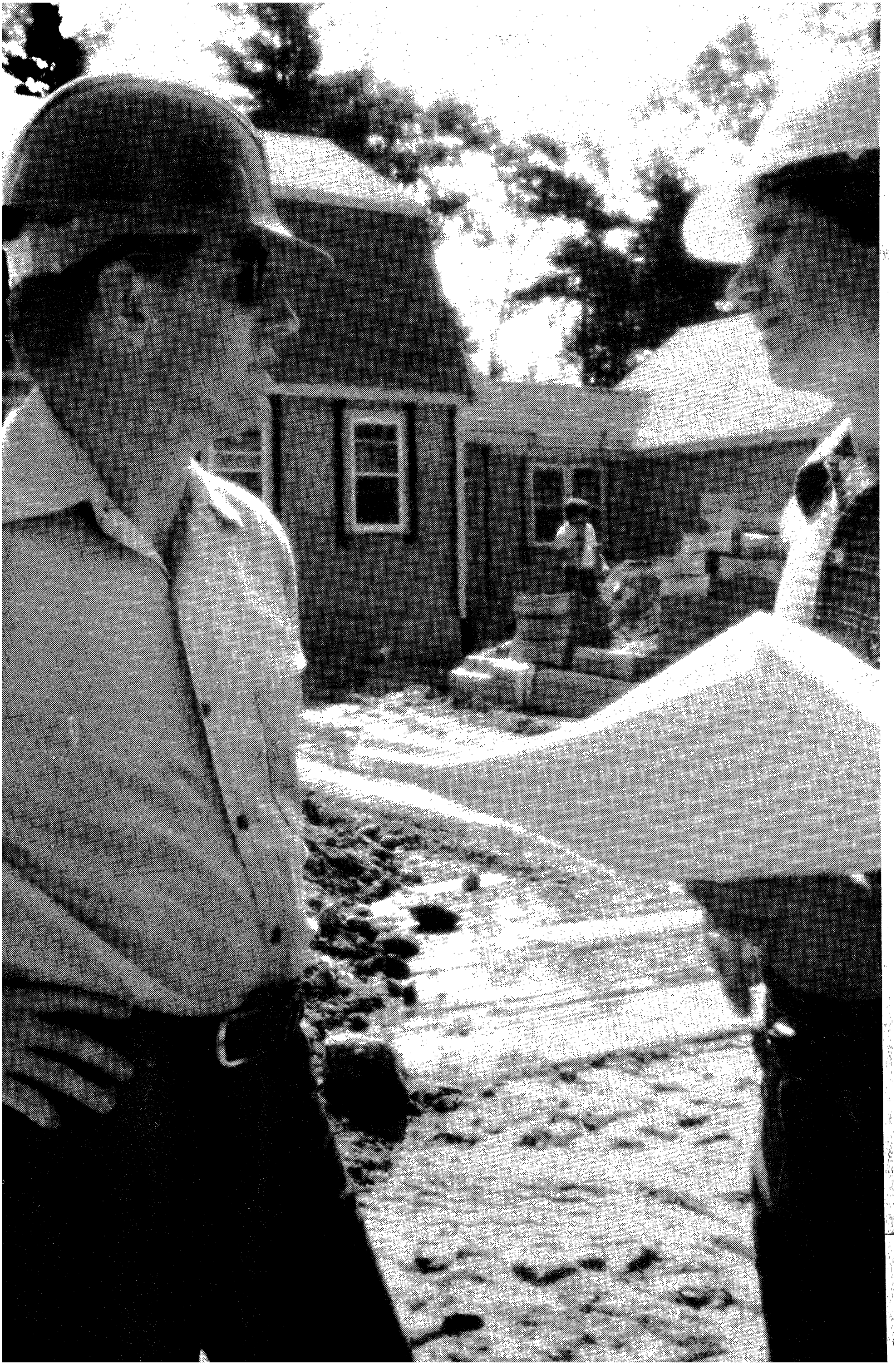
Joanne's accounting software is Secretary of Agriculture TransAction, which uses a checkbook-based single-entry accounting system. Along with TransAction, she uses the Swine Management Module. The electronic spreadsheet is Multiplan, which is menu-driven so there are no special commands to memorize. Joanne gets her futures prices from Agri-Star, a commodities trading database which utilizes the Rainbow's terminal emulation mode.

The Farmer's Productivity Tool

Digital's Rainbow 100B and LA50 Personal Printer are helping Bob and Joanne to maintain the independent lifestyle of the family farm. After choosing their software, they looked for a personal computer system that could run that agribusiness software. When Bob and Joanne decided on a Digital Rainbow 100B, they purchased a quality system that supports both MS-DOS and CP/M-86/80®, two of the world's most popular microcomputer operating systems. This versatility, combined with Digital quality, convinced them that a Rainbow 100B would be an asset in the day-to-day running of their farm.

The Rainbow 100B comes with 128 Kbytes of online memory. Bob and Joanne added the 128-Kbyte Base Memory Module that expands the Rainbow's memory to 256 Kbytes. The Rainbow 100B's dual-floppy diskette drive provides 800 Kbytes of storage, which easily holds a full-year of multi-enterprise accounting records. And Bob and Joanne know that as their needs grow, they can expand their Rainbow to include 896 Kbytes of memory and a 10-Mbyte hard disk.

A telephone modem and the Rainbow's terminal emulation ability help Joanne get up-to-the-minute weather reports and commoditites prices, making her planning more accurate. The LA50 Personal Printer lets Joanne produce work schedules that Bob uses for reference while making his rounds. And, with Digital's hot-line support and three options of service—on-site, carry-in, or mail-in—they know that help is readily available. With the Rainbow 100B, Bob and Joanne have a very sound investment.



Rainbow Revolutionizes Construction

A few years ago, it was difficult to imagine that the computer revolution would affect even the small businessperson. But for Richard, the head of a growing construction company, the computer revolution has reached him through his personal computer. The system hasn't shortened his workday, but it has increased his control over company projects. His system? A Digital Rainbow 100+, and Richard is still amazed at how much more he can accomplish today, compared to the "old days".

Before he purchased the Rainbow 100+, Richard performed all job costing on the same manual system he had used since he started doing business in the late 60's. Maintenance of this old system required detailed entries into notebooks each week, and Richard regularly spent many hours comparing estimates with actual costs. The margin for arithmetical error was great, since time was often at a premium and Richard had to work fast. Today, with a Rainbow 100+ and Richard's choice of software, those mistakes are only a memory.

Placing a Bid

Soon after he bought his Rainbow, Richard submitted a bid to the local town council for a new town hall. Although he had finished his estimate the night before it was due, Richard realized the next morning that his cost estimates on fixtures were too low. Since the town council had placed a noon deadline on bids, Richard knew that he had only a few hours to correct his figures.

Using the job estimating module of his construction software package on the Rainbow, Richard sat down at the keyboard and "called up" the file that held his estimate. He repriced his bid within minutes. By quickly reprinting his estimates on a Digital Letterprinter 100, Richard delivered the bid to the town council well before the deadline, and was ecstatic to find that his firm had been chosen to build the town hall.

The 10-Mbyte hard disk on the Rainbow 100+ makes access time to the files extremely fast. In fact, the Rainbow 100+ computer's hard-disk drive facilitates the running of Richard's entire construction package.

Tracking the Job

Today, as the job on the town hall progresses, Richard enters costs in a job-costing module as they occur. In addition to material and labor costs, Richard also inputs information on payments as they are received so that the job-to-date status remains current. When a vendor unexpectedly raises the price of cement mixture, Richard examines some detailed comparisons of estimated costs and actual costs. The report shows that with the price rise, materials for the project will be far more than he'd planned for. He decides that he will have to find another source for the mixture so that his costs won't eliminate the profit.

Meeting the Payroll

When the payroll is due, Richard uses the payroll module from his construction management software package. The previous manual system consumed several hours' worth of time, but with the Rainbow 100+, Richard's secretary spends only a fraction of the time she used to spend. The payroll module calculates the amount owed each employee, taking into consideration taxes and deductions. At Christmas, Richard uses the payroll module to calculate bonuses for his salaried people. Finally, paychecks with full detail on the stubs are produced with an accounts payable module that's part of the payroll module.

Accounts Payable and General Ledger

Richard made a large purchase of wallboard, which he plans to use for both the town hall job and another project. In entering the cost information, Richard had distributed the one invoice to the different general ledger accounts for each job. Today, as Richard pays the bill to take advantage of the vendor discount, he can see that this information is registered under both accounts. The software system automatically subtracts the three percent discount he is allowed for paying the bill within 10 days.

Forecasting the Cost of Capital Equipment

Richard is thinking of replacing some of the equipment he owns, particularly two bulldozers. The bank is willing to loan him the money on a 42-month note at 10 percent, and Richard is wondering how this purchase will affect his cash flow for the next year.

Richard "calls up" a cash flow projection model that he built with his electronic spreadsheet. Before he inputs the numbers for the monthly loan payments, he inserts a line into the model that will list the monthly interest payments on the loan. He also enters another line that will calculate the principal. He then has the model calculate the bottom line, using a single keystroke. With the Rainbow's 132-column display, Richard quickly sees that his firm can easily carry the debt for the coming year.

Software for the Construction Industry

With Construction Management Information System from Construction Data Control, Inc., Richard has chosen to take a comprehensive approach to construction management. With the Rainbow 100+'s 10 Mbyte hard disk drive, there is fast access to all of the modules.

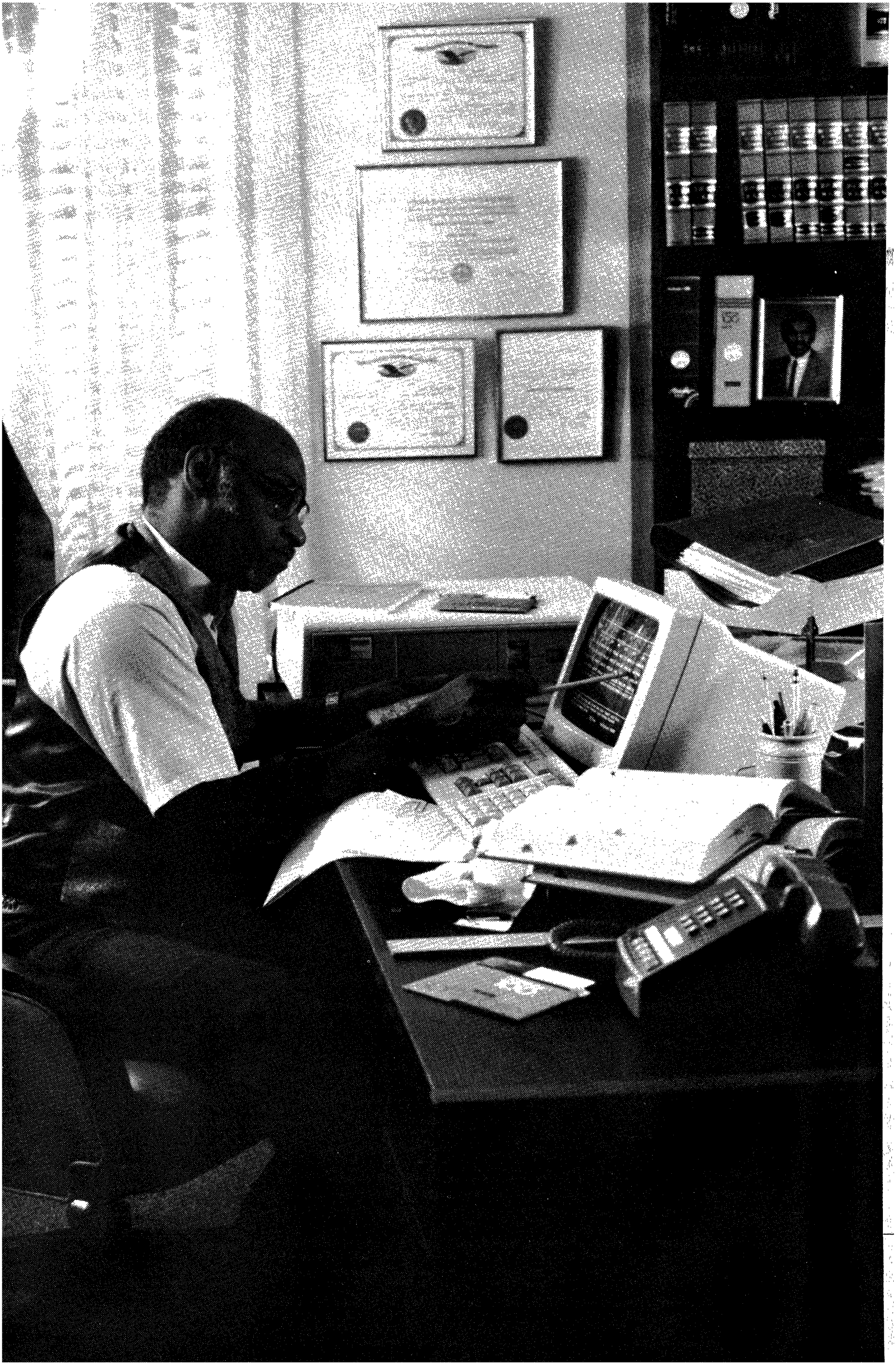
Multiplan helps Richard clarify what different actions will mean to his business. Even when the project is a big one, Multiplan and the Rainbow 100+ combine to provide an eight-window display of information from various parts of the plan.

A Rainbow 100+ on the Construction Site

For his purposes, Richard chose a Rainbow 100+ and doubled the standard 128 Kbytes of main memory to 256 Kbytes. But the 10-Mbyte hard disk drive that is integral to the Rainbow was the biggest attraction for Richard. He knew that the software he wanted performed best when used in conjunction with a hard disk. No matter which Rainbow he chose, Richard knew his system was backed by Digital's support programs, giving Richard a resource for all questions about the Rainbow. Digital's "HELP" telephone line provides Richard with fast answers.

With the Rainbow 100+, Richard also purchased Digital's Letterprinter 100, a desktop printer ideal for printing documents that require a wide carriage, such as complex spreadsheets. The dot-matrix Letterprinter 100 also creates letter-quality text, which is just what Richard wants when he bids on a project.

As Richard's business grows, his Rainbow 100+ will easily keep pace. With both MS-DOS and CP/M-86/80 available on the Rainbow, Richard has a wide variety of software packages to choose from. When the business expands, and new and different applications are needed, Richard is confident that they will run on the Rainbow.



A Rainbow and the Law

The practice of law is demanding, something Ted knew when he entered the profession. What he didn't know when he became a partner, was how much of his time would be taken up with managing the business details of the firm: tracking billable time and reimbursable costs, making sure invoices went out to clients on time, following up on his associates' productivity. The ever-increasing number of cases from his corporate and general practice made Ted think he was well on his way to becoming an office manager rather than a lawyer. Then Ted and his partner made a smart decision; they bought a Digital Rainbow 100+ personal computer to perform their office management tasks. Now Ted spends the majority of his time practicing law and a smaller portion of his day managing the practice. With the legal software and the Rainbow 100+ he and his partner chose, he has complete control over both areas.

Tracking a Client's Status

Recently, Ted received a call from an out-of-state client who is bringing in more and more business. Deane Construction Company is a small but growing concern. William Deane, the sole owner who now wants to incorporate and change the company's name to Central Construction Company, Inc., is asking Ted to handle the matter.

Ted asks Fran, his secretary, to first check the account status of Deane Construction. Using a legal time and billing package with the Rainbow 100+, she can call up a customer statement on the construction company that lists financial information regarding fees billed year-to-date, the amount received, and the balance due. The report shows that Deane had been prompt about making payments, which had been on a per-job basis.

Efficient Use of Research Time

Ted proceeds to research the regulations concerning the amendment of the corporate name. Because the firm is out of state, Ted connects the Rainbow 100+ to a legal database that allows him access to regulations for different states. Once connected, Ted executes a search and retrieve, and then prints any items pertaining to his research, all within a half hour.

Ted keeps track of his activities on notepaper. At the end of the day he hands his notations to Fran. Using the daily transaction sub-menu in the legal package, she inputs the timesheet information on a case-by-case basis, with various work codes differentiating the services were performed. Finally, Fran has the system generate a daily transactions report with a summary of hours and fees for each case.

Because Deane Construction has become a regular client, Ted decides that he will bill it monthly as opposed to a per-job basis. Since he bills his clients at varying intervals, Ted instructs Fran to code the account so that only the monthly billing run will include the Deane account. When Fran sends a statement to Deane Construction at the end of the month, she will be able to bill disbursements only, fees only, or both. The system will even print a late notice or create an accounts receivable aging.

Personal Productivity

Gail, one of Ted's associates, has a salary review coming up. Ted uses an attorney productivity report as the basis for reviewing his associates. From this report, he can see monthly and year-to-date totals on billable and non-billable hours for each associate within a matter of minutes. In looking at the billable totals for the past months, Ted sees that Gail is steadily increasing her caseload and easily fulfilling Ted's expectations of her. Ted then writes up his review of Gail and gives it to Fran for typing.

Word Processing

As Fran types up the required documentation concerning the name change for Deane Construction, she knows she can search forward and backward throughout the text to make the changes—even if some occurances of the phrase are bolded.

Fran does much of her work using blank forms which she stores on the 10-Mbyte hard drive of the Rainbow 100+. After the board's approval of the incorporation and name change for Deane Construction, Fran calls up the blank form she created for the Waiver of Notice, copies it into her work area, and fills in the necessary information. She then makes her new form the first page of the board meeting's minutes.

Fran prints out her work on a Digital LQP02 Letter-Quality Printer, which uses a daisywheel print head that produces full-character printing. While her documents are printing, Fran goes on the the next editing job at hand.

Software for the Law Office

Ted's firm uses Advanced Legal Software. Written specifically for the legal environment, this system can do selective billing, time and cost adjustments, pre-bills, bill printing, and even late notices.

To access a wide variety of legal libraries, Ted uses WESTLAW, a legal database for law firms requiring legal research information. With WESTLAW, Ted has access to libraries on federal statutory law, regulations, case law, special interest libraries, and WESTLAW state libraries.

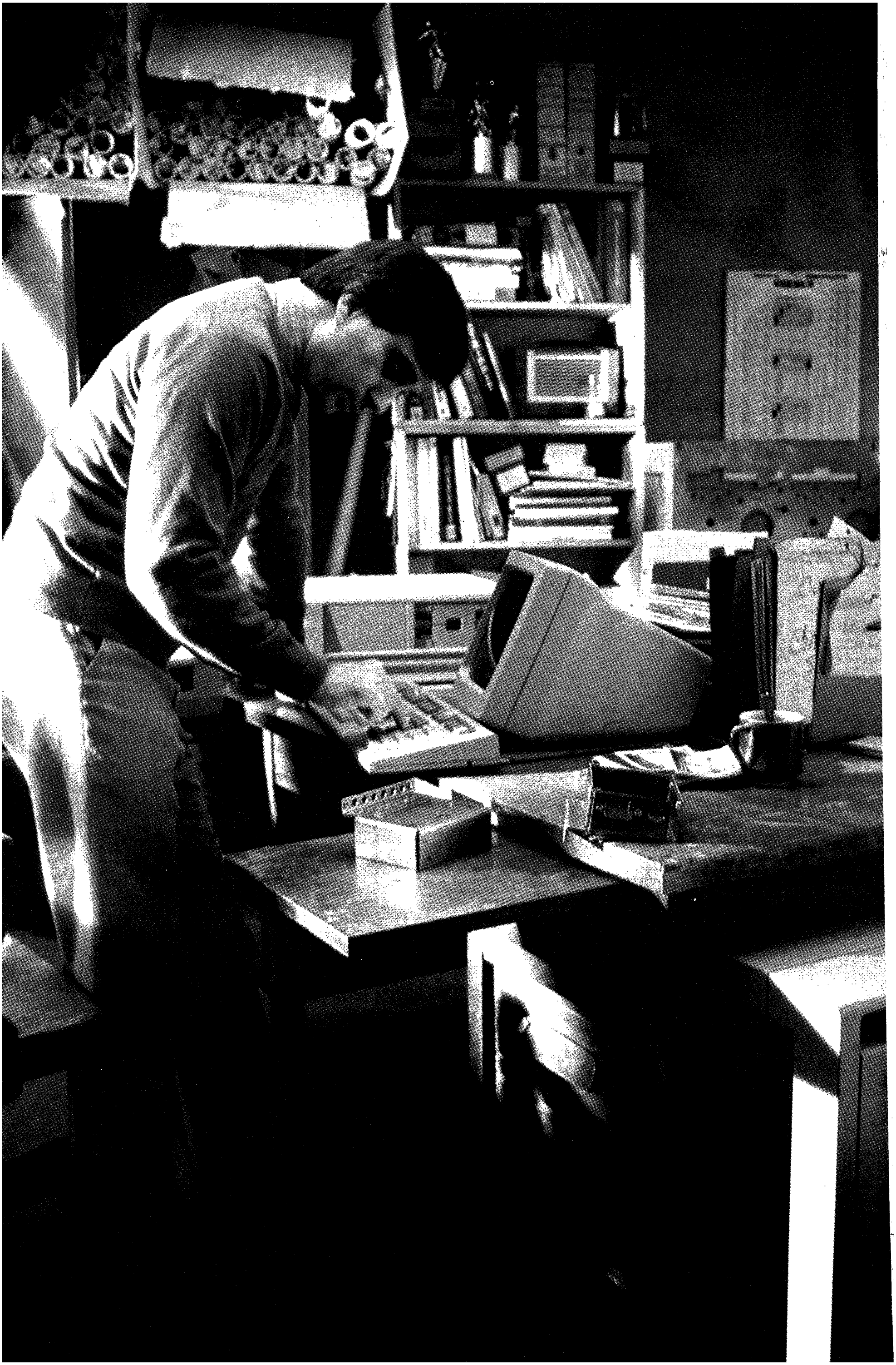
For word processing, Fran chose SAMNA WORD II. With SAMNA, Fran can assemble a document from standard paragraphs stored on disk, change the spacing anywhere in the text, and be sure that printouts never have awkward hanging lines at the beginning and end of a page.

The New Associate

The Rainbow 100+ with 128 Kbytes of on-line memory and an internal 10-Mbyte hard-disk drive lets the members of this firm manipulate large quantities of files that go hand-in-hand with practicing law. Using a telephone modem and the Rainbow's terminal emulation, Ted has a wide variety of legal research material at his disposal. Ted likes to joke that his "new associate" has reduced the "paper chase."

The LQP02 Letter-Quality Printer's user-interchangeable print wheels combine a variety of print styles with excellent print quality. Ted strives to provide his clients with superior legal services, and Digital's Letter-Quality Printer makes his paperwork look professional, too.

The one thing the Rainbow has increased for Ted and his secretary is available time. Ted is free to practice law and Fran can better support him in that function. Access to documents and files is only a few keystrokes away. Even learning how to use the system was easy; "Learn Rainbow," a computer-based instruction course, made Fran feel comfortable immediately. If productivity and quality are the key words to becoming a partner in a law practice, the Rainbow is already there.



A Growing Business

Mark's company manufactures engineering research equipment. He started his business three years ago with two other people and one product line. Today his company has more than 50 employees, five product lines, and annual sales of nearly 10 million.

Although sales are up and new orders are coming in every day, Mark feels that his profit margins are too low. He suspects that product costs are eating away at his profit margin, but isn't quite sure which product is responsible. He's decided to isolate the cause of the problem and then find an answer—quickly, before the margin gets any longer.

An Integrated Problem Solver

Luckily, Mark has a combination of innovative tools to help find a solution to the situation. Using a Digital Rainbow 100B, which he has in his office, and an integrated software package that combines an electronic spreadsheet, information management system, and graphics, Mark knows he will have an answer in a short time.

The information management section of Mark's software package contains up to two years' worth of data on sales, product costs, and expenses for his company. With a few keystrokes, Mark selects the records he wants for each of his product lines and then transfers these numbers onto the spreadsheet format. The spreadsheet with the required data appears in a matter of seconds, and Mark begins to check his production costs.

A sound knowledge of his business, coupled with some strong hunches, help Mark to pinpoint the trouble area on the spreadsheet: An oscilloscope has become increasingly labor intensive because it must be programmed.

Mark did not want to waste any time explaining his findings to the management team. He quickly directed the system to create a bar chart for production costs over the past two years, and in less than two seconds he had a visual presentation. With the Rainbow's high-resolution color monitor, the colors of the chart were crisp and clean, showing the oscilloscope problem with startling clarity.

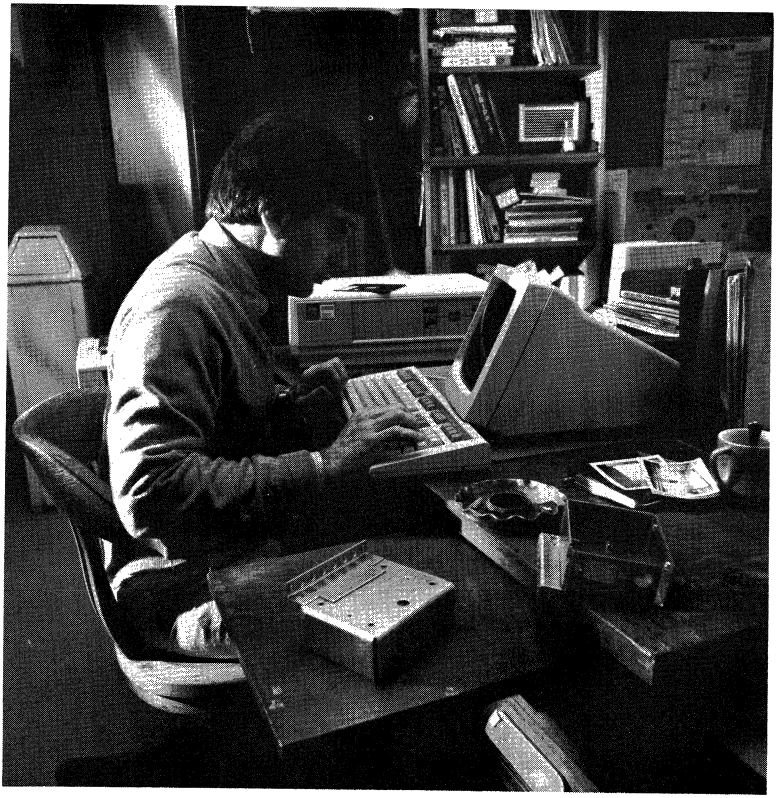
Since two of his managers were working in the next office, Mark called them in and showed them his findings. Someone suggested that they go back to the spreadsheet, replace the oscilloscope's in-house production costs with an estimated price for subcontracting the product, and then create another graph to show the difference.

In another few seconds, the second bar chart was on the screen and the difference in savings was clear. Mark decided to print both versions of the chart on his Letterprinter 100 so that he could review it during the next day's staff meeting.

Employee Stock Purchase Plan

Now a few days later, Mark is preparing for a company presentation on a proposed Employee Stock Purchase Plan. After formulating the plan on the spreadsheet, Mark uses the graphics portion of his integrated software package to create a line graph showing how each employee's investment will increase in value. After printing the necessary spreadsheets and graphs, Mark asks his secretary to create a transparency of the graph.

Before buying his Rainbow 100B, Mark would not have had the time to prepare this type of presentation. For Mark, there are still not enough hours in the day, but the combination of software plus the Rainbow assure Mark that the time he spends in front of his system is very productive.



Software for the Busy Professional

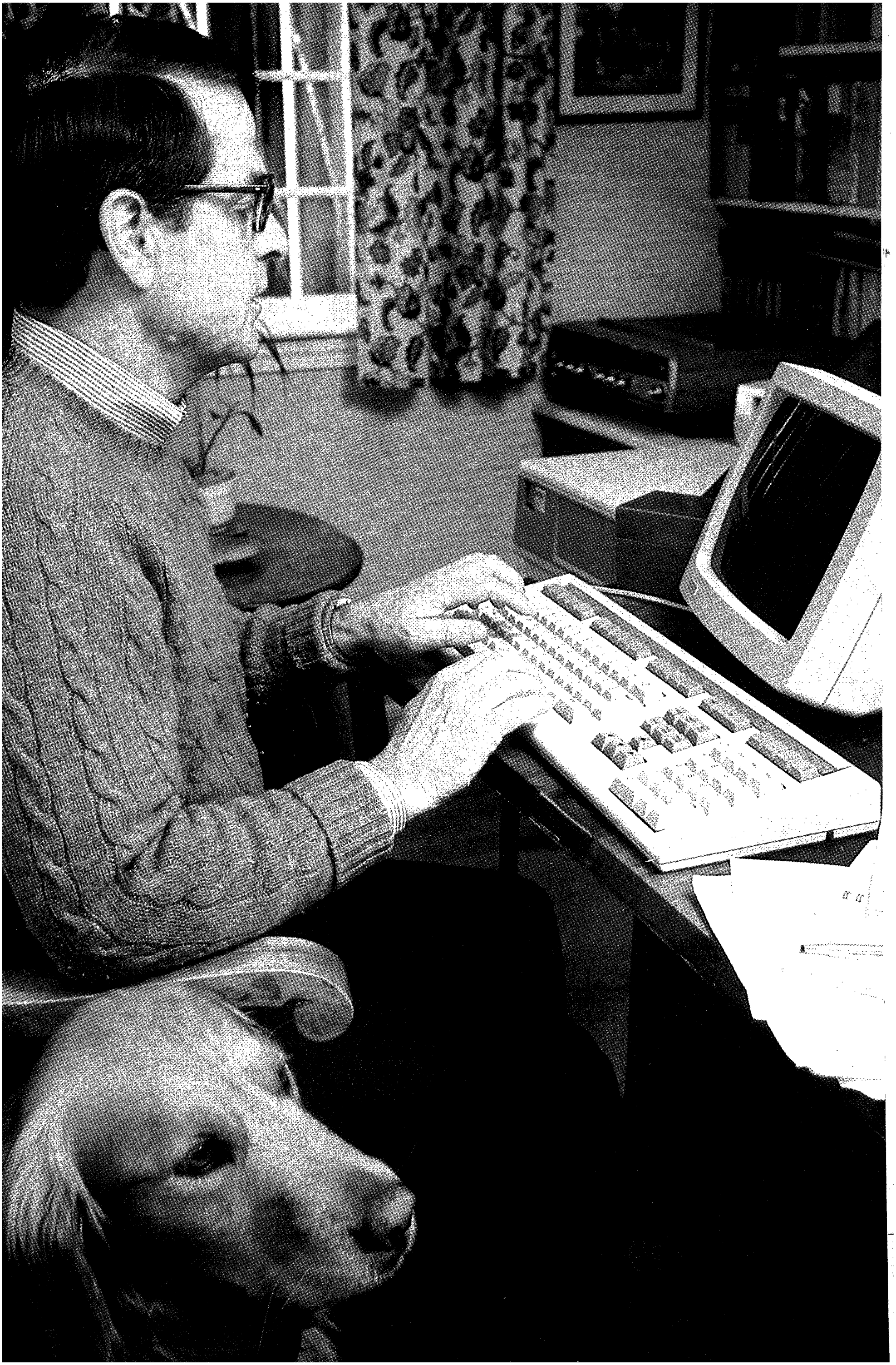
Mark's software package is Lotus 1-2-3 from Lotus Development Corporation. Lotus 1-2-3 combines the power of three programs—a spreadsheet, information management commands, and graphics. He found that 1-2-3's commands, which are free from computer jargon, saved him the frustration of learning commands from three different applications.

A Rainbow for the Owner/Manager

Mark uses Digital's Rainbow 100B and the MS-DOS operating system to run Lotus 1-2-3. Knowing that he wanted to take full advantage of the graphics portion of 1-2-3, Mark purchased the Rainbow's color monitor and graphics option, which can display either graphics or text. The high resolution of the monitor lets Mark work on the system for hours at a time without the headaches or eyestrain that can result from long periods in front of many other video displays.

The Rainbow 100B comes with 128 Kbytes of on-line memory, and Mark added the 256-Kbyte Base Memory Module and two 256-Kbyte Chip Sets for a total of 896 Kbytes. The expanded memory, along with 800 Kbytes of storage from the dual-diskette drives, allow Mark to build and store very large spreadsheet models.

With the Rainbow and Lotus 1-2-3, Mark feels that he has better control over his growing business. His system lets him get to the heart of a problem—whether it be production costs or a presentation—in a minimum of time.



The Accountant's Business System

Jack is a certified public accountant and financial consultant working for a small CPA firm. He uses a Rainbow 100+ to prepare financial statements and plan investment strategies for his clients.

One of Jack's clients is thinking of purchasing a small business and combining it with his present retail enterprise. The client wants Jack to analyze his present position, perform a valuation on the proposed acquisition, and make a recommendation.

Checking the Books

Jack first wants to check his present financial status. Using a client ledger package that is specifically designed for a CPA firm, Jack checks to make sure he has up-to-the-minute financial data on his client. He then decides to run a six-month profit and loss statement on the company.

Within minutes, he has printed this report on his Letterprinter 100 and is directing the system to generate another report comparing the last two six-month periods. As this second report is printing, Jack begins a closer examination of his client's financial status.

From the data on his printout, he sees that the company is steadily increasing its profit line and his client is not locked into any long-term debt. His only question concerns the company's growing accounts receivable. He makes a notation to point this out to his client so that he can reduce the amount. Otherwise, his venture could be put in jeopardy.

After deciding that his client's present financial status is a basically good one, Jack checks the books of the firm his client wants to buy. During the following week, he does a valuation of the proposed acquisition and estimates the company's worth.

Stock Prices by Phone

Jack's client wants to make a personal contribution towards the purchase by selling some stock. He has asked Jack to check the recent activity of the stocks in his portfolio. Using the Rainbow's terminal emulation mode, Jack dials into a New York Stock Exchange database service by telephone to get the information he needs. Jack uses his printer to obtain a hard copy of the screen display.

The next step is to run an analysis on the stock portfolio using a special software program to do just that. The program does a complete analysis of his client's stocks in a few seconds. From studying the screen, Jack already can see what combination of stock will yield the funds needed by his client, while at the same time having the least effect on the intrinsic value of the portfolio.

Forecasting the Bottom Line

Using information obtained from the valuation, Jack consolidates the financial statements of the two companies, using a software package that combines the results of reports from various sources. With the electronic spreadsheet feature of this package, Jack builds a pro-forma profit and loss statement with the consolidated numbers.

First, Jack loads a model he previously built that will forecast a profit and loss statement for the next two years. He makes a copy of the model in his work area and proceeds to update it with information from the software package's files containing the consolidated statements.

To complete the forecast, Jack enters the loan payments and interest percentage that he thinks will be necessary. The program begins to calculate a bottom line as fast as he can input the information. With the Rainbow's 132-column video display, Jack can see 12 months' worth of information, and the smooth scrolling feature allows him immediate access to the second year of data. The high-resolution screen lets Jack see that with the acquisition, his client's business will dip into the red for the first two months. But if his trend analysis of future sales proves correct, his client's firm will break even by the third month and show a growing profit.

Jack prints out his forecast and places it in a folder with the other reports in preparation for an early morning meeting with his client.

Software for the CPA Firm

Jack keeps his books with CPA-11 from Franklen Computer Systems, Inc. CPA-11 lets Jack design and produce an unlimited number of reports. The package also includes provisions for multicompany clients, after-the-fact payroll, depreciation, and amortization schedules. Jack likes using CPA-11 because the package takes advantage of Rainbow's special function keys.

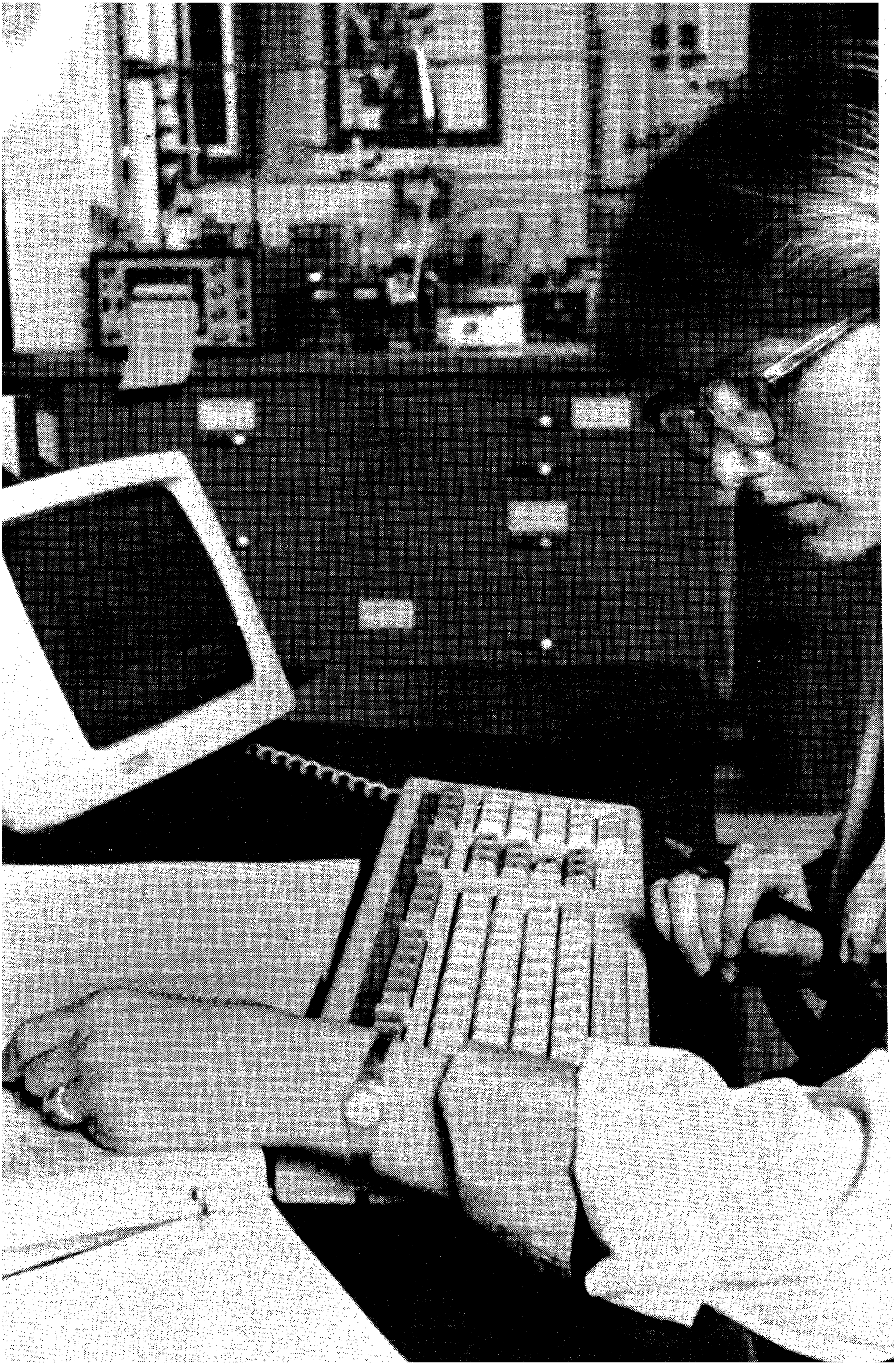
The Dow Jones News/Retrieval service lets Jack access a variety of information concerning financial news, market information, and company profiles. By using the Rainbow's terminal emulation ability, Jack does not have to hunt for yesterday's newspaper to get the latest stock prices.

For doing stock portfolio and other types of financial analysis, Jack uses Money Decisions I and II. Jack likes the fact that he has a comprehensive collection of business and financial problem-solving tools available. With Money Decisions' English-like commands, Jack can evaluate several alternatives within the space of a few minutes by changing just one variable instead of several hours.

MicroPlan-86 is a powerful and versatile financial modeling tool. When Jack wants to tie together various sets of data, he uses the Consolidation/Tables Module of MicroPlan-86.

The CPA's Productivity Tool

The Rainbow 100+ takes the "pencil-pushing" out of Jack's daily routine, and the Rainbow's design gives him room on his desk to spread out his client's paperwork. The 128 Kbytes of on-line memory (expandable to 896K, if he ever needs it) and 10 Mbytes of hard-disk storage let Jack run and store the large amounts of data that many of his clients require. Jack needs a variety of financial and accounting programs to do his work. Knowing that the Rainbow runs both MS-DOS and CP/M-86/80 operating systems assures Jack that he will always have a wide selection of software. In Jack's line of work, the Rainbow is his partner.



Rainbow Goes to College

Jeanne and Lesley are roommates at a large university. Jeanne is an engineering major, and Lesley studies comparative literature. Their school has instituted a computer literacy program that encourages students to use personal computers in their work.

Computer systems are available to students at a discount through the campus bookstore, so Jeanne and Lesley chipped in and bought a Rainbow and an LA50 printer. Both have found that the Rainbow computer helps them cope with their heavy workloads.

Different Problems Require Different Solutions

For her math, engineering, and physics courses, Jeanne had been using a calculator, paper, and pencil. But now she uses her Rainbow, and a software package designed for solving mathematical equations. Most of her classmates still use calculators to grind through these assignments, but the Rainbow has given Jeanne an advantage.

Because of the software program's clear layout—variables displayed above, formulas below—Jeanne can quickly see the relationships involved in the problem, and alter the values accordingly. She also can display and print out graphs of functions for an even closer examination.

Lesley's liberal arts courses require her to write long papers such as essays, literary criticism, research papers, and creative writing. For many students, writing papers is the tough part, but with Lesley, it comes naturally. For her, the hard part has always been getting the papers edited, rewritten, and clean-typed in time.

Before she had the Rainbow, Lesley paid a typing service to prepare her papers. It was expensive. She'd have to have papers redone because the typists couldn't understand her handwriting. And the typing service was no help when time constraints forced her to write papers the night before they were due. Whenever Lesley typed her own papers, no matter how hard she tried they inevitably looked sloppy, and no amount of correction fluid or erasable bond paper helped.

But now Lesley has help from her Rainbow and the word processing package she's selected. Her dormitory room is no longer buried in papers, because she keeps all of her documents on easy-to-store diskettes. She can devote more time to researching and writing, and less to the mechanics of getting the words down on paper. The quality of Lesley's work has improved, too, and her grades show it.

She starts by typing a rough draft and storing it onto the disk. She doesn't worry about getting things perfect the first time, because she knows she can go back and easily edit at any time. So her writing is freer, less forced, and her ideas come easily. She can continue to write and rewrite, make changes, try different sentences, move paragraphs, even check her spelling—all on the screen. Only when the writing is perfect does she have to print it out. So now, she can let her papers go until almost the last minute; she can print out papers in the morning, knowing she'll have a picture-perfect copy to hand in that afternoon. Her professors have even said what a pleasure it is to read such "neat" papers.

From Introductory to Advanced Programming

Both Jeanne and Lesley have enrolled in computer programming courses this year. Jeanne programs in FORTRAN and COBOL for her engineering work, and lately, as she has become more interested in programming, she has begun studying systems programming using the C compiler. C is a language that makes use of modern block-structured programming techniques, which will come in handy as Jeanne takes more advanced courses in software design.

Lesley studies BASIC programming for her "Introduction to Programming" course, just to learn more about computers.

Both students find the Rainbow a great asset in these courses. Since computing time on the school's central computer system is always at a premium, Jeanne and Lesley write and debug their programs using software packages purchased from the bookstore at a large discount. Debugging programs often takes longer than writing them, so by using the Rainbow as an independent system, they save the school a lot of money, and save themselves a lot of time by not having to wait in line to use the school's computer terminals. And they free up computer resources for students who don't own their own computers.

Once their programs are written, debugged, and ready to be turned in, Jeanne and Lesley use their Rainbow's built-in terminal emulation and a communications software package to send their programs to the school's main computer. With a few commands, their programs are transmitted to the computing center on the other side of campus, directly into their professor's account.

The professors look the programs over, make comments, and grade the work, all by computer.

When Jeanne thinks back to last year—the lines at the computer center, the shortages of paper, the panic just before the assignments were due and whenever the computers went down—she's glad she's got the Rainbow.

Software for Every Kind of Student

Jeanne uses the TK!Solver-86 Equation Solver from Software Arts, Inc. for her engineering, science, and math problems. She also uses FORTRAN-80 and COBOL-80 from Microsoft for her programming, as well as the MWC-86 package by Mark Williams Company. Jeanne uses SELECT-86 word processing from Select Information Systems for her written assignments, and MBASIC-86 from Microsoft for her introductory programming course.

Both students use poly-COM from Polygon Associates for communicating their assignments electronically to the university's large timesharing system.

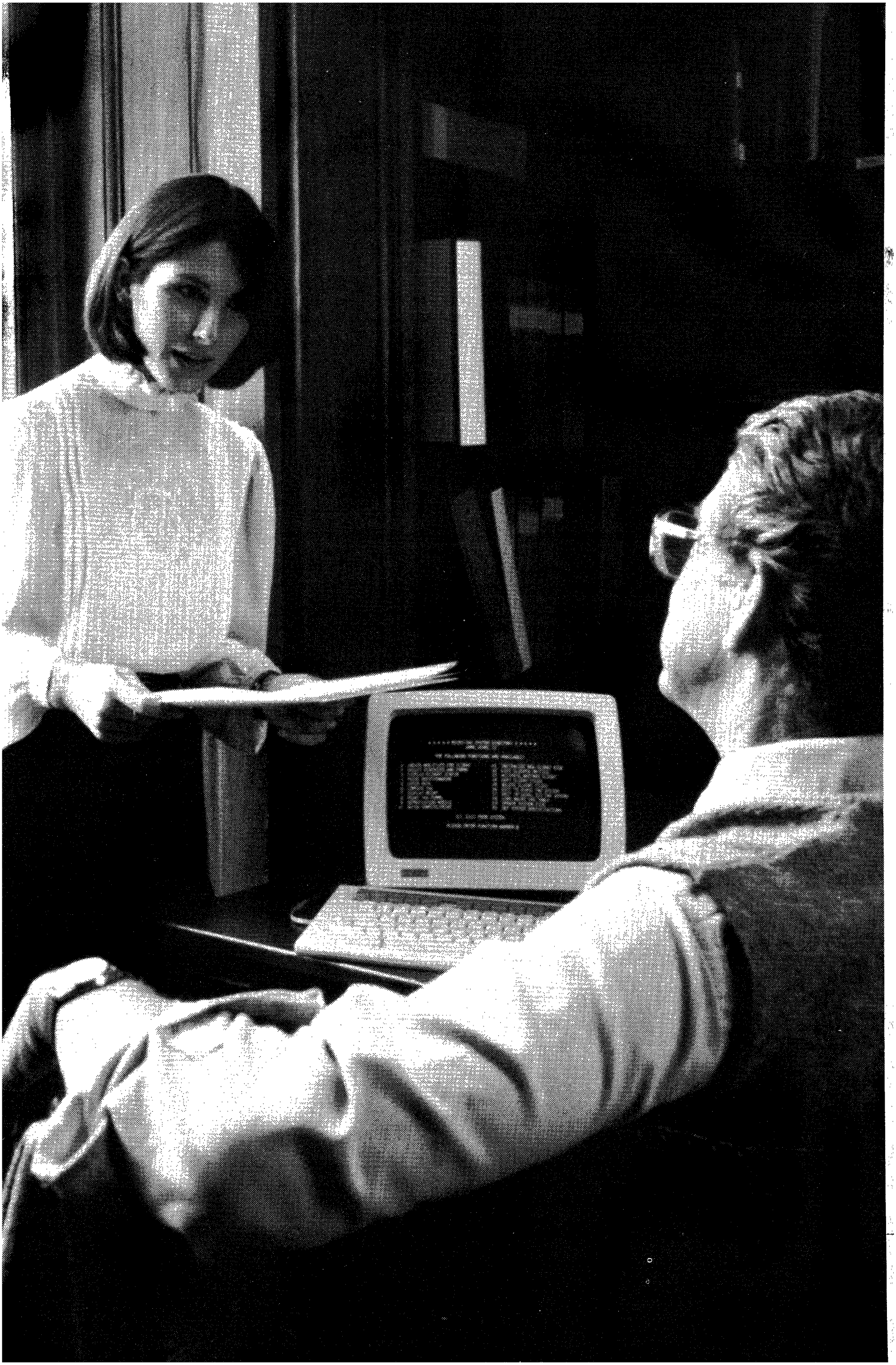
A New Tool for Higher Education and Beyond

For Jeanne and Lesley, their Rainbow is a tool that helps them get their work done, not unlike a calculator or a typewriter.

The difference is that the Rainbow's a lot more powerful and versatile, and helps them solve a wider range of problems much more quickly. The Rainbow helps them get the most out of their education, and helps speed the learning process.

They've talked about who gets the Rainbow after they graduate, and joked about buying out each other's interest in the computer. They also think about someday upgrading their system by adding a 10-Mbyte hard disk to store more information.

Lesley would love to buy a letter-quality printer someday, and Jeanne thinks a graphics option, more memory, and some of the latest integrated software packages would be terrific. What keeps both students happy is knowing that when the time is right to move on and expand their Rainbow's capabilities, the Rainbow won't get in their way. It will grow along with them, just as they have grown at college.



Chapter 4

Rainbow in Large Organizations

When Rainbow goes to work in the corporate environment, it brings along all the features you've seen at work so far. But its ability to communicate with other personal computers and with larger systems takes on a new importance.

With Rainbow communications, you can have instant access to your company's databases. You can share information with colleagues across the hall or across the country. And you can do these things without any extra software, using Rainbow's terminal emulation.

The following stories, which are not about actual businesses or people, accurately portray how communciations, as well as other Rainbow features, come into play in the corporate setting.

The Analyst in the Central Office

John is a one of several financial advisors in a large corporation. His job is to analyze the company's performance against goals set forth in its budget. John used to tackle these major analysis projects with accounting pad, pencil, calculator, many erasers, and lots of patience. Each analysis took days or even weeks, and even then it was not exhaustive enough to satisfy him.

Then John's requisition for a Rainbow 100B with spreadsheet and communications software packages came through. Since then, John's productivity has soared because now he can research a financial question until he is certain he has seen all the implications.

Preparing the Quarterly Report

One of John's responsibilities is to update one division's revenue and backlog plan every three months. The analysis, which is a projection of a two-year forecast, covers four different products in three geographic areas. His input data consists of beginning backlog, bookings, shipments, and ending backlog. He compares this data with the expected corporate goals for year-end backlog and revenue.

As part of this quarterly update, John performs sensitivity analysis. In the spreadsheets scenarios he constructs, he asks such questions as: What happens to the backlog level if bookings fall off? What if bookings increase? What happens to revenue if the pricing changes for some products?

Before John got his Rainbow computer, he created 20 such scenarios in a week with each one requiring about three hours. The first time he used his Rainbow on the revenue and backlog update, he spent about a day setting up the many spreadsheet formulas he needed. He spent the next morning entering the data, and that afternoon he generated scenarios—100 scenarios in all.

Preparing next quarter's update is even easier for John, now that he has constructed the spreadsheet. He needs only a morning to update the data and an afternoon to run the scenarios. With Rainbow, John no longer worries about missing a crucial point because he can explore many more "what if" scenarios than he could before.

The Spreadsheet in Action

The input data John uses is stored on a large mainframe database. It includes information concerning current backlog in all areas, previous period's bookings, shipments, and the other information he needs to formulate trends. Before John got his Rainbow, he used to wade through the massive printout from the data processing department to find the reports on his division. Now, he connects his Rainbow to the mainframe with one of Rainbow's communications software packages. John makes inquiries to the mainframe database and transfers the appropriate data to his Rainbow diskette.

Next, John retrieves the spreadsheet model for the baseline backlog and revenue plan that he constructed the previous time and updates it with the new data. The spreadsheet program automatically recalculates all subtotals, totals, and consolidations across geographical regions.

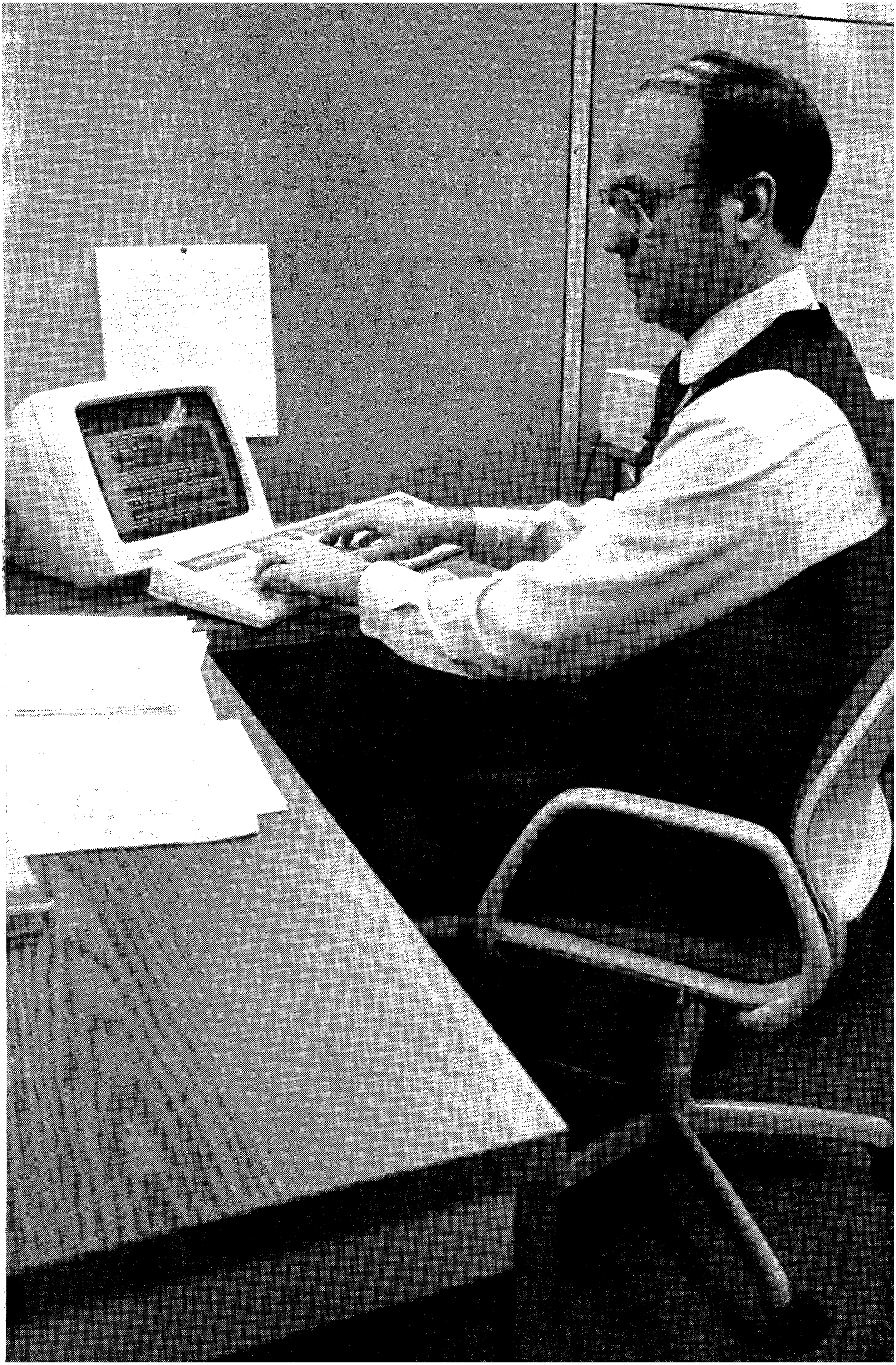
Now he begins to alter the spreadsheet to reflect various "what-if" questions. Each time he changes a value, his spreadsheet program recalculates all entries according to its formulas. He saves a copy of each spreadsheet model—each with new set of values—in a new file on the diskette and moves on to another question.

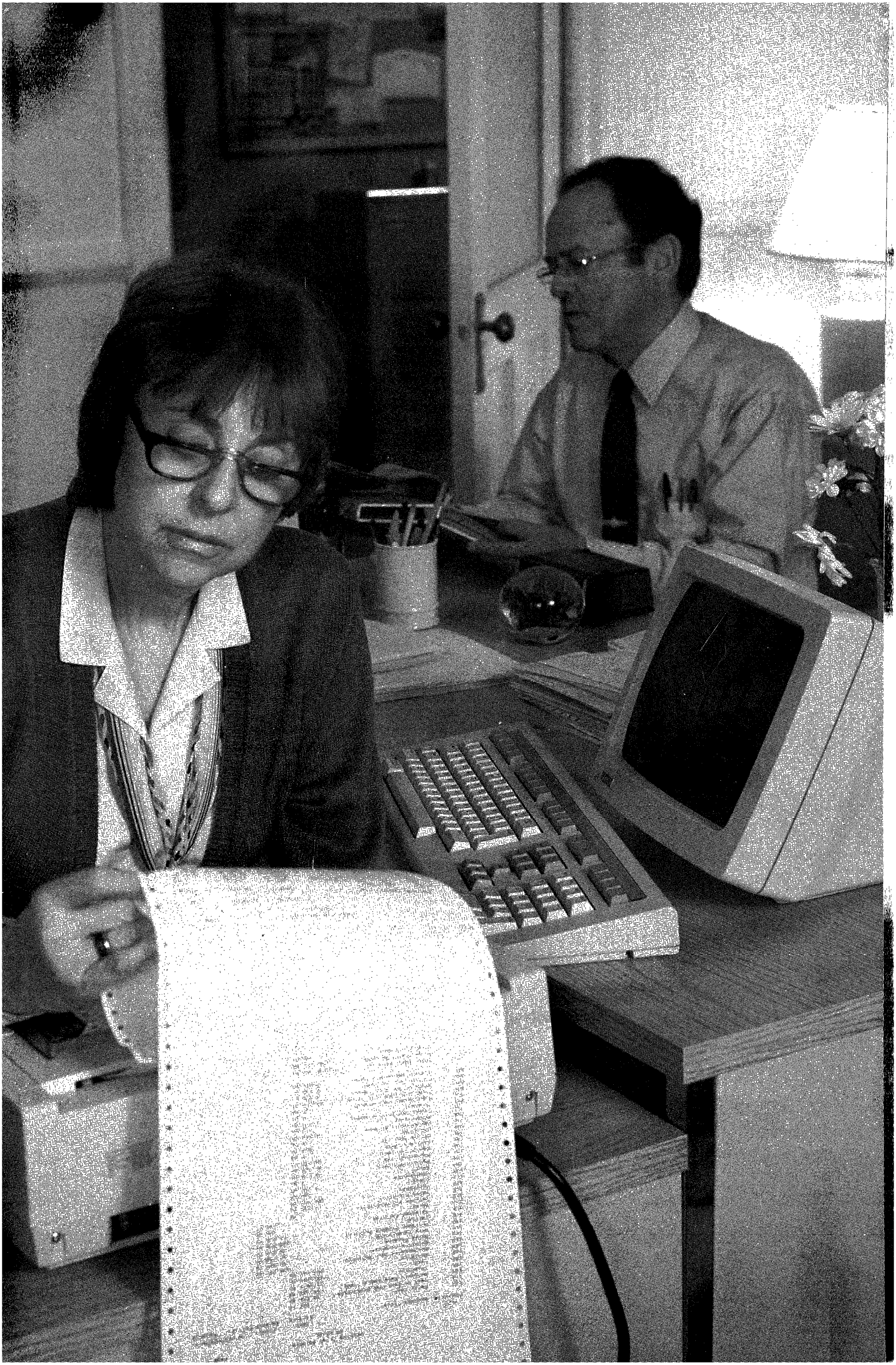
Software for Financial Analysis

John's financial spreadsheet package is Chang Laboratories' MicroPlan-86. Its Tables Module helps him produce high-quality, customized reports. MicroPlan-86 also has an automatic table consolidation feature that makes it easy to merge his data covering different geographical areas. John performs interactive data communication with his corporation's mainframe computer using his Rainbow and the poly-BSC/3270 IBM communications package from Polygon Associates.

The Consultant's Analytical Tool

The Rainbow's unique 132-column display makes it easier to view all the columns of a financial spreadsheet. For example, John can view all eight quarters of his two-year plan at the one time, without losing any valuable information. And Rainbow's crisp resolution makes the columns of numbers easier to read than they would be on many other personal computers.





Business Forecasting for Manufacturing

Laurie is a financial analyst working closely with the manufacturing department of a large company. She ordered a Rainbow 100B to help with business forecasting, but has found it invaluable for word processing and communications as well.

Preparing the Forecast

Laurie is in charge of the business forcasting for two specific products. Each product has a total cost based on the cost of different items: the product's bill of materials, labor, added-value items such as freight and duties, and a host of fixed business expenses. She has to compare every cost, plus the total cost of the finished product, against the current corporate projections. Laurie prepares a monthly report on these comparisons just a few days after the month's actual cost figures come in.

Like John in the previous scenario, she used to use paper, pencil, and calculator, taking two full days to plow through all the data. Much of this work was the repetitive process of laying out the intricate spreadsheet, copying in the corporate part numbers, and entering the expected values from the corporate plan.

When she first got her Rainbow computer, she spent about two days setting up the format of the spreadsheet model and entering the part numbers, formulas, and other data. But with Rainbow and her spreadsheet program, she has never had to repeat that effort.

Every month since then, she simply updates the copy of the last report, which is stored on a Rainbow diskette, and inserts the current month's actual costs. Her spreadsheet program recalculates all arithmetic, and Laurie has a completely updated report in one morning's time.

Once she has printed out a copy of her report, she prepares a management memo using word processing software. Instead of writing her memo longhand and then waiting for it to come back from the word processing station, Laurie writes and edits her memo in one step, and then prints it herself.

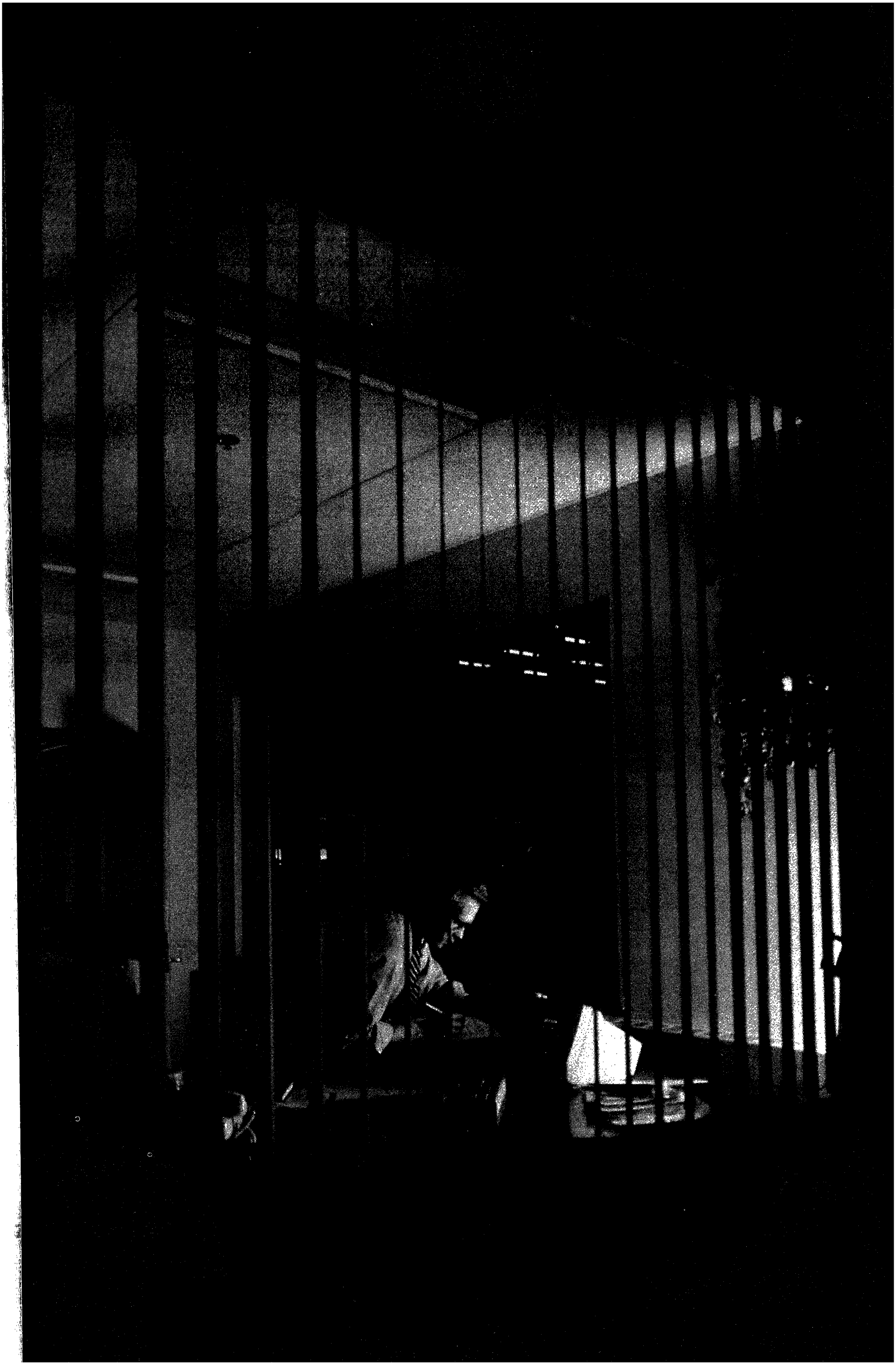
Access to Corporate Computer Resources

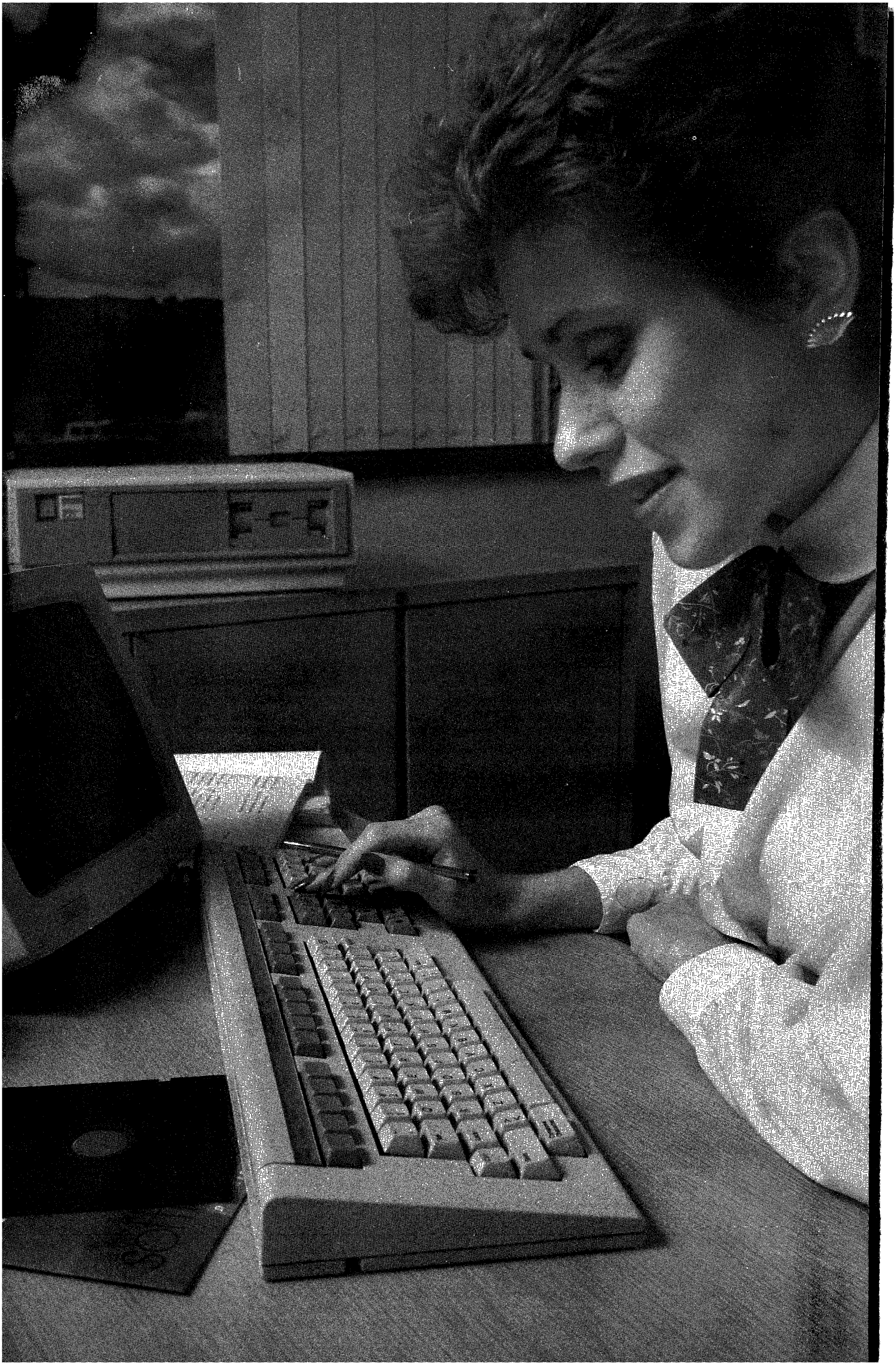
Another part of Laurie's job is answering inquiries on items such as standard costs and bills of materials (BOMs). She can access several different corporate databases with her Rainbow using a communications package. Once she has logged into the database, she enters the part number and the BOM of the item in question, and the host system displays the standard cost.

With this communications package and her Rainbow, Laurie also has access to the corporate electronic mail system. The system connects employees all over the corporation in a fast, efficient electronic network. Using electronic mail, she can send and receive messages much faster than by regular office mail.

Software for Business Forcasting

Laurie uses the Multiplan spreadsheet calculator from Microsoft Corporation for the analysis of her products. The WordStar wordprocessing package from MicroPro International Corporation, with its on-screen formatting, helps her prepare professional-looking reports and memos. Laurie knows that what she sees on the screen is what she will get on a printout. And because WordStar can process files created with Multiplan, she can combine spreadsheet tables with text for a more informative report. With the poly-BSC/3270 IBM communications package, Laurie's Rainbow emulates one of IBM's 3270 family of display stations. poly-BSC/3270 lets Laurie initiate such interactive functions with her company mainframe as transaction processing and database inquiry using Rainbow.





Managing the Human Resource

As one of many personnel managers in a large company, Barbara provides services to an engineering department. She found that a Rainbow 100+ computer is perfect for managing files and personnel activities—and it gives her access to the large mainframe on which the corporate personnel database is stored.

Tracking Employees and Candidates

One of the managers in the engineering group that Barbara services needs some additional information on a job applicant he'd like to hire. Barbara searches through the database file she created on her Rainbow for information on the potential employee. There she has records of every person who's applied for a job in the last six months, including such information as expertise, area of interest, interview cycle status, references, and current correspondence. Within seconds, she has a full report on this applicant's qualifications and status without having to search through stacks of manila folders.

If the applicant accepts the position, Barbara can record data on the new employee in the employee file she keeps with the same database management software package on her Rainbow. This file contains each employee's name, address, job level, salary, review date, and other pertinent information. With this database file, Barbara can keep on top of such things as reviews due each month, salary planning data, and Equal Employment Opportunity compliance information.

Next, she types in a command to print out the names of all employees in her group whose last salary review was 11 months ago or earlier, along with the names of their managers. At this point, notifying the managers that it is time to start the salary review process for certain employees is easy. Barbara simply prints out a report using the report writer software that works with her database management package. Then she sends copies to the appropriate managers using a communications package and the company's electronic mail system.

Producing Standard Correspondence

By mid-morning the manager tells Barbara that he wants to hire the applicant, and asks her to extend a formal job offer to him. Using a word processing package, Barbara retrieves the blank form she has created especially for this purpose. Now all she has to do is fill in a few simple details. Barbara also has blank forms for the salary review process, for employee health insurance, and other standard transactions.

Looking Up Information on a Larger System

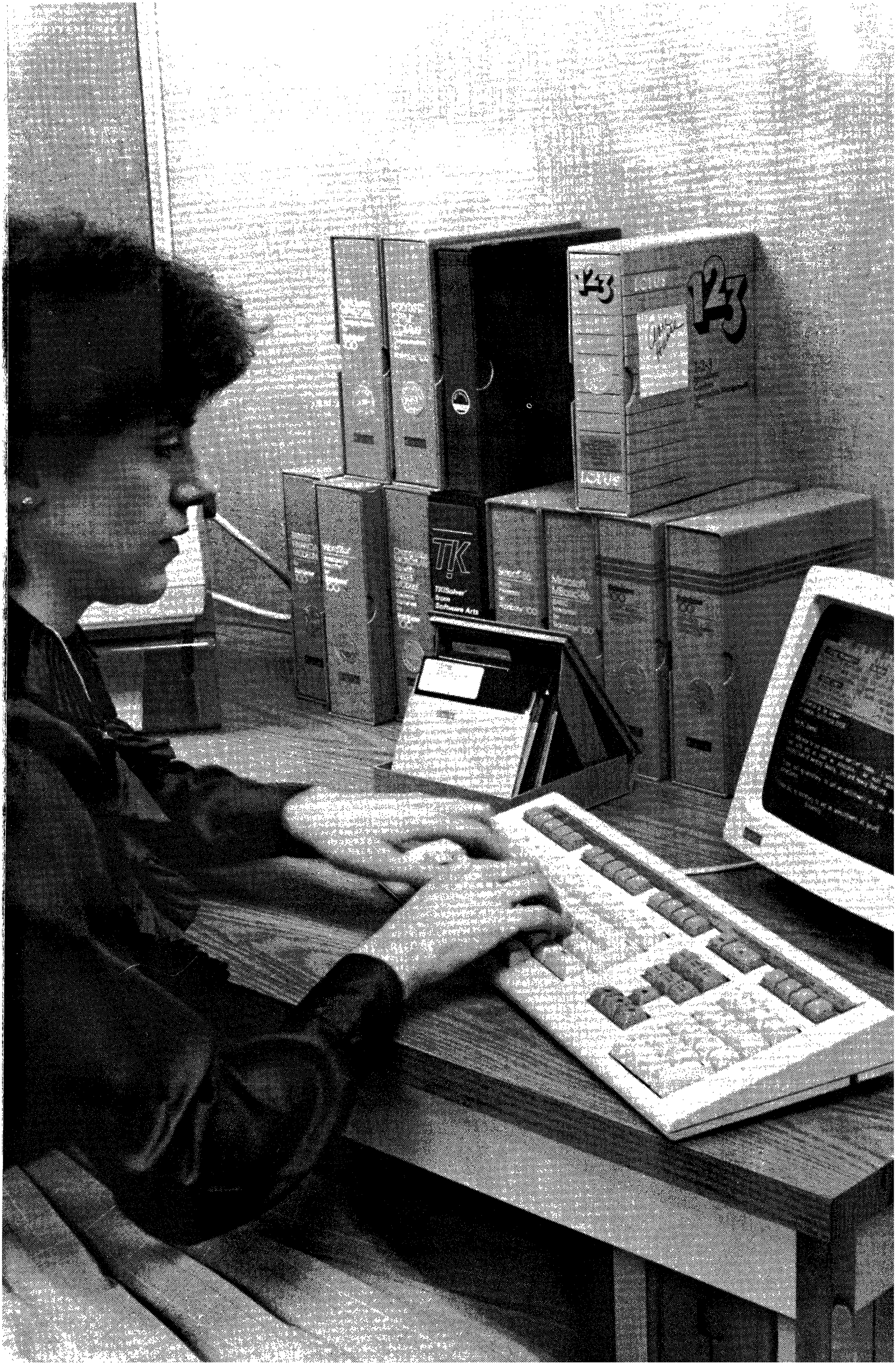
Later that day, Barbara receives a call from one of the engineers in her group who wants to use a vacation day. Using Rainbow's terminal emulation, Barbara can access the corporate personnel database to find out how many vacation hours he has already taken this year. Before she had a Rainbow, she had to phone for this information, which often meant endless rounds of "telephone tag" with the payroll office.

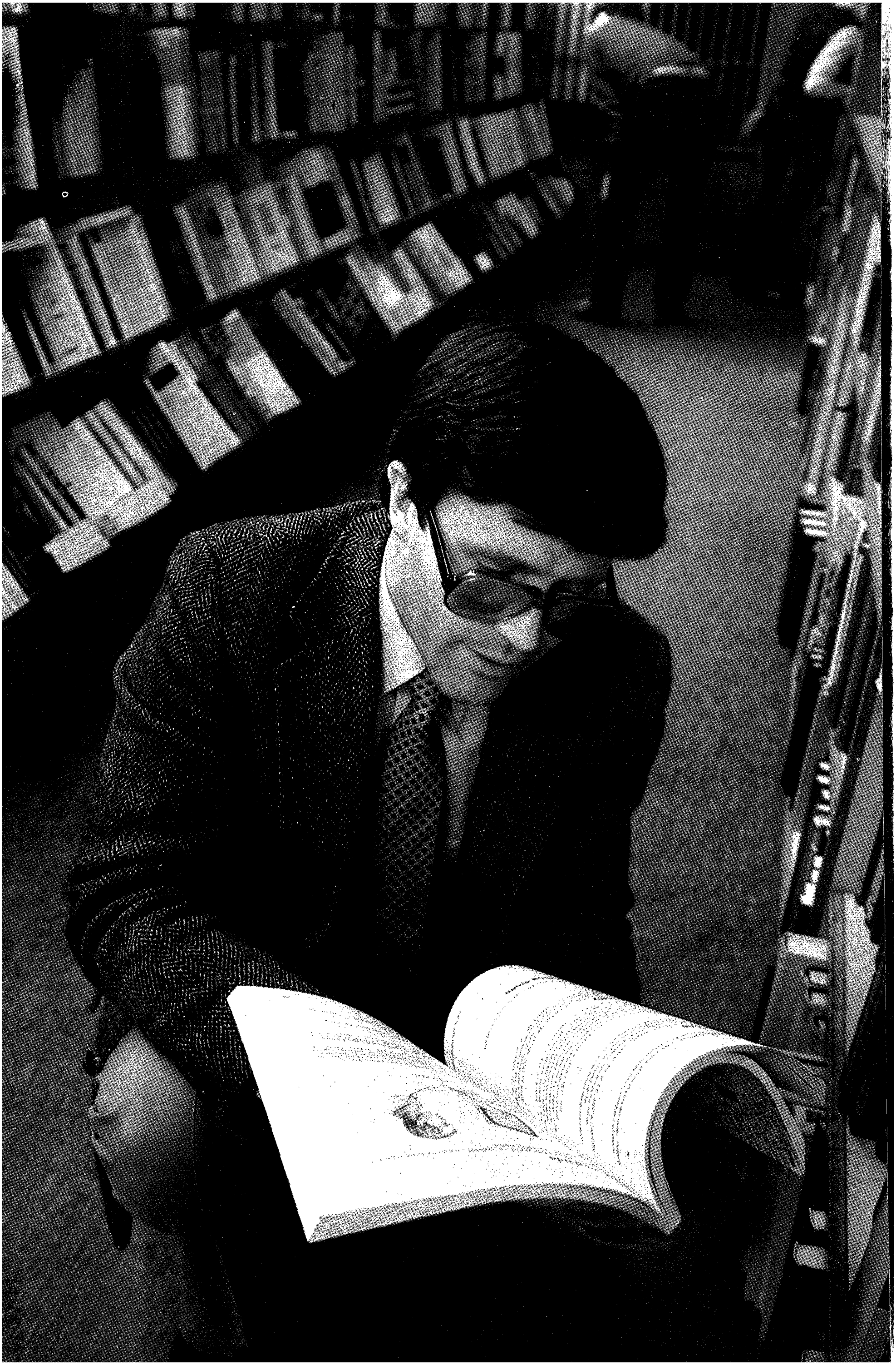
Software for Personnel Management

Barbara handles her database information with PFS:FILE and PFS:REPORT from Software Publishing Corporation. With the SAMNA WORD II word processing package from SAMNA Corporation, Barbara can create form letters and even print envelopes and mailing labels. And she connects up to the corporate computer using poly-COM from Polygon Associates, Inc.

The Manager's Productivity Tool

Database management is an application that usually requires a large amount of memory for the program, and a large amount of storage for the data files. The Rainbow 100+ with its 10-Mbyte hard disk has ample room for all the personnel data she needs to store, and the 896 Kbytes of memory make database inquiries fast and efficient.





Chapter 5

Common Questions about the Rainbow Personal Computer

The following questions are frequently asked by our customers who are interested in the Rainbow personal computer. Many of them should also be asked of any manufacturer whose personal computer you are considering for purchase. We think you'll find the answers you get for the Rainbow will leave you satisfied.

The Systems

Q. *Should I buy a Rainbow 100B or a Rainbow 100+?*

A. Rainbow 100B is the model to choose if you wish to buy a complete system at a moderate price. The Rainbow 100B, with 128 Kbytes of memory (expandable to 896 Kbytes) and 800 Kbytes of storage (expandable to 1.6 Mbytes with the addition of another dual-diskette drive) has enough storage space to handle most personal computing tasks.

If you plan to run programs that require a large storage capacity, the Rainbow 100+ is the answer. With 10 Mbytes of internal hard-disk storage, the Rainbow 100+ can hold about 12 times as much information as the Rainbow 100B's standard 800-Kbyte dual diskette drive.

Q. *Can I upgrade my Rainbow 100B to include the large storage capacity of a hard disk?*

A. Yes. Digital offers an upgrade kit that includes 10-Mbyte hard disk, controller board, software, and cables. You can install the kit yourself, using only a small screwdriver.

Operating Systems

Q. *Why does Digital offer both CP/M® and MS™-DOS as its main operating systems for the Rainbow?*

A. We want you to have a choice of as many different applications as possible. More than 1000 CP/M 8- and 16-bit and MS-DOS applications run on the Rainbow today, with many being added daily. Rainbow also runs the Concurrent CP/M™ operating system available from Digital Research Inc. and the p-System from SofTech Microsystems, Inc.

Q. *Has Digital done anything special with the Rainbow's MS-DOS?*

A. Rainbow's MS-DOS is the standard MS-DOS operating system from Microsoft Corporation with several enhancements. We have adapted the MS-DOS editor to use the Rainbow's function keys, included a sophisticated BACKUP utility to make copies of your hard disk files, and added the RDCPM utility which reads Rainbow CP/M disks.

Q. *Which operating system is best?*

A. The one that helps you get your job done. It's important to remember that an operating system is just a support service to allow you to run your applications. Asking which one is best is like asking whether a phonograph is better or worse than a cassette player—the answer depends on your needs and preferences.

When deciding on an operating system, you should first select the applications that will best meet your needs. Then you can pick the operating system which supports those applications.

Applications Software

Q. *Where can I purchase Rainbow software?*

A. You can call 800-DIGITAL toll-free to receive the address of the Rainbow software distributor nearest you.

Q. *What is the difference between the Digital Classified Software and software that's not available through Digital?*

A. The Digital Classified Software (DCS) program certifies that software bearing its silver seal has been checked against Digital's standards of clarity, reliability, and use of Rainbow's function keys and other ease-of-use features. Inexperienced users can purchase an Applications Advisory Support contract at a small monthly fee for telephone assistance with DCS software.

There are many other fine application packages on the market which, while not part of DCS, also run well on the Rainbow. Their producers back these products with their own reputation for quality.

Compatibility: Software and Data Files

Q. *Can I use data files from an IBM PC running PC-DOS on a Rainbow running MS-DOS? For example, if I have been using Multiplan under PC-DOS can I take the models that I have developed and use them with Multiplan on my Rainbow?*

A. Yes, usually. The file directory structure of MS-DOS is the same as the file directory structure of PC-DOS, so that is no barrier. There is a slight possibility, though, that developers of a particular application changed the way the application stores data in its files preventing the data from transferring.

Q. *Can I use data files that I have created on my Rainbow under CP/M if I switch to MS-DOS? For example, if I have been using Multiplan under CP/M, can I take the models that I have developed and use them on my Rainbow under MS-DOS?*

A. Yes, but only after converting the files to the MS-DOS format because the file structure on a CP/M disk is very different from that of an MS-DOS disk. The RDCPM utility in the MS-DOS operating system reads CP/M files. You can then save these files in MS-DOS format.

Q. *Can I run all of the software that is available for the IBM PC or other MS-DOS machines on the Rainbow running MS-DOS?*

A. Not necessarily. If the application's developers have been careful to use only standard MS-DOS capabilities, then the application should run on the Rainbow. Keep in mind, though, that current versions of MS-DOS do not have standard graphics support. Therefore, any MS-DOS application that uses graphics does so by directly manipulating the hardware. Since the actual graphics hardware varies from one personal computer to another, graphics software for one personal computer will not work on another.

Even software that doesn't use graphics may require the use of function keys and special screen characteristics, and thus would not perform properly. You can avoid this problem by purchasing a specifically Rainbow-compatible version of such applications. This is to your advantage, anyway, because the Rainbow version would make better use of the Rainbow's unique features.

Q. *Can I run a CP/M application and then an MS-DOS application on the Rainbow?*

A. Yes, after you restart the system by pressing SET-UP, CTRL/SET-UP.

Communications

Q. *Do I need to buy a software package to give my Rainbow communications capability?*

A. No. A standard built-in feature of the Rainbow is emulation of Digital's popular VT100-series video terminal. This allows the Rainbow to communicate as a terminal with any of the many larger computers that work with VT100-style terminals. When your Rainbow is connected to such a host computer, you can access the host's files, use its networking and electronic mail services, and any other services it provides to regular terminal users. And all these capabilities require no extra software.

Q. *What is the benefit of buying communications software, such as poly-COM, poly-BSC/RJE, and poly-BSC/3270?*

A. Communications packages provide several additional capabilities that Rainbow's built-in terminal emulation does not. You can communicate with another personal computer (such as the IBM PC), or with an IBM mainframe using 3270, 2780, or 3780 protocol. You can set up terminal characteristics more easily. You can send files of text stored on your Rainbow through the communications line to the host computer. You can receive text from the host and automatically store it in a file on your Rainbow. On the Rainbow's keyboard, you can define special keys to have specialized functions. You can even access your Rainbow from a different location.

Q. *Can the Rainbow transfer and store data from Dow Jones, The Source, and other such public networks and databases?*

A. Yes, using the poly-COM communications package.

Hardware

Q. *Which color monitors can be used on the Rainbow?*

A. Any RGB (red/green/blue) monitor with synchronization on green will work. However, Digital's own color monitor for the Rainbow is recommended—it has the high resolution needed to display 132 characters per line and to support sophisticated graphics packages. The less expensive color monitors will not provide acceptable resolution (probably no better than a standard TV set) and may not be able to handle even an 80-character line.

Q. *Can you use a monochrome video monitor on the Rainbow made by another manufacturer?*

A. No.

Q. *Can you use other printers?*

A. You can use any serial printer that uses XON/XOFF protocol.

Q. *Do I have to buy two monitors (color and monochrome) if my primary interest is creating color graphics?*

A. No. You can use Digital's color monitor, or the monochrome monitor, to process both text and graphics on the same screen. So if you want to run color graphics, you only need to buy the color monitor. And if you want to run monochrome graphics, you only need Digital's monochrome monitor.

Q. *Can the Rainbow be used as a multiterminal system?*

A. No. Both CP/M and MS-DOS are single-user operating systems, so only one user, working at the standard keyboard and monitor, can actually control the system. However, an additional terminal may be connected to the communications line port, through which an applications program could communicate.

Documentation

Q. *Is there technical documentation for the Rainbow available from Digital?*

A. Yes, there are two, three-volume Technical Documentation Kits—one for the CP/M-86/80 operating system and one for the MS-DOS operating system. Both kits contain information on hardware, software, and standards of special value to software and hardware developers. They are available through your Digital sales representative, Digital Business Centers, and authorized Digital retail outlets. Refer to Chapter 7 for more details.

Chapter 6

Personalized Service for Your Rainbow Personal Computer

Service capabilities built into your Rainbow during the design, development, and engineering phases ensure continuous and effective use of your Rainbow system.

Digital lets you—the Rainbow user—decide on the level of support you need, from complete system support by Digital to doing your own self-maintenance, and offers you a variety of service options.

Field Service

Warranty Services—The Investment Protection Plan

When you purchase a personal computer from Digital, you receive a a 90-day, on-site warranty that covers both hardware and Digital-supported software. The warranty includes the following services:

- On-site hardware service including repair and replacement of defective parts
- A telephone help line to answer your questions about system set-up and general system operation, and to provide advisory support services for Digital-supported software
- Replacement of defective media for both operating system software and DCS software
- *Perspective*, Digital's personal computer newsletter that includes information on products, services, course offerings, and training schedules, and helpful hints on how to use your personal computer more efficiently

Post-Warranty Services

When the warranty period expires, you can protect your system with one of Digital's on-site or off-site system support agreements. It is available from your Digital sales representative.

The system support agreements include notices of updated software, and documentation, a telephone help line to answer your questions, and a subscription to the newsletter *Perspective*, Digital's personal computer newsletter.

You choose the hardware support program that best meets your needs. Each program gives you fast response and comprehensive support, including parts and labor.

DECservice System Support
With the DECservice System Support, you are assured of on-site service within just four hours if your system is located within 100 miles of a Digital Servicenter. If complex problems arise, field service technicians automatically call for additional resources to speed service time. The field service technicians work nonstop to repair your equipment no matter what time they arrive at your location. They also provide preventive maintenance. You can receive DECservice System Support 24 hours a day, seven days a week.

Basic System Support
The Basic System Support program also offers fast on-site service, and preventive maintenance. Additional resources are called in when needed to speed service time. Service is available during standard business hours, 8 a.m. to 5 p.m., Monday through Friday.

Carry-In System Support
This is a convenient, low-cost alternative to on-site service and offers the same benefits. When you need hardware service, you can carry your system into any of the 150 Digital Servicenters located around the country. Your system will be repaired and ready for you to pick up within 48 hours.

Per-Call Service
If you don't need comprehensive support, you can take advantage of one of Digital's Per-Call programs that support only your hardware. You can get Per-Call service on a non-contractual basis at your location or at one of Digital's Servicenters.

VETERANS ADMINISTRATION
COURT SQ
digital

On-site Per-Call Service

For on-site Per Call service, you pay for the time and materials required for each service call. Service is available Monday through Friday from 8 a.m. to 5 p.m.

Carry-in Per Call Service

Carry-in Per Call service is available through the 150 Digital Servicenters located around the country. You pay a flat rate for labor, plus the cost of all parts. All carry-in service and parts come with a 90-day warranty.

DECmailer Service

This alternative is intended for more technically oriented customers. Once customers have isolated the faulty component using system diagnostics, they need only snap it out, and mail it to a Customer Return Center. Within five days, customers will be mailed a replacement component. All service and parts come with a 90-day warranty. And the DECmailer Service also includes 24-hour emergency service.

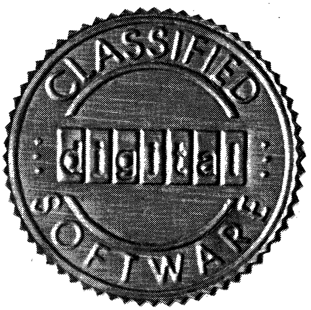
Software Service

Because thousands of applications software products are available in the personal computer marketplace, customers often are confused about which personal computer to buy. The Digital Classified Software (DCS) Program was developed to help you make this critical decision.

Personal computer software developed by Digital undergoes our exacting Digital phase review process; upon successful completion, it qualifies for the DCS Seal.

DCS also serves as a process by which third-party software is tested by Digital and given a "seal of approval."

There are close to 100 software products for the Rainbow with the DCS seal, and more are arriving every day. To acquire DCS approval, software products are put through a careful evaluation process. When you purchase DCS software from Digital, you are assured that the package meets the following criteria:



Documentation:

Manuals are clear and complete. They list and explain all error messages, and include such user aids as examples of program operation, tables of contents, and page numbers.

Installation:

The process is straightforward and manageable, even to the inexperienced user.

Demonstration:

All program commands and functions perform as documented, without ambiguities.

Operation:

The program is easy to use for inexperienced users and is consistently reliable during testing.

Applications Advisory Support Services

Applications Advisory Support Services for DCS software is available for a small monthly fee. This telephone advisory support service can help you make the most of your applications and development packages. We at Digital are trained specialists on all aspects of computer software. So when you purchase DCS software with one of our Applications Advisory Support Services, your business gets the resources of Digital's trained support personnel to help you every step of the way.

Educational Services

Digital's Educational Services provides one of the largest and most diversified computer education programs available in the industry. Worldwide, these resources include 27 educational centers, a staff of over 1,700 professionals, and more than 500 courses.

All courses—from the Computer-Based Instruction you get with your Rainbow to classroom lecture/lab instruction, on-site classes, self-paced packaged courses, and management seminars—are intended to ensure your success and satisfaction with your personal computer and to provide solutions to your training needs.

A listing of Educational Services courses is published quarterly in *Digest*, a publication designed to help customers plan and schedule their training programs. Contact your nearest Training Center for further information about the prices and availability of the courses listed here.

Educational Services Training Centers

California

Los Angeles Training Center
4311 Wilshire Boulevard
Suite 400
Los Angeles, California 90010
Telephone: (213) 937-3870

Santa Clara Training Center
2525 Augustine Drive
Santa Clara, California 95051
Telephone: (408) 748-4048

Colorado

Denver Training Center
8800 East Arapahoe Road
Englewood, Colorado 80112
Telephone: (303) 773-6535

Illinois

Chicago Training Center
5600 Apollo Drive
Rolling Meadows, Illinois 60008
Telephone: (312) 640-5520

Massachusetts

Boston Training Center
12 Crosby Drive
Bedford, Massachusetts 01730
Telephone: (617) 276-4111

New York

New York Training Center
One Penn Plaza
New York, New York 10119
(212) 971-3545

Texas

Dallas Training Center
12100 Ford Road
Suite 110
Dallas, Texas 75234
Telephone: (214) 620-2051 (X301)

Washington D.C.

Washington D.C. Training Center
8100 Corporate Drive
Landover, Maryland 20785
Telephone: (301) 577-4300

Rainbow Personal Computer Courses

TRAINING FORMATS

Computer-Based Instruction
(CBI)—Programmed instruction installed as an application on your system.

Digital Press
State-of-the-art books on a wide range of computing issues and topics.

Lecture/Lab

A fixed-length course taught by an instructor using supervised laboratory exersises.

Self-paced Audiovisual Instruction

Individual study with video cassettes allowing students to progress at their own rates.

Seminar

An intensive, interactive lecture and discussion led by industry experts.

USER TRAINING

Getting Started on Your Rainbow

This lecture/lab course prepares the first-time user for an immediate and effective start in computing.

Using the CP/M Operating System

A lecture/lab course that gives new users hands-on knowledge of the CP/M operating system.

ALL-HANDS-ON Introduction to MS-DOS

This seminar includes all of the major features of the MS-DOS operating system. In the hands-on environment at a training center, you will gain the experience you need to improve your productivity in the work place.

APPLICATIONS TRAINING

Rainbow BASIC

A lecture/lab course that introduces the new user to the concepts of programming and fundamental BASIC language statements. You will use the Rainbow throughout the course to work on sample BASIC programs.

ALL-HANDS-ON dBASE II Introduction

This seminar is an intensive introduction to all features of dBASE II for the non-technical user. The seminar is designed to provide you with the tools you need to make the best use of dBASE II in your day-to-day work.

Introduction to Rainbow Multiplan

This Computer-Based Instruction course presents graphic displays and descriptions of the Multiplan applications package. You will learn how to set up spreadsheets and solve problems through simulations of actual tasks.

Using Multiplan on Your Rainbow

This lecture/lab course introduces the use of an electronic spreadsheet with the Multiplan program and a Rainbow personal computer. You will learn to create spreadsheet models, format data, perform calculations, and create formulae.

ALL-HANDS-ON Multiplan

This seminar is designed for people who have had several months experience using the Multiplan spreadsheet program. The seminar examines the powerful and often little-used features of Multiplan and explores the more advanced applications of the package.

Introduction to poly-COM Communications

This self-paced Computer-Based Instruction course teaches you the skills necessary to use the poly-COM communications package with your Rainbow personal computer.

Using Select on your Rainbow

This lecture/lab course provides first-time users with the skills required to use this word processing package in a variety of offices.

Advanced Rainbow BASIC

This lecture/lab course is designed for those users already familiar with the BASIC language on the Rainbow personal computer. The course discusses file design; and storing, modifying, and retrieving records from a file.

ALL-HANDS-ON Introduction to 1-2-3

This seminar is an intorduction to the Lotus 1-2-3 spreadsheet, graphics, and information management program. It reinforces the concepts included on the Computer-Based Instruction disk that comes with the program and presents new concepts as well. You have access to an instructor for all of your unanswered questions.

MANAGEMENT SEMINARS

Executive Computing for the Non-Data-Processing Manager

This three-day application design and programming seminar is designed for the manager whose focus in not data processing. You will gain an in-depth understanding of how to get things done using the BASIC programming language. The seminar deals with such management applications as finance, manufacturing, decision-making, and marketing.

Effective Management with Personal Computers

This seminar is designed for managers who want the advantage of personal computers. You will learn about personal computers by examining and solving business problems while utilizing personal computers.

SELF-PACED AUDIOVISUAL COURSES

Office Automation

This course explains office automation, identifies its major technologies, and examines the impact of automation on the work place.

Office Automation Implementation

This course presents guidelines for successfully automating the office and offers the advice of leading office automation consultants.

DIGITAL PRESS PUBLICATIONS

Office Automation: A Survey of Tools and Technology, by David Barcomb

The first comprehensive introduction to the techniques, principles, terminology, and components of the office automation revolution.

Your First Business Computer, by Peter Luedtke and Rainer Luedtke

This book is designed to help professionals, department managers, and small business managers choose the right computer system for their business.

DECUS—Digital Equipment Computer Users Society

Digital also has its own computer society, DECUS, which is one of the largest and most active computer users' groups in the world. Through DECUS you will meet many other Digital equipment users and exchange ideas and information. DECUS sponsors local, regional, national, and international meetings and symposiums for its members. It also maintains a library of more than 1,500 software packages written and submitted by DECUS members for the use of other members.

A new Personal Computer Interest Group will sponsor papers, develop a newsletter, distribute public domain software, and generally work to exchange information about Digital's personal computers.

PART II

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Chapter 7

Rainbow Systems and Options

Digital's Rainbow personal computers are high-quality business machines designed and built by the world's second largest computer company's professionals, for anyone who demands professional-quality performance. Whether your present personal computing needs are relatively moderate, as in a small-sized business, or highly sophisticated, as in a large corporation or a scientific/technical environment, Rainbow brings not only high-performance solutions to your work, but also brings *more standard features* that can help you better accomplish the tasks for which you want a personal computer.

Regardless of what capability you seek in a personal computer today, with any Rainbow system you can still grow—and diversify—with options from Digital or from independent hardware vendors.

This chapter introduces the standard features of the Rainbow base system, then provides detailed information and technical specifications on each Rainbow base system component. The second part of the chapter provides the same level of detail on Digital's options for the Rainbow personal computers, plus a list of third-party hardware products.

Rainbow Base Systems

Each Rainbow base system is a complete solution to your personal computer needs. Whichever model you choose—the Rainbow 100B or the Rainbow 100+ system—you get Digital's highly acclaimed keyboard; a high-resolution monitor, either monochrome or color; high performance from 8-bit and 16-bit microprocessors; large-capacity system storage space; and 128 Kbytes of memory. The communications and printer ports are also standard. The modular packaging makes installation a snap. Advanced features like memory-mapped video and 132-column displays let you see more information at one time and see it faster. With the terminal emulation capability, you get a personal computer and a terminal rolled into one. Rainbow's superb design—inside and out—will help you be more productive and will make your job easier.

Rainbow is reliable, a real workhorse for your business applications. Rainbow's self-test and power-up diagnostics verify the status of the system and let you know if, and where, any problems exist.

Rainbow 100B

The Rainbow 100B personal computer, Digital's new floppy-based Rainbow system, is a cost-effective investment in personal computing power for your business and personal needs. This Rainbow comes with 128 Kbytes of memory and 800 Kbytes of diskette storage. Three option slots on the system module allow you to add: a graphics option; more memory (up to a total of 896 Kbytes); an extended communications option or a second dual-diskette drive or you can upgrade to a full Rainbow 100+ with the addition of a 10-Mbyte hard disk drive.

If you have a Rainbow 100 (PC100-A), the original floppy-based Rainbow personal computer, refer to the options section of this chapter for information about new products for your system.

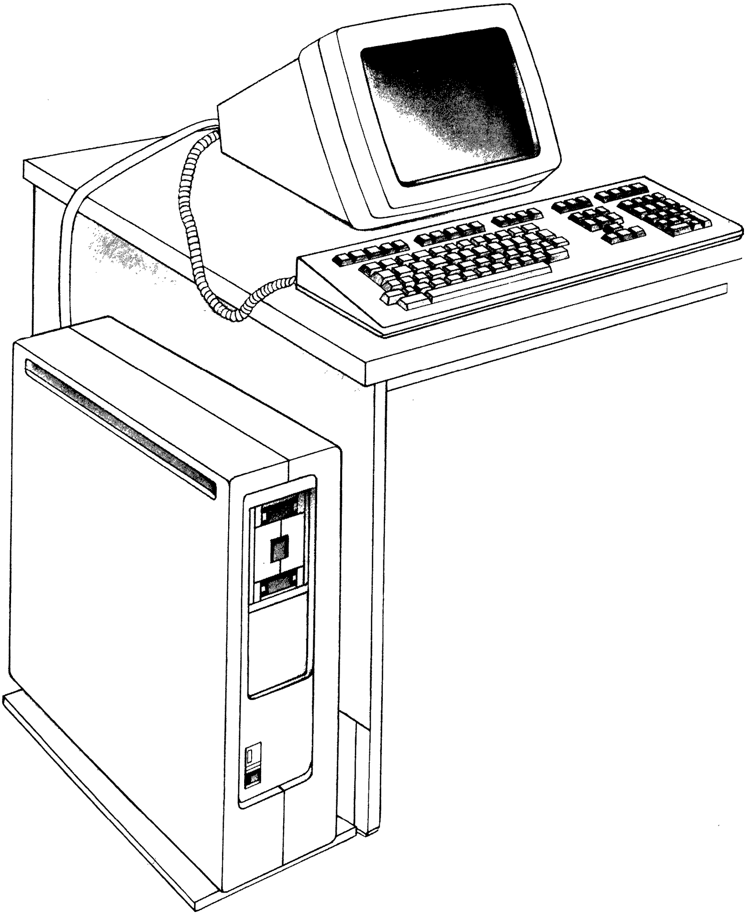
Rainbow 100+

The high-performance Rainbow 100+ personal computer is a Rainbow 100B, *plus* a 10-Mbyte hard disk drive. It too comes standard with 128 Kbytes of memory and 800 Kbytes of floppy-diskette storage space. Two dedicated option slots in the Rainbow 100+ system unit provide space for the addition of the bit-mapped graphics option and incremental memory upgrades to a total of 896 Kbytes.

Rainbow System Specifications	
System Unit	
for Rainbow 100B and 100+	Two microprocessors—Zilog 8-bit Z80A *and* Intel 16-bit 8088
	Main memory—128 Kbytes parity RAM, expandable up to 896 Kbytes
	Dual-diskette drive—800 Kbytes removable floppy storage
	Serial RS232/423 printer port
	Async/sync RS232/423 communications port
	Memory-mapped video
	Terminal emulation
for Rainbow 100+ only	10-Mbyte internal hard-disk drive
Keyboard	
for Rainbow 100B and 100+	Low-profile, detached
	N-key rollover
	Sculptured key array
	105 matte-textured, non-slip keys
	Separate editing keys and numeric keypad
	Adjustable keyclick and bell tone
Video Monitors	
for Rainbow 100B and 100+	80 or 132 column width display
	High resolution, 7 x 9 dot matrix
	Bit-mapped graphics capability
	60 image-per-second refresh rate
	High-efficiency, anti-glare filter
Monochrome	Monochrome composite, choice of white, amber, or green display on black
	12-inch (diagonal) screen

Rainbow System Specifications

Color	RBG Color
	13-inch (diagonal) screen
Diagnostics	
for Rainbow 100B and 100+	Power-up self-test
	Menu-selectable self-test
	Diagnostic diskette
System Expansion & Options	
for Rainbow 100B	Three option module slots, all options user-installable
	Memory expansion options—eight upgrades available to a system total of 896 Kbytes
	Graphics option
	10-Mbyte internal hard-disk upgrade; or extended-communications option; or third-party module
	Additional dual-diskette drive fits in system unit (if no hard disk) for a system total of 1.6 Mbytes of floppy-diskette storage
for Rainbow 100+	Two option module slots, all options user-installable
	Memory expansion options—eight upgrades available, to a system total of 896 Kbytes
	Graphics option

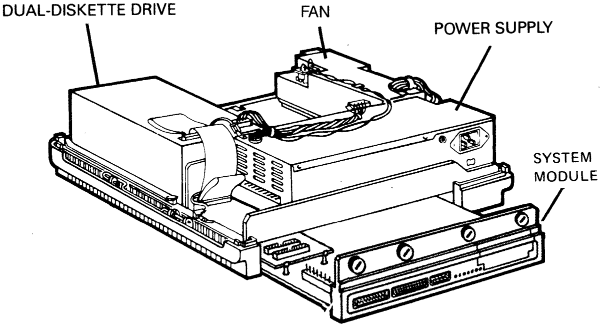


The Rainbow Personal Computer (System Unit Mounted in Optional Floor Stand)

System Unit

- **Order Codes:**
  PC100-B2 *100B for USA*
  PC100-P2 *100+ for USA*

Both Rainbow personal computers, the Rainbow 100B and the Rainbow 100+, utilize the same high-performance system unit. It is a single slim box that contains the system board with two microprocessors (one 8-bit and one 16-bit) and the main memory, a dual-diskette drive that hold two diskettes on a single spindle, a printer port, a communications port, the power supply, and additional slots for adding options. The inclusion of a 10-Mbyte internal hard disk and its controller module within the 100+ is the only difference that distinguishes the system unit of the Rainbow 100+ from that of the 100B.



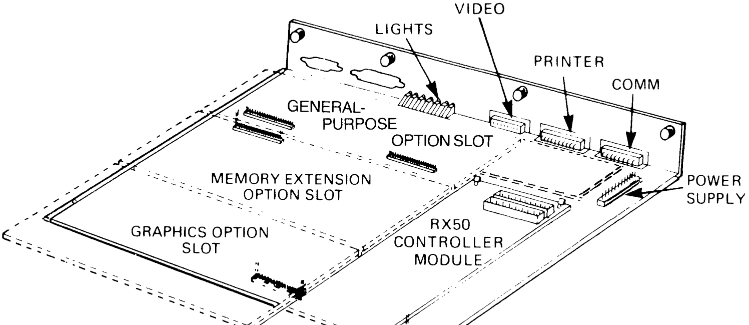
Rainbow 100B System Unit
Internal View from the Back

The system unit is compact enough to be placed right on your desk, or you can use Digital's optional floor stand to hold the unit vertically, alongside or under your desk within easy reach.

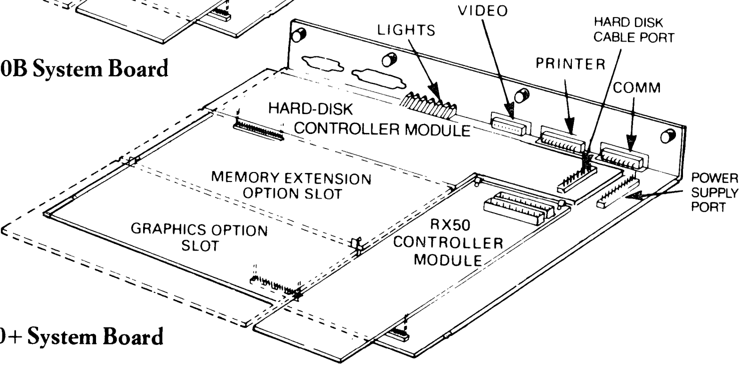
The components and interior of the system unit are easily accessible. They have been designed with snap-in/snap-out and slide-out features for easy installation and maintenance. Install a system option or remove a module simply by turning a screw and popping the component out with a ballpoint pen.

System Board

The system board is made up of electronic components and circuits. Its major components are the two microprocessors (Z80A® and 8088®), main memory chips, and communications hardware. It also contains read only memory chips (ROMS), including a ROM that supports three languages—USA English, Canadian English and Canadian French (for PC100 -P2, -B2).


VIDEO
LIGHTS
PRINTER
COMM
GENERAL-PURPOSE OPTION SLOT
MEMORY EXTENSION OPTION SLOT
POWER SUPPLY
GRAPHICS OPTION SLOT
RX50 CONTROLLER MODULE

Rainbow 100B System Board


VIDEO
LIGHTS
HARD DISK CABLE PORT
PRINTER
COMM
HARD-DISK CONTROLLER MODULE
MEMORY EXTENSION OPTION SLOT
POWER SUPPLY PORT
GRAPHICS OPTION SLOT
RX50 CONTROLLER MODULE

Rainbow 100+ System Board

Mounted on the system board is the RX50 controller module, which controls reading and writing on the floppy-diskette drive. The Rainbow 100+ also has a hard-disk controller module, which controls reading and writing on its hard-disk drive. In addition, the system board has areas dedicated for mounting option modules to further extend the capabilities of your Rainbow 100B or Rainbow 100+.

The system board lies horizontally near the bottom of the system unit and slides out from the rear of the box.

Two Microprocessors

Rainbow's special dual-processor design uses a Zilog Z80A 8-bit processor coupled with an Intel 8088 16-bit processor (*see Architectural Overview below*). The Z80A executes 8-bit applications and the 8088 runs 16-bit programs. All MS-DOS applications run under the 8088 microprocessor. If you are using the CP/M-86/80 operating system, it detects whether you have loaded an 8-bit or a 16-bit CP/M program and automatically selects the correct processor to run that software. This allows you to use different CP/M software packages without the inconvenience of swapping system diskettes.

To boost system throughput, system functions are divided by the two microprocessors using a parallel processing technique. Reading or writing to the diskette is controlled by the Z80A, while the video display, keyboard, serial printer and communications ports, and the option modules are controlled by the 8088. On the Rainbow 100+, the 8088 also manages the controller for the hard disk. Parallel processing makes the Rainbow an exceptionally fast and powerful personal computer.

Main Memory

The Rainbow personal computers come standard with 128 Kbytes of main memory. That's plenty of room for the operating system, plus storage for user applications and document files.

Eight different increments of additional main memory are available, using an optional memory expansion module and memory chips, to bring the system total up to 896 Kbytes. *See the Memory Expansion Options description for more detailed information.*

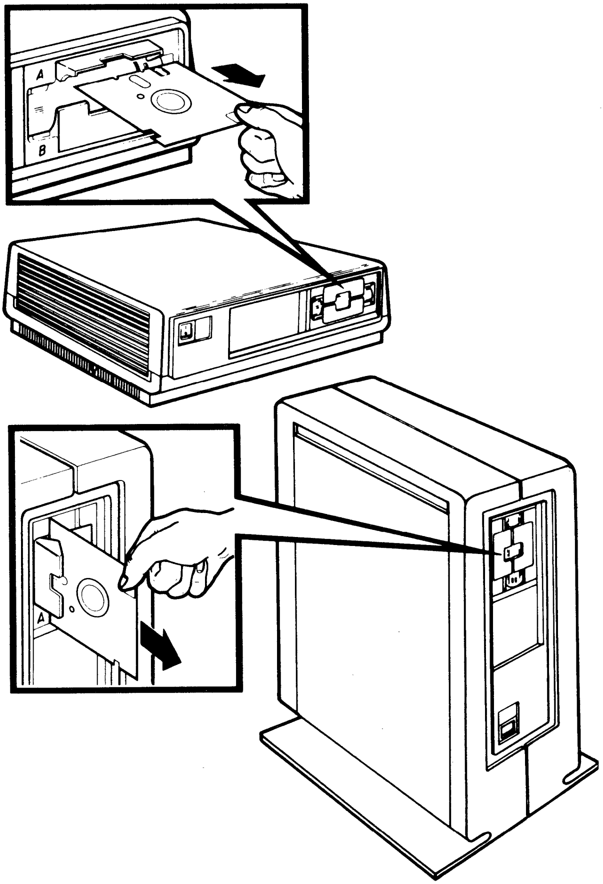
Disk Drives

There is room in the Rainbow system unit for two disk drives. Both the Rainbow 100B and the Rainbow 100+ come with a dual-diskette drive already installed. The Rainbow 100+ includes a second disk drive as well—a 10-Mbyte internal Winchester hard disk.

To the Rainbow 100B, you can add a second dual-diskette drive within the system unit to expand your floppy storage to a total of four diskettes with a maximum capacity of 1.6 Mbytes. Or, you can upgrade the Rainbow 100B to a full Rainbow 100+, by adding Digital's 10-Mbyte internal Winchester disk.

Dual-Diskette Drive

The compact, reliable dual-diskette subsystem consists of one drive that accommodates two 5.25-inch diskettes on a single spindle. Each flexible RX50 diskette stores 400 Kbytes of information, so you get a total of 800 Kbytes of floppy-diskette storage included standard with your Rainbow.



Inserting Diskette into Drive A

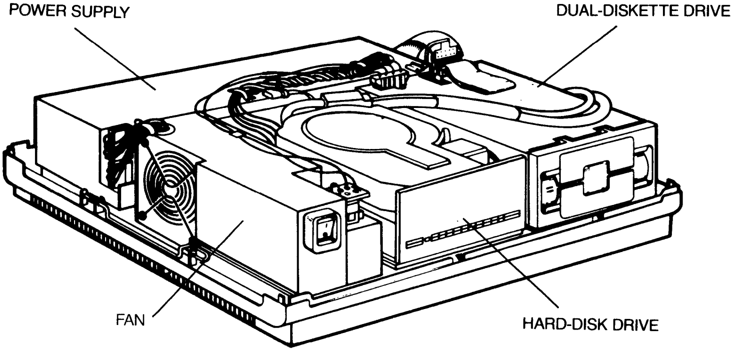
Rainbow Dual-Diskette Drive Specifications	
Height	3.3 inches (8.3 cm)
Width	5.8 inches (14.6 cm)
Depth	8.5 inches (20.4 cm)
Weight	3.8 lbs (1.7 kg)
Diskettes per Drive	2
Number of Recorded Surfaces	2 (1 per diskette)
Capacity	
Per Drive	819 Kbytes
Per Track	10 sectors
Per Sector	512 bytes
Transfer Rate	250 Kbits per second
Random Access Time	264 msec
Rotational Speed	300 rpm
Density	96 tracks per inch

Rainbow 100+ Internal Hard-Disk Drive

The hard-disk drive system mounted within the system unit of the Rainbow 100+ personal computer provides 10-Mbytes of formatted, fixed, internal system storage. This high-performance hard disk handles large amounts of data—12 times the storage capacity of the floppy-diskette drive—accessed from one source at high speed, so you can work more efficiently and quickly.

This winchester-type disk subsystem seeks out and transfers information faster than floppy drives. And since the large storage capacity can eliminate the need to continually exchange floppies, you'll work faster too.

You can transfer the operating systems and many of your applications directly onto the hard disk. And for added convenience, disk storage can be divided into four partitions, so you can access applications and files easily and quickly, as well as separate different kinds of programs and data into logical units for simplified file mangement and backup. Switching from one program to the next is quick and easy. There is also substantial room for file storage, so you can create and manage large databases or integrate documents and data from diverse sources into a single file.



Rainbow 100+ System Unit Internal View from the Front

The hard-disk drive subsystem consists of the 5.25-inch disk, sealed within the drive unit, and its controller module, which manages reading and writing to the disk. The design of these drives has several advantages that ensure the safety of valuable data and enable users to access data when needed. For instance, the drive has a disk head assembly that cannot be changed by the operator. This means information is safe from accidental damage incurred while inserting or removing media. The disk drive requires no preventive maintenance or adjustments.

The floppy-diskette drive and the hard-disk drive together on the Rainbow 100+ provide more options for organizing and storing documents and programs. Most data and applications can be easily transferred from the diskettes to the hard disk for internal storage, or from the hard disk to the floppy diskettes for removable storage.

Rainbow 100+ Internal Hard-Disk Drive Specifications	
Height	3.3 inches (8.3 cm)
Width	5.8 inches (14.6 cm)
Depth	8.5 inches (20.4 cm)
Weight	4.5 lbs (2.3 kg)
Formatted Capacity	10 Mbytes
Performance	
Peak Transfer Rate	5 Mbits per second

Rainbow 100+ Internal Hard-Disk Drive Specifications	
Rotational Latency	8.33 milliseconds
Average Access Time	85 milliseconds
Media Characteristics	
Density	345 tracks per inch, 9074 bits per inch
Recording Method	MFM
Start Time	15 seconds
Stop Time	20 seconds
Rotational Speed	3600 rpm
Number of Data Platters	2
Number of Data Surfaces	4
Number of Heads per Surface	1

Printer Port

The printer port accepts a direct connection with Digital's LA50 Personal Printer, Letterprinter 100, and LQP02 Letter-Quality Printer, providing various speeds, numerous type sizes and fonts, draft- and letter-quality print, and graphics printing capabilities.

You don't have to make complex hardware modifications to install your Digital printer. The peripheral cable supplied with the system unit may be used to connect either a printer or a modem to your Rainbow. To hook up a printer, simply plug the appropriate end of the cable into the connector labeled PRINTER on the back of the system unit. Two small thumbscrews will secure it there. Then connect the other end of this cable to the back of the printer. You don't even need a screwdriver.

Rainbow's printer port may also interface to a variety of non-Digital printers that use the XON/XOFF flow control protocol or DTR control flow protocol and that are equipped with serial RS232 interfaces (Rainbow does not support parallel printers). To connect to a non-Digital printer, certain modifications to speed, parity, and stop bits may be required. Some printers may require modifications to the software. Consult the printer manufacturer's interface instructions and the *Rainbow User's Guide* and *Owner's Manual* for Rainbow set-up instructions.

The Rainbow printer port is a general-purpose, asynchronous port and may also be used to interface to other devices, such as non-Digital pen plotters and tablets, that can be programmed to appear as printers to the software. Consult the device manufacturer's interface instructions.

Communications Port

An asynchronous/byte-synchronous communications port is a standard feature on the Rainbow. You can use your Rainbow to communicate with a remote computer either by a telephone line—using a modem—or by a direct connection. In either case, the communications connector (labeled COMM) on the back of the system unit is used.

With Rainbow you can enhance your interoffice communication. Rainbow can communicate with a great number and variety of machines. This means that large amounts of information can be exchanged at high speed over limited distances, and that small or large groups of users can share data, programs, and peripherals.

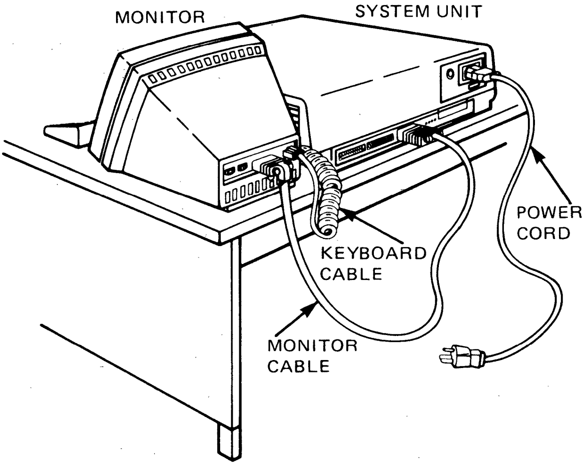
A standard feature of the Rainbow is emulation of Digital's popular video terminals. This feature allows the Rainbow to become a terminal on another personal computer or a mainframe acting as a host. Rainbow then uses its keyboard and screen as input and output devices to the host computer. It transmits keyboard entries to the host, and displays characters received from the host computer on its screen or prints them on a printer. When Rainbow is connected to a host computer, you can access files on the host computer, run programs on the host computer, use the host computer's networking services, and use other services the host computer provides.

Rainbow can operate in two terminal modes. First, it can operate as a Digital VT102 video terminal out of its ROM (read-only memory) boot routine accessed from the Main Menu. No diskette is needed to run VT102 terminal emulation mode. And you can change speeds and terminal characteristics from the keyboard using Rainbow's Set-Up Menu.

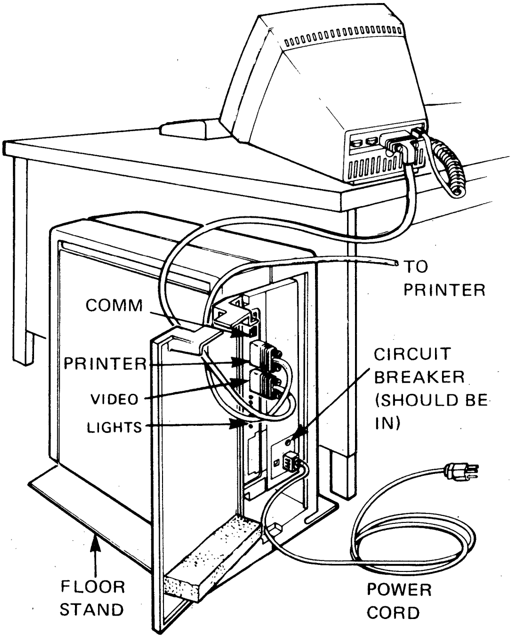
Alternately, Rainbow can communicate under program control of a communications application. Under the control of the poly-COM communications package for CP/M and MS-DOS, Rainbow can emulate other terminals in addition to the VT102, including a wide variety of ASCII start/stop terminals. This communications package also allows Rainbow to communicate with other personal computers, such as those from Apple Computer, Inc. and IBM Corporation, and with other Digital personal computers. Under the poly-BSC/3270 and poly-BSC/RJE IBM communications packages, Rainbow can emulate binary synchronous 3278 terminals or 2780/3780 RJE devices.

Rainbow also gives you easy access to on-line information sources such as the New York Times Information Service™, the Dow Jones News Retrieval™ service, and the legal database WESTLAW™.

As with the printer port, a variety of additional devices can also be accessed through this connector.


MONITOR
SYSTEM UNIT
POWER CORD
KEYBOARD CABLE
MONITOR CABLE

Without the Floor Stand


TO PRINTER
COMM
PRINTER
VIDEO
LIGHTS
CIRCUIT BREAKER (SHOULD BE IN)
FLOOR STAND
POWER CORD

With the Floor Stand

Rainbow Personal Computer Cable Connections

Power Supply

The power supply converts alternating current (AC) into the direct current (DC) the system uses. It also transforms the DC power into lower voltages for the system board, keyboard, monitor, and drives.

Rainbow's system unit plugs into a standard wall socket. Its power supply can accommodate both 115 or 230 volts AC current. A slide switch in back of the cabinet lets you easily adjust the power supply to the appropriate voltage. You can select 50 or 60 Hz from the on-screen Set-Up parameters.

Diagnostics

The Rainbow personal computer is a rugged machine that you can depend on for reliability. Rainbow runs self-test and power-up diagnostic tests to verify the status of the system and let you know if, and where, any problems exist.

An internal diagnostic test runs upon power-up, reset, or self-test. When the system is turned on or reset, a quick, power-up diagnostic test checks the internal logic. From the Main Menu, you can initiate a more extensive test.

The diagnostics diskette contains separate testing programs, so you can check the diskette drive and the memory. It also allows you to add new diagnostic tests to the diskette when you add some new options to your system.

System Expansion

The Rainbow personal computer was designed to grow with you and your business, so many hardware options—a few of which have already been mentioned—are available to expand the capabilities of your Rainbow 100B or Rainbow 100+. Most of these options fit into a slot on the system board, or they connect to the system unit through one of the ports.

See the Rainbow Options section in this chapter for detailed information about Rainbow options available from Digital Equipment Corporation, and for a listing of products developed by independent hardware producers for the Rainbow personal computers.

Architectural Overview

The following information is provided for those who are interested in the more technical details of the Rainbow system architecture.

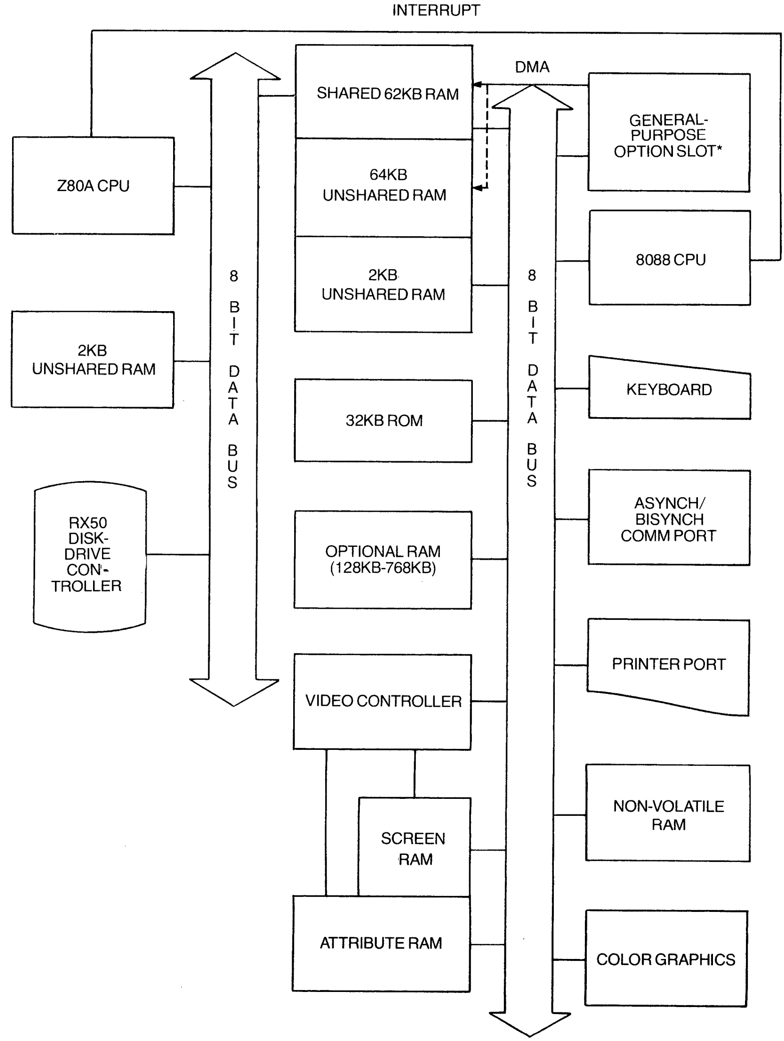
The Rainbow architecture is based on a dual-microprocessor design in which each microprocessor controls both program execution and certain system resources. Each microprocessor accesses its own bus and private memory, as well as a common memory area.

The two microprocessors in the Rainbow are the 8-bit Zilog Z80A and the 16-bit Intel 8088. The Z80A runs at a speed of 4.012 MHz and the 8088 at 4.815 MHz. The Z80A accesses an 8-bit on-board data bus, to which are connected the RX50 disk-drive controller, 2 Kbytes of unshared RAM memory, and 62 Kbytes of dual-ported RAM memory shared with the 8088. The Z80A has two primary functions: to control the RX50 floppy disk drive and to execute 8-bit application programs. Each processor uses its own unshared 2 Kbytes of RAM for special system functions. The Z80A and the 8088 can interrupt each other: the Z80A is interrupted when the 8088 requires a diskette access, the 8088 can be interrupted when diskette operation is completed, or when the Z80A needs to access any of the system resources—keyboard, video, communications or printer port, graphics, hard-disk drive—which are on the 8088 on-board data bus.

The 8088 microprocessor, which runs 16-bit programs, is attached to a second 8-bit on-board data bus. Connected to the same bus are the 2 Kbytes of unshared RAM; the 62 Kbytes of dual-ported RAM, shared with the Z80A; 64 Kbytes unshared RAM; 32 Kbytes of ROM; unshared expansion RAM with 128 Kbytes to 768 Kbytes capacity (to a total of 896 Kbytes maximum memory for the system); the video controller, screen, and screen RAM; the graphics option; the printer port; the communications port; the keyboard; and the hard-disk drive controller. The 8088 CPU accesses all of these components via this same bus.

Of these elements on the 8088 bus, the 62 Kbytes of shared RAM contains the 16-bit portion of the operating system and the corresponding 16-bit application program, while the 2 Kbytes of unshared RAM is used to store interrupt vectors and other system information. The 32 Kbyte ROM module contains the system boot, diagnostics, and the VT102 terminal emulation routine. The 64 Kbytes of unshared RAM and the optional expansion RAM are used for additional program storage to accommodate large 16-bit applications. The keyboard operates over the bus on a programmed I/O basis as does the serial printer port. The communications port will handle both asynchronous start/stop operation as well as IBM Binary Synchronous Protocol at speeds up to 19,200 baud in a programmed I/O mode.

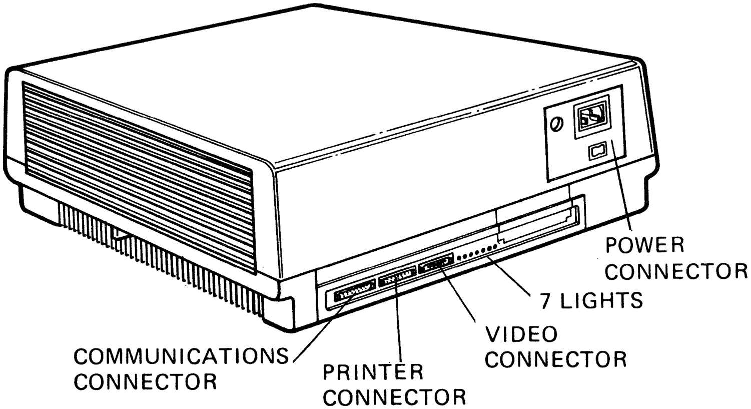
The 8088 bus is also connected to the video controller which contains Digital's proprietary VT100 chip set that controls the screen and gives it the attributes of the VT100's Advanced Video Option (*see the Monochrome and Color Monitor factsheets for details*). A discrete display RAM memory, consisting of both character and display attribute memory elements, is accessed directly by the 8088. A memory-mapped video technique is used for very fast screen reads and writes. This technique consists of block-memory moves used to enhance video performance. The graphics option allows bit-map graphics to be displayed on the screen in high resolution under the control of the GSX-86 graphics software and graphics application programs. The graphics option will operate with either the monochrome or color monitor. It provides four colors in high resolution or sixteen colors in medium resolution on the color monitor—selectable from an extensive palette—and four or sixteen shades of grey, green, or amber (depending upon your choice of model) on the monochrome monitor.


INTERRUPT
DMA
SHARED 62KB RAM
64KB UNSHARED RAM
2KB UNSHARED RAM
32KB ROM
OPTIONAL RAM (128KB-768KB)
VIDEO CONTROLLER
SCREEN RAM
ATTRIBUTE RAM
Z80A CPU
2KB UNSHARED RAM
RX50 DISK-DRIVE CON-TROLLER
8 BIT DATA BUS
8 BIT DATA BUS
GENERAL-PURPOSE OPTION SLOT*
8088 CPU
KEYBOARD
ASYNCH/ BISYNCH COMM PORT
PRINTER PORT
NON-VOLATILE RAM
COLOR GRAPHICS

*FOR HARD-DISK DRIVE CONTROLLER, OR EXTENDED COMMUNICATIONS OPTION, OR THIRD-PARTY OPTION

Rainbow 100B System Architecture

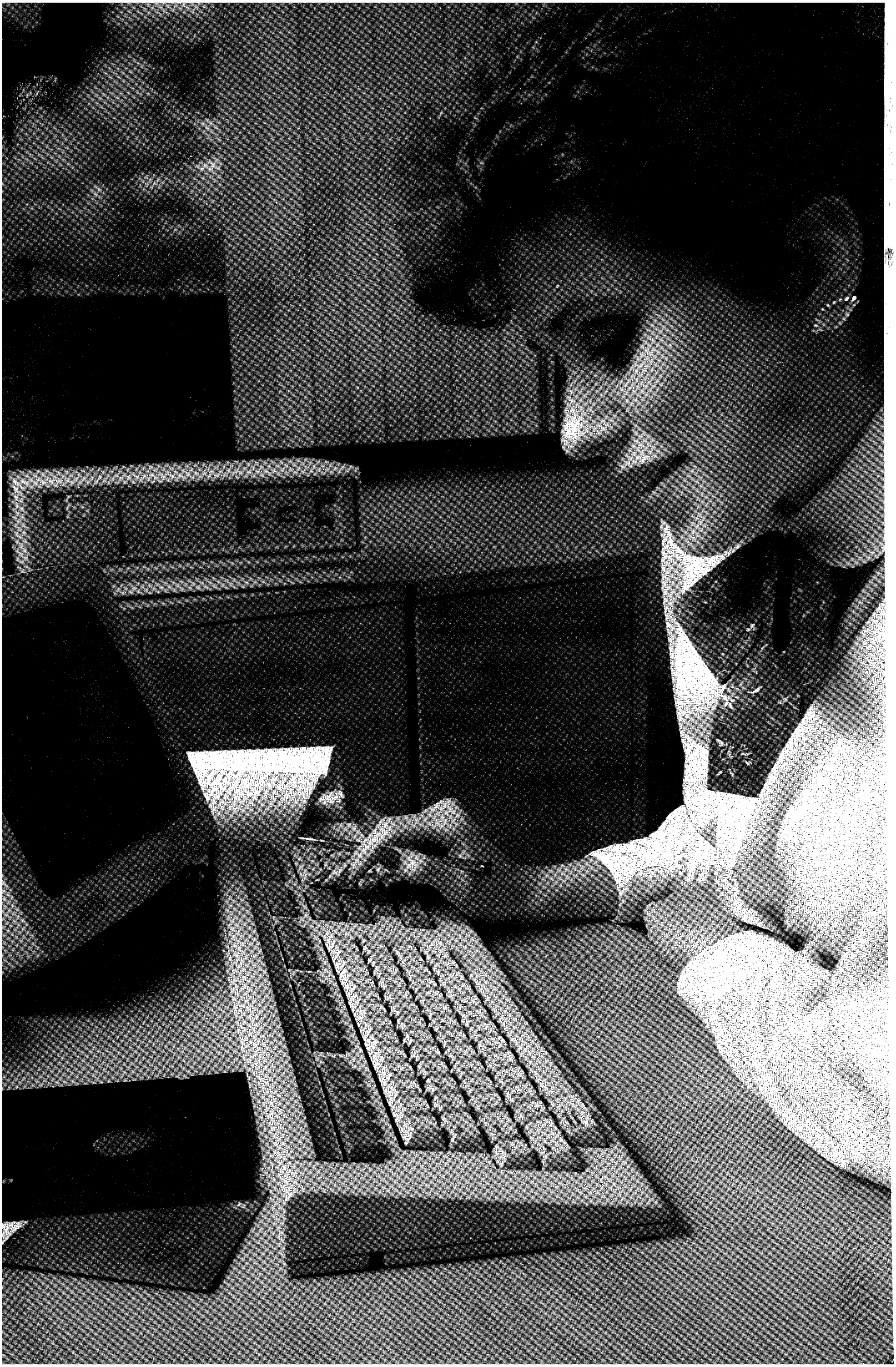
Rainbow System Unit & Power Supply Specifications	
Height	6.5 inches (16.5 cm)
Length	19 inches (48.3 cm)
Width	14.3 inches (36.3 cm)
Max Weight	
Rainbow 100B	30 lbs (13.6 kg)
Rainbow 100+	35 lbs (15.8 kg)
Power Supply Type	Transistor, switch-type AC to DC converter
AC Input	Switch-selectable
	Single-phase, 3-wire
	100-120V nominal (90-128V rms) or 200-240V nominal (180-256V rms)
	47-53 Hz low line frequency
	57-63 Hz high line frequency
Line Current	3A @ 115 Vac or 2A @ 230 Vac
AC Power Consumption	237 Watts
Regulated Voltages	+5V, 12V, and −12V DC
Circuit Protection	Circuit breaker, externally accessible


POWER CONNECTOR
7 LIGHTS
VIDEO CONNECTOR
COMMUNICATIONS CONNECTOR
PRINTER CONNECTOR

System Unit, Back View

The Rainbow System Unit (PC100-B2 for 100B or PC100-P2 for 100+) includes:

- System box with
  - Zilog Z80A 8-bit and Intel 8088 16-bit microprocessors
  - 10 Mbyte hard-disk drive (for Rainbow 100+ only)
  - Dual-diskette drive (2 x 400 Kbytes)
  - 128 Kbytes memory
  - Asynchronous/synchronous RS232/423 communications port
  - RS232/423 serial printer port
  - Power supply
  - expansion slots
  - three slots for Rainbow 100B
  - two slots for Rainbow 100+
- Monochrome monitor cable
- 10-foot peripheral cable (either for printer or modem)



Keyboards

Rainbow Keyboard Country Kit

- **Order Code: PC1K1-BA** *for USA*

The keyboard is your direct link to the Rainbow personal computer. User-oriented design and quality craftsmanship make it the foremost personal computer keyboard in the industry. Its superior design allows you to work comfortably and efficiently. You'll especially appreciate the separate numeric keypad and clearly labeled editing and function keys.

The keys are sculptured to fit your fingers, with a non-slip surface for positive touch—your fingers don't slide off in hot weather or when you're tired. The low-profile keyboard is exactly the right height for people who prefer the low-fatigue, palm-on-table typing style. And the keyboard is truly quiet. The only noise it makes is an electronic keyclick, which you can turn off or set to the volume you prefer. Rainbow's keyboard attaches to the monitor by a six-foot coiled cord, so you can place it where it's comfortable and fits best. It's even light enough to hold on your lap.

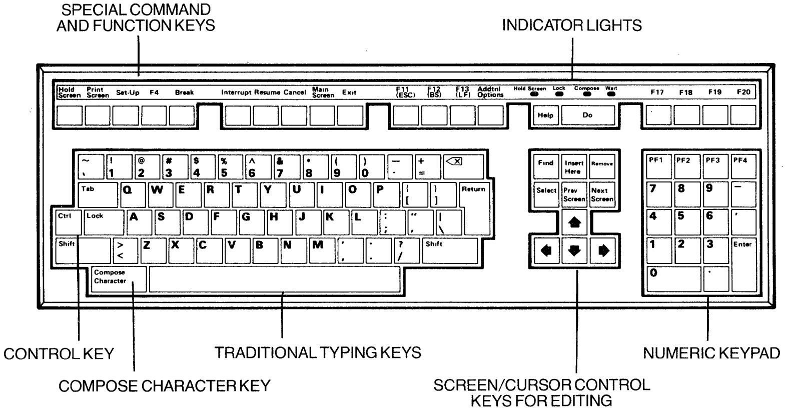
The keyboard is arranged to eliminate errors and increase data entry speed. There are 105 keys divided into four easy-to-remember areas: traditional typing, numeric keypad for data entry, screen/cursor control keys for editing, and special command and function keys. These areas are laid out for convenience in accessing commonly used functions. And words, instead of codes, are used to label editing and special function keys.

Traditional Typing Keys

The traditional typing keys provide the uppercase and lowercase alphabets, numbers, and punctuation, arranged like the keys on a typewriter. Typing key functions are similar, too, except that the LOCK key shifts alphabetic keys to uppercase but doesn't affect the numeric or punctuation keys.

Two keys you won't find on a typewriter are the CONTROL (CTRL) key and the COMPOSE CHARACTER key. When used in conjunction with certain other keys, the CTRL key performs special functions. CTRL is used to reset your Rainbow (SET-UP plus CTRL/SET-UP). In terminal emulation mode, CTRL is used for printing (CTRL/PRINT SCREEN). And many application programs use CTRL for specialized functions.

The COMPOSE CHARACTER key on the Rainbow 100B and 100+ gives you access to many international characters and symbols, stored in read-only memory. This means that under control of some applications you can use the USA keyboard to type, for example, symbols such as the section, general currency, copyright, micro, and paragraph signs (§, ⊗, ©, μ, ¶), as well as to type many foreign-language characters that include diacritics, such as German umlauts, French accents, and Spanish tildes.


SPECIAL COMMAND AND FUNCTION KEYS
INDICATOR LIGHTS
Hold Screen
Print Screen
Set-Up
F4
Break
Interrupt
Resume
Cancel
Main Screen
Exit
F11 (ESC)
F12 (BS)
F13 (LF)
Addtnl Options
Hold Screen
Lock
Compose
Wait
F17
F18
F19
F20
Help
Do
Tab
Return
Ctrl
Lock
Shift
Shift
Compose Character
Find
Insert Here
Remove
Select
Prev Screen
Next Screen
PF1
PF2
PF3
PF4
Enter
CONTROL KEY
COMPOSE CHARACTER KEY
TRADITIONAL TYPING KEYS
SCREEN/CURSOR CONTROL KEYS FOR EDITING
NUMERIC KEYPAD

Numeric Keypad

The data entry keypad on the far right is laid out like a calculator keypad and makes number-handling or accounting programs easier to use. The numeric keys duplicate the functions of the corresponding traditional typing keys. All of the keys on the numeric keypad can also be redefined by application programs to perform special tasks unique to that program. Keys PF1 to PF4 are expressly designed to be special function keys for program use.

Screen/Cursor Control Keys

The location of the screen and cursor control keys, between the traditional typing keys and the numeric keypad, allows fast, productive editing with the right hand, while the left hand is in the typing area. The four keys that control cursor movement are arranged in a handy "inverted T" formation for fast cursor positioning with minimum finger motion and are clearly labeled with arrows. The six editing keys activate important screen functions and are used to simplify the operations of a variety of applications such as WordStar, Select and Multiplan.

Special Function Keys

The special function keys positioned horizontally across the top are versatile soft-coded keys, as are the top four keys on the numeric keypad. Each of them generates a unique code sequence, which can be interpreted by a program to perform various functions.

A special label strip to identify the function keys comes in the *Rainbow System Kit.* It goes in the slot at the top of the keyboard. The HELP and DO keys are positioned directly above the editing keys for easy reach and are pre-labeled because they are commonly used by most programs. The HELP key is particularly important; with many of Digital's software applications, and with many third-party programs, the HELP key brings messages to the screen to get you out of difficulty by explaining your options at any point in the program.

Indicator Lights

Small red indicators in the function key label strip light up as a reminder to you when you are using the LOCK, HOLD SCREEN, and WAIT functions. The LOCK light indicates that the alphabet will be all uppercase. The HOLD SCREEN light indicates that the display has been temporarily "frozen" to allow you to read data that may have been scrolling by quickly. The WAIT indicator lets you know that the program will not accept data entries from the keyboard until the light goes out.

Keyclick and Bell

A speaker is built into the keyboard to increase your awareness of what the computer is doing: you can hear a slight keyclick when you press a key and a bell tone when you turn on the Rainbow or approach the margin. An application program may also use the bell to notify you if you press the wrong key.

The volume for keyclick and the bell tone can be turned on or off with the SET-UP function, and it can be adjusted to any of eight different volume levels. You can hear the volume as you set each level to make your choice easier.

Rainbow Keyboard Specifications

Height:	0.5—1.6 inches (1.25—4 cm)
Length:	21 inches (53.3 cm)
Width:	6.75 inches (17.1 cm)
Weight:	4.5 lbs (2 kg)
Home Row Key Height:	1.2 inches (3 cm) above desktop
Keys:	105 keys with matte-textured finish and concave surface
	0.50 inches (1.27 cm) square
	0.75 inches (1.9 cm) center-to-center spacing between keys for single-width keys
	Wobble less than .020 inches (0.5 mm)

Rainbow Keyboard Specifications	
Keypad:	Sculptured key array in four groups N-key rollover
Numeric Data Entry Keys:	18 keys on far right keypad
Function Keys:	20 keys positioned across top
Typing Keys:	57 keys
Screen/Cursor Control Keys:	10 keys on the middle keypad
Cord to Video Monitor:	6 foot (1.9 m), coiled 4-pin telephone-type modular connectors
Electronics:	8-bit microprocessor 4 Kbytes of ROM 256 bytes of RAM 4 light-emitting diodes Speaker for audio feedback
Diagnostics:	Power-up self-test, generates identification code upon passing test
International Standards Conformance:	Meets European 30 mm home row requirement and provides clearance for diskette drive media insertion, without having to move keyboard away from system

Gold Key Keyboard

- **Order Codes:**
  PC1K1-CA *USA Country Kit for Rainbow 100B and 100+*
  LK201-BA *USA Keyboard for Rainbow 100*

The Gold Key keyboard makes it easy to use your Rainbow personal computer as an ALL-IN-1 terminal. ALL-IN-1, an office automation software product that runs on Digital's VAX computers, integrates many VAX applications through easy-to-use menus that can be customized for individual applications.

The Gold Key keyboard has the same superb design as the other Rainbow keyboards. The only difference is that the keys on the Gold Key keyboard are specially labeled to make it easier to use the ALL-IN-1 editor and other VAX word processing packages that resemble the DECmate WPS system, while using your Rainbow as a terminal. The ALL-IN-1 editor commands are designed around the keyboard's gold key, a powerful special function key that works in conjunction with other keys to execute many text and file management functions with just a few keystrokes.

When you're not using your Rainbow as an ALL-IN-1 terminal, this keyboard functions as a Rainbow keyboard.

A keyboard Country Kit containing the Gold Key keyboard and the same Rainbow documentation included with the PC1K1-BA Country Kit is available for the Rainbow 100B or 100+. If you already have a Rainbow 100 (PC100-A) and wish to purchase a Gold Key keyboard, order part number LK201-BA for the keyboard only.

The USA Country Keyboard Kit for Rainbow (PC1K1-BA) or for Gold Key (PC1K1-CA) includes:

- USA keyboard (either LK201-AA for Rainbow or LK201-BA for Gold Key)
  - Keyboard cord to plug into monitor
  - Keyboard feet (2)
  - Power cord
- *System Kit and Installation Instructions*
  - *Rainbow™ Installation Guide*
  - *Rainbow™ Owner's Manual*
  - *Documentation Map*
  - *Keys to Digital's Warranty Service packet*
  - System test diskette
  - Diskette drive labels
  - Label strip for keyboard function keys
  - Reply card

Video Monitors

The Rainbow personal computers' video monitors combine superb styling and functional design with advanced video technology.

The precise, high resolution displays of these monitors surpass the video quality offered by most other personal computer monitors. The crisp 7-by-9 dot-matrix character display is kept steadily defined by a 60-image-per-second refresh rate which reduces screen flicker. A special antiglare coating on the display screen reduces reflections, enchances character contrast, and improves overall readability. So whether you view a white, green, or amber display on a black screen or use reverse video to see dark characters against a colored background, the definition is sharp and the characters easy to read, even those with descenders that fall below the text line (such as the "tails" on the letters g, y, j, p, q).

You can vary the screen display from 80 to 132 columns, an increase that lets you view about 50 percent more information than on a typical 80-column display. This capability is ideal for some financial, accounting, and numerical analysis applications that demand all 12 months of data with a 13th column for totals displayed on the screen at the same time.

Rainbow also incorporates all of the display characteristics of Digital's VT102 video terminal. For example, text highlighting features—bold, blink, reverse-video, vertical lines, borders, and double-height and double-width characters—let you add emphasis on a character-by-character basis under software control, so you can tailor the visual display to the job at hand.

Rainbow supports smooth or jump scrolling. You can scroll through your text horizontally or vertically, as well as through a full or split screen, so you view information the way you want to see it. Many of Rainbow's video display features are directly selectable using on-screen set-up menus.

The Rainbow personal computers give you truly fast keyboard-to-screen response with memory-mapped video. Memory-mapped video brings individual characters or entire pages of text to the screen immediately after input from the keyboard. Deletions disappear just as quickly. This speeds entry and editing time because you don't have to wait to see the results of your keystrokes. You see Rainbow's enhanced performance work as you work.

The monochrome and color video monitors all display high-resolution bit-mapped graphics with the graphics option. *For more information about graphics, see the Graphics Option description.*

Monochrome Video Monitors

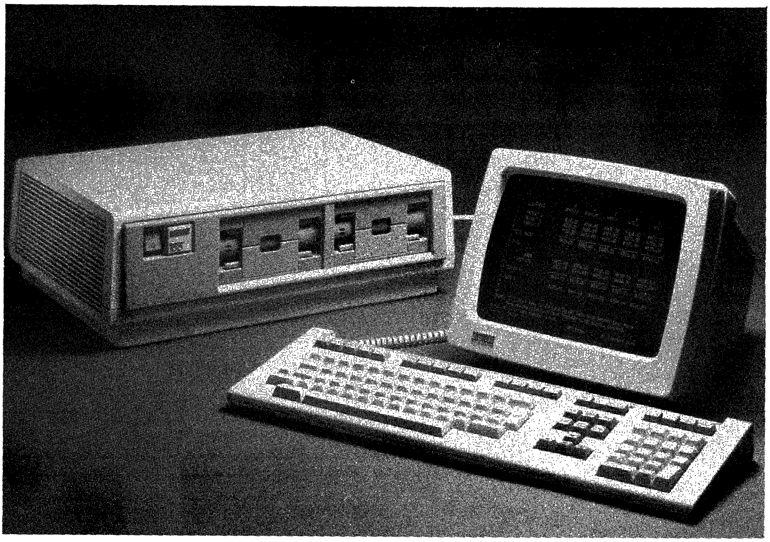
- **Order Codes:**
  VR201-A *White*
  VR201-B *Green*
  VR201-C *Amber*

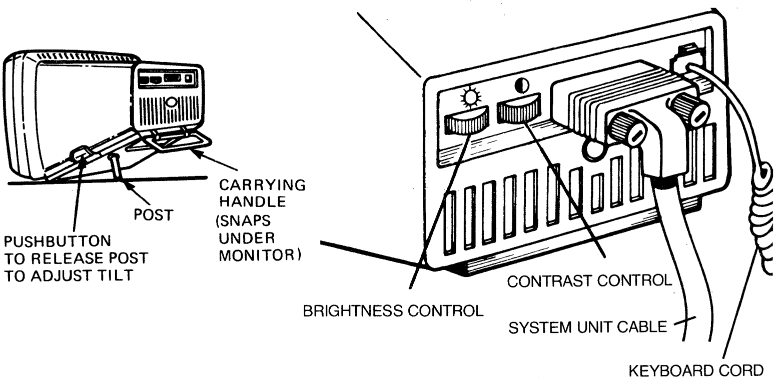
Each monochrome video monitor has a full 12-inch (diagonal) screen housed in an elegant, small case that takes up very little room on your desk. The monitor is compact and portable, and its recessed handle makes it easy to carry and move around.

Digital offers a choice of display color—white, green, or amber—for your Rainbow monochrome monitor.

The monochrome monitor adapts to suit your work style. A pushbutton on the monitor's side releases a post to adjust the tilt of the screen to the most comfortable angle. You can adjust the brightness and contrast by a set of dials on the back of the monitor, as you would on a television set.

Graphics displayed on the monochrome monitor, with the graphics option, are as sharply defined as those on the color monitor. You can display up to four shades of grey, green, or amber (depending upon your model) in high-resolution mode, or 16 shades in medium-resolution mode.




CARRYING HANDLE (SNAPS UNDER MONITOR)
POST
PUSHBUTTON TO RELEASE POST TO ADJUST TILT
CONTRAST CONTROL
BRIGHTNESS CONTROL
SYSTEM UNIT CABLE
KEYBOARD CORD

Monochrome Monitor
Rear View

Rainbow Monochrome Video Monitor Specifications	
Height	11.5 inches (29.2 cm)
Width	13.75 inches (34.9 cm)
Depth	12.25 inches (31.1 cm)
Weight	14 lbs (6.4 kg)
Adjustable Tilt	+5 to -25 degrees
Standard Video Output	RS170 compatible, monochrome character cell video
Video Screen	12 inches (diagonal) Antiglare filtering to reduce eye fatigue
Video Display	High-resolution monochrome with bold, underline, blink, and reverse-video and split-screen capability 60-image-per-second refresh rate reduces screen flicker
Characters	7x9 dot matrix, includes 2-dot descenders
Format	80 or 132 columns wide, selectable, by 24 lines for a total in excess of 3,000 characters
Graphics *(With Graphics Option)*	800 x 240 pixels
Set-Up Parameters	Smooth or jump scroll, scroll rate, light or dark screen, block or underline cursor, autowrap, auto screen blank, menu-selectable

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Rainbow's Monochrome Video Monitor (VR201-A,- B,- C) includes:

- Monochrome video monitor—white, green, or amber display, respectively—with recessed carrying handle and variable tilt post

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Color Video Monitor

- **Order Code:**
  VR241-AA *for USA*

The color video monitor for the Rainbow personal computers has been specifically designed to display brilliant color graphics. It is the solution for those who want a one-monitor Rainbow system for both text and color graphics. Used for text, it provides the same high-quality display as the monochrome monitor, with green characters on a black background. Used for graphics, it displays high-resolution color graphics that are sharply defined and easy to read.

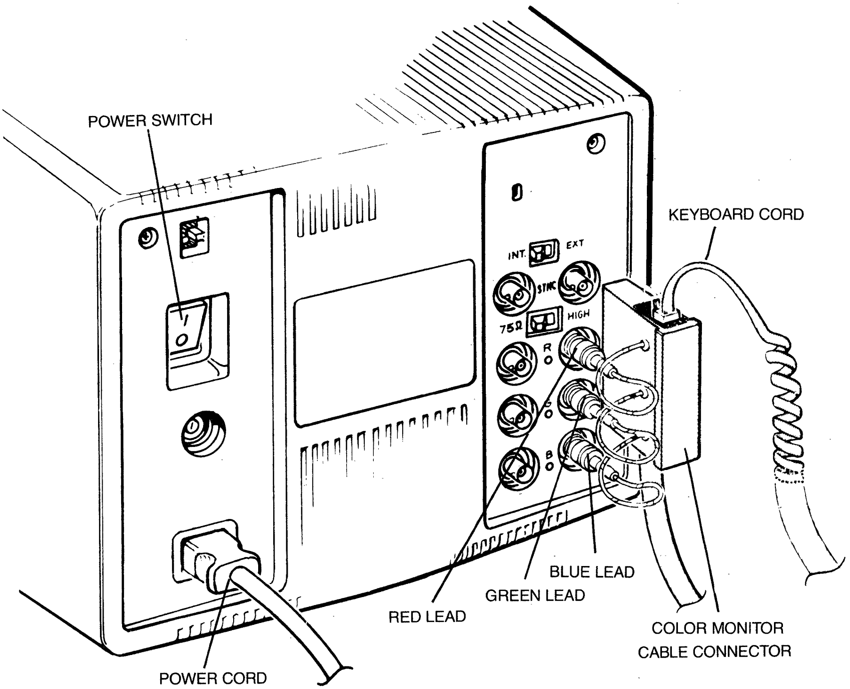
PRODUCT SALES

The color monitor combines elegant styling and user-oriented design with advanced video technology. The high bandwidth of the monitor (18-20 MHz) allows the display of either 80 or 132 columns by 24 rows of high-quality text characters, or high-resolution bit-mapped graphics. These precise displays far surpass the video quality of competitive personal computer monitors.

The big, 13-inch (diagonal) display screen is attractively packaged and fits on your desk. You can adjust the brightness and contrast with a set of dials on the side of the monitor, as you would on a television set. The monitor's high-efficiency antiglare filter provides excellent contrast and thus reduces eye-fatigue in normal lighting.

To design or run graphics on your Rainbow, you need the graphics option module and appropriate application software. Rainbow offers two resolution modes for graphics and a multitude of brilliant colors. In high-resolution mode—800 by 240 pixels (picture elements)—four colors can be displayed at once from a palette of 4096 colors. In the medium-resolution mode—384 x 240 pixels—16 colors can be displayed from the same extensive palette. You can also mix graphics and graphics text on the same screen, so you can label your graphs and charts for more effective graphics presentations.

Rainbow Color Video Monitor Specifications	
Height	12.8 inches (31.9 cm)
Width	14.5 inches (36.3 cm)
Depth	17.0 inches (43.2 cm)
Weight	36.6 lbs (16.6 kg)
Video Screen	13 inches (diagonal) High-resolution color High-efficiency, antiglare filter
Color Graphics *(With Graphics Option)*	
High-resolution Mode	800 x 240 pixels, 4 selectable colors
Medium-resolution Mode	384 x 240 pixels, 16 selectable colors
Palette	4096 colors (1024 colors for PC100-A)
Text *(Under Video Control of System Unit)*	


POWER SWITCH
KEYBOARD CORD
INT.
EXT
SYNC
75Ω
HIGH
R
G
B
BLUE LEAD
GREEN LEAD
RED LEAD
COLOR MONITOR CABLE CONNECTOR
POWER CORD

Color Monitor Rear View

Rainbow Color Video Monitor Specifications	
Format	80 or 132 columns wide, selectable, by 24 lines
	7 x 9 dot matrix, includes 2-dot descenders
Video Display	Bold, underline, blink, reverse-video, and split-screen capability
Active Raster Size	240 mm (W) x 150 mm (H)
Dot Pitch	.31 mm resolution (shadowmask)
Degaussing	Built-in, automatic
Interface	Standard RS170 RGB (red-green-blue) cable connector with built-in line termination and selectable external synch
Power Supply	Universal, switch-selectable 90-120 Vac, 47-63 Hz or 185-256 Vac, 47-63 Hz
Hardware Prerequisite	Graphics Option (PC1CXX-BA)

Rainbow's Color Monitor (VR241-AA) includes:

- Color monitor
- USA power cord
- *Color Monitor VR241 Installation/Owner's Guide*

Foreign-Language Options

Digital Equipment Corporation offers Rainbow personal computers for foreign-language users.

Seventeen keyboard Country Kits are available, providing foreign-language capabilities for many different countries, including two language options each for Canada and Switzerland.

Each keyboard Country Kit includes a country-specific keyboard with the appropriate language characters and key labels, documentation in that language, and a power cord that meets the power requirements of that country.

The color video monitor also comes with documentation and a country-specific power cord. (Since the monochrome monitor requires no documentation or power cord, there are no country-specific variations—order VR201-A, -B, -C.)

Select the appropriate keyboard Country Kit, system unit, and color video monitor from the charts below.

Installing a Foreign-Language Rainbow 100B or Rainbow 100+

The system units available for Rainbow 100B and Rainbow 100+ each have a factory-installed ROM chip that supports several languages, so no hardware installation is required. English (USA) is included for all systems.

Installing the foreign-language option for these systems is as easy as pressing a key. The first time you power-up the Rainbow 100B or 100+ personal computer, an Install Country menu will ask you—in the languages supported by the system—to select the country/language that you wish to install. Just move the cursor with the [→] key to your country choice. Press the Select key to install that language. From now on, all system menus and messages will be displayed in that language.

Foreign-Language System Components for Rainbow 100B (PC100-Bx) and Rainbow 100+ (PC100-Px)

Country	*Keyboard Country Kit*	*Color Monitor*	*System Unit*
USA	PC1K1-BA	VR241-AA	PC100-B2 (120V) or PC100-P2 (120V)
Canada (French)	PC1K1-BC	VR241-AC	
Canada (English)	PC1K1-BQ	VR241-AQ	

Foreign-Language System Components for Rainbow 100B (PC100-Bx) and Rainbow 100+ (PC100-Px)

UK	PC1K1-BE	VR241-AE	PC100-B3 (240V) or PC100-P3 (240V)
Germany	PC1K1-BG	VR241-AG	
Switz (French)	PK1K1-BK	VR241-AK	
Switz (German)	PC1K1-BL	VR241-AL	
France	PC1K1-BP	VR241-AP	
Australia	PC1K1-BZ	VR241-AZ	
Netherlands	PC1K1-BH	VR241-AH	PC100-B4 (240V) or PC100-P4 (240V)
Belgium	PC1K1-BB	VR241-AB	
Sweden	PC1K1-BM	VR241-AM	PC100-B5 (240V) or PC100-P5 (240V)
Finland	PC1K1-BF	VR241-AF	
Denmark	PC1K1-BD	VR241-AD	PC100-B6 (240V) or PC100-P6 (240V)
Norway	PC1K1-BN	VR241-AN	
Spain	PC1K1-BS	VR241-AS	PC100-B7 (240V) or PC100-P7 (240V)
Italy	PC1K1-BI	VR241-AI	

Installing a Foreign-Language Rainbow 100

If you already have a Rainbow 100 personal computer (PC100-A), it can be converted to a foreign-language system by replacing a read-only memory (ROM) chip that came on the system board with a different ROM chip, supplied with the keyboard Country Kit. This chip contains a stored character set for the language of your choice.

Foreign-Language Options for Rainbow 100 (System Unit PC100-A)

Country	*Keyboard Country Kit*	*Color Monitor*
USA	PC1K1-AA	VR241-AA
Belgium	PC1K1-AB	VR241-AB

Foreign-Language Options for Rainbow 100 (System Unit PC100-A)

Country	*Keyboard Country Kit*	*Color Monitor*
Canada (English)	PC1K1-AA	VR241-AQ
Canada (French)	PC1K1-AC	VR241-AC
Denmark	PC1K1-AD	VR241-AD
UK	PC1K1-AE	VR241-AE
Finland	PC1K1-AF	VR241-AF
Germany	PC1K1-AG	VR241-AG
Holland	PC1K1-AH	VR241-AH
Italy	PC1K1-AI	VR241-AI
Switz (French)	PC1K1-AK	VR241-AK
Switz (German)	PC1K1-AL	VR241-AL
Sweden	PC1K1-AM	VR241-AM
Norway	PC1K1-AN	VR241-AN
France	PC1K1-AP	VR241-AP
Spain	PC1K1-AS	VR241-AS
Australia	PC1K1-AZ	VR241-AZ

Rainbow Options

Digital Equipment Corporation offers hardware options for the Rainbow personal computers so that you can expand your system to enhance the performance of applications you are already working with, or so that you can add new capabilities.

The floppy-based Rainbow 100B is a highly versatile system that can be expanded to include another dual-diskette drive or a 10-Mbyte hard-disk option, whichever best suits your needs.

Memory options for both the Rainbow 100B and 100+ let you step your system all the way up to 896 Kbytes, in additional increments that you add as you need them. Plus, you can add graphics capability, a technical character set, or a special character set that you create yourself.

There is good news for owners of the Rainbow 100 (PC100-A) as well. Virtually all of the options for the Rainbow 100B and the 100+ can be added to your system. For example, a new memory adapter option specially designed for the Rainbow 100 lets you take advantage of memory options that can increase your system's main memory up to 832 Kbytes. And you can upgrade to hard-disk capability.

Each Digital option for the Rainbow personal computers is described in the following pages.

In addition to those products offered by Digital, many independent, third-party hardware producers are developing and marketing hardware options for the Rainbow personal computers to meet some of the more specialized needs of the large, and diverse community of Rainbow users. A chart at the end of this chapter lists many of these producers and their products.

Graphics Option

- **Order Code: PC1XX-BA**

Graphic representations of data make numerical relationships easier to understand and visual presentations more effective. With graphics, you see the whole picture. The graphics option equips your Rainbow personal computer with high-resolution, bit-mapped monochrome and color graphics that are sharply defined and easy to read.

The Rainbow graphics option comprises hardware and software: The graphics module allows you to draw figures from simple vectors up to complex open and closed curves on Rainbow's video screen and provides color graphics capability. The GSX™-86 software, a graphics system extension to the CP/M®-86/80 operating system, is used by 16-bit CP/M graphics applications, such as GraphPlan™-86.

The Graphics Module

The graphics module provides two resolution modes—medium (384 by 240 picture elements or pixels) and high (800 by 240 pixels)—for precise bit-mapped graphic displays. Both levels of resolution far surpass the TV-quality pictures on most personal computer monitors. In addition, the high-resolution mode gives you an excellent graphics text display capability, allowing up to 132 characters per line.

Rainbow graphics work with both the monochrome video monitor and the color monitor. The graphics module produces beautiful colored displays of your charts and graphs on the screen of Rainbow's color monitor. You get a multitude of brilliant colors to choose from. In the high-resolution mode, four colors can be displayed at once from a palette of 4096 colors. In the medium-resolution mode, 16 colors can be displayed from the same extensive palette.

Graphics displayed on the monochrome monitor translate to respective grey, green, or amber values (depending upon which model you have). Four values are available in high-resolution mode, and up to 16 values can be displayed in medium-resolution mode. (If you already have a Rainbow 100, PC100-A, and wish to add the graphics option, the palette is 1024 colors on the color monitor and four monochrome shades are available in medium- and high-resolution mode on any of the monochrome monitors.)

You can mix graphics text and graphics on the same screen or page. In graphics-text mode, character writing at several thousand characters per second is fast and versatile. With the appropriate application software, you can create character sets needed for special applications such as mathematic formulas or scientific notation or foreign characters.

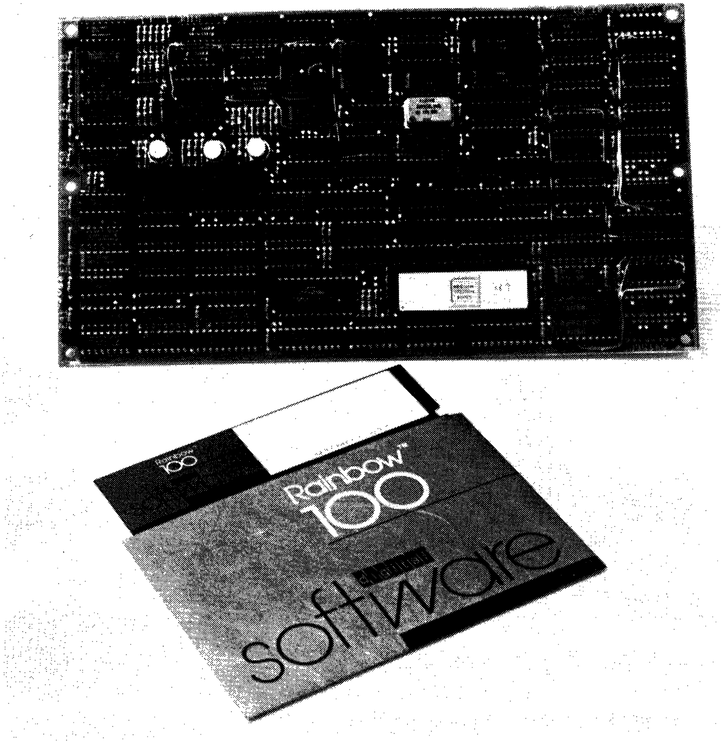
The graphics option module is a microprocessor-controlled subsystem based on the NEC 7220 graphics chip with specialized circuitry for enhanced performance.

MS-DOS Graphics

A number of MS-DOS programs, such as 1-2-3 from Lotus Development Corporation, have graphics implemented in the application and involve no user programming. These applications require the graphics option module but do not require any additional software.

GSX-86 CP/M Graphics

There are industry-standard 16-bit CP/M graphics applications that require the CP/M-86 graphics software, GSX-86, in addition to the graphics module in order to create graphics on the Rainbow. The graphics option includes GSX-86, which is the virtual device interface for CP/M graphics on the Rainbow. As the graphics system extension to the CP/M-86/80 operating system, GSX-86 pro-



vides graphic output through standard operating system calls. Object code that utilizes GSX-86 is highly transportable between personal computers running CP/M-86 operating systems.

The major components of GSX are the Graphics Device Operating System (GDOS) and the Graphics Input/Output System (GIOS). The GDOS and GIOS path to graphics devices is parallel to the BDOS and BIOS path in CP/M. BDOS handles logical operating system calls, and BIOS provides the device-dependent interface. GDOS intercepts and services graphics calls by first loading the required device driver module, GIOS. GSX includes a set of supported graphic output device drivers which are loaded from the disk prior to execution. Only one device driver resides in memory at a time, maximizing the memory available for application programs.

GSX-86 software supports dot-matrix impact printers—the LA50 Personal Printer and the Letterprinter 100—and graphics pen plotters, so you can make hardcopies of the graphics you've designed on the screen.

For further information on GSX-86 graphics software, refer to Chapter 9.

Installation

Installation of the graphics option module is simple. The system board has a dedicated slot for it. The graphics module snaps right into this space, with no other connections required.

Rainbow Graphics Option Module Specifications

Graphics Type	Bit-mapped
Resolution	
High-resolution Mode	800 x 240 pixels, 2 planes
Medium-resolution Mode	384 x 240 pixels, 4 planes
Number of Colors Displayable	
High-resolution Mode	4 colors, selectable
Medium-resolution Mode	16 colors, selectable
Palette	4096 colors (1024 for PC100-A*)
Scrolling Capabilities	Horizontal and vertical
Split Screen Scrolling	Regions vertically
Hardware Prerequisite for Graphics	Color Monitor (VR241-Ax) or Monochrome Monitor (VR201-A, -B, -C)
	Memory required varies with application, 256 Kbytes recommended minimum
GSX-86 Graphics Software	
Hardcopy Devices Supported	LA50 Personal Printer (as graphics printer)
	LA100 Letterprinter 100 (as graphics printer)
	LPV16 pen plotter**
	Hewlett-Packard HP 7470A and HP 7220C pen plotters**
Software Prerequisite	CP/M®-86/80 Operating System

*The palette for the Rainbow 100 is 4096 colors if separate monitors are used for text and graphics.
**Device driver delivered "as is." Requires BCC19-15 cable. LPV16 is supported as a two-pen plotter.

Rainbow Graphics Option (PC1XX-BA) includes:

- Graphics option module
- Signal cable (BCC17-06) for the RGB color monitor
- Media and Documentation kit
  - GSX-86 software and diagnostic diskettes (on RX50 media)
  - GSX-86 license and *Software Product Description*
  - *GSX-86 Getting Started*
  - *GSX-86 Programmer's Reference Manual*
  - *Color/Graphics Option Installation Guide*

Memory Expansion Options

Adding more memory to your Rainbow personal computer can give you access to some of the most advanced applications available. For example, you may want to use applications such as Lotus 1-2-3 or Concurrent CP/M-86, both of which require 256 Kbytes. Some sophisticated software integraters require up to 512 Kbytes.

Another reason to add more memory is so that you can take advantage of the fast performance of MDRIVE. With a minimum of 192 Kbytes of memory (or more, depending upon your application and data files), you can use the MDRIVE capability included in the MS-DOS V2.05 and CP/M-86/80 V2.0 operating systems. MDRIVE is particularly valuable on the floppy-based Rainbow 100B for speeding up the performance of tasks that heavily access the diskettes, such as database sorting. You can also use MDRIVE to pass data rapidly between programs—for example, inserting a CalcStar spreadsheet into a WordStar document. (See the operating system descriptions in Chapter 9 for more information about MDRIVE)

For maximum flexibility, Digital offers several memory expansion options for the Rainbow personal computers.

128- and 256-Kbyte Base Memory Modules and Add-On Chip Sets

- **Order Codes:**
  PC1XX-AC *128-Kbyte Base Memory Module*
  PC1XX-AD *256-Kbyte Base Memory Module*
  PC1XX-AY *64-Kbyte Add-On Memory Chip Set*
  PC1XX-AZ *256-Kbyte Add-On Memory Chip Set*

The 128- and 256-Kbyte base memory options and add-on memory chip sets are designed to provide up to 768 Kbytes of additional main memory, for a system total of up to 896 Kbytes on the Rainbow 100B and 100+.

To use these options on the Rainbow 100 (PC100-A) for a system total of up to 832 Kbytes, you need the memory adapter option. (See the Memory Adapter Option description.)

These memory options provide a simple, cost-effective way to expand your Rainbow's computing power, and to keep pace with the future. Eight different increments of additional main memory are available so that you can select and install the memory best suited to your needs.

Here's the way this memory expansion system works on the Rainbow 100B and 100+: A dedicated option slot on the system board holds one base memory expansion module. Choose between the 128-Kbyte module or the 256-Kbyte module. Snap one of these base modules onto the system board for an immediate system upgrade of 128 or 256 Kbytes, respectively. Whichever base memory option module you choose, simply add more memory chips to it for still greater system expansion.

Two different memory chip sets—a 64-Kbyte chip set and a 256-Kbyte chip set—are available for adding more memory to your base module. See the chart below for the possible configurations.

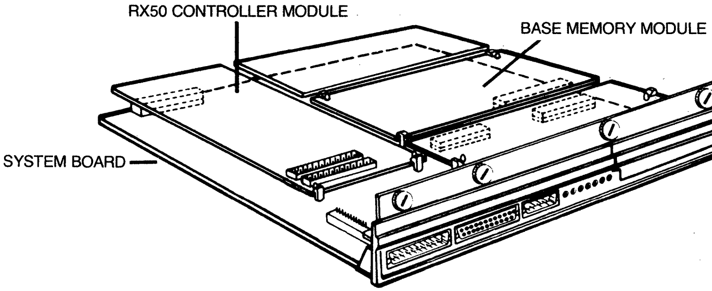
No modifications to the set-up parameters are necessary after installation of an upgrade. Your Rainbow 100B or Rainbow 100+ will automatically display a message on the screen after installation, verifying the total amount of RAM now available.

All memory options include parity detection, which may be used to ensure the integrity of your data and application programs.

Note: These chips are MOS volatile RAMs and could be damaged when they are added to the base modules. Digital recommends that installation be done by an Authorized Digital Dealer or by Digital Field Service. Customers desiring to install their own chips should carefully follow the instructions for installation.

	System Total	
Memory Configurations	**Rainbow 100B, 100+**	**Rainbow 100***
128-Kbyte Base Memory Module Options for PC1XX-AC:		
• Add module "as is"	256 Kbytes	192 Kbytes
• Add one 64-Kbyte chip set to module	320 Kbytes	256 Kbytes
• Add one 256-Kbyte chip set to module	512 Kbytes	448 Kbytes
256-Kbyte Base Memory Module Options for PC1XX-AD:		
• Add module "as is"	384 Kbytes	320 Kbytes
• Add one 64-Kbyte chip set to module	448 Kbytes	384 Kbytes
• Add two 64-Kbyte chip sets to module	512 Kbytes	448 Kbytes
• Add one 256-Kbyte chip set to module	640 Kbytes	576 Kbytes
• Add one 64-Kbyte chip set and one 256-Kbyte chip set to module	704 Kbytes	640 Kbytes
• Add two 256-Kbyte chip sets to module	896 Kbytes	832 Kbytes

*Requires memory adapter option



Installing a Base Memory Module in the Rainbow 100B (or 100+) System Unit

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128-Kbyte Memory Expansion Option (PC1XX-AC) includes:
- Base memory module with eighteen 64-Kbit chips of parity RAM
- Installation guide

256-Kbyte Memory Expanion Option (PC1XX-AD) includes:
- Base memory module with nine 256-Kbit chips of parity RAM
- Installation guide

64-Kbyte Chip Set (PC1XX-AY) includes:
- Nine 64-Kbit chips of parity RAM
- Installation guide

256-Kbyte Chip Set (PC1XX-AZ) includes:
- Nine 256-Kbit chips of parity RAM
- Installation guide

Memory Adapter Option for Rainbow 100

- **Order Code:**
  PC1XX-AK *Memory Adapter Option for PC100-A*

The memory adapter option lets you upgrade your system to include up to 832 Kbytes of parity main memory. This option serves as an interface that allows you to use the 128- and 256-Kbyte memory options and add-on chip sets—described above—on your Rainbow 100 (PC100-A).

To install the memory adapter option, you remove the 8088 microprocessor chip from Rainbow's system board and insert the memory adapter board into the memory option slot on the system board. An 8088 microprocessor on the memory adapter replaces the one removed from the system board. The *Memory Adapter Option Installation and Testing Guide* takes you through the installation process.

Once the adapter option is installed, the additional memory configurations are handled in exactly the same way as described in the section above, except that you are adding the base memory modules to the adapter, rather than directly to the system board.

A menu-driven utility program, included with the hardware, patches the CP/M-86/80 or MS-DOS operating system to take advantage of the additional memory.

The Memory Adapter Option (PC1XX-AK) for Rainbow 100 includes:
- Adapter module with 8088 microprocessor
- Utility diskette
- *Memory Adapter Option Installation and Testing Guide*

192-Kbyte Memory Option

- **Order Code:**
  PC1XX-AB *192-Kbyte Memory Option*

The 192-Kbyte memory module provides an alternative option to upgrade the parity main memory of your Rainbow personal computer.

The memory option module mounts directly in the dedicated memory slot on the system board, with no additional hardware required, and is easily installable without special tools. No switches or jumpers are required.

Note: Evaluate your needs for additional memory carefully before selecting a memory module for your Rainbow personal computer. There is only a single memory expansion slot on the Rainbow system board, so you can mount only one memory expansion module.

The 192-Kbyte Memory Expansion Option (PC1XX-AB) includes:

- 192-Kbyte memory expansion module
- *Rainbow Memory Extension Option Installation Guide*

Storage Options for Floppy-Based Systems

Digital offers storage upgrade options for your floppy-based system, so you can expand your online storage capacity as your business and records grow. The system unit has room to add a hard-disk drive option *or* an additional dual-diskette drive.

A hard-disk drive gives you faster, more convenient access to many of your applications and data files, most of which can be loaded directly onto the hard disk and selected from the keyboard. The hard-disk drive's fast access time also speeds system performance, which is especially useful for disk-intensive tasks such as database sorting or integrating spreadsheets into other documents. A hard disk is required for some applications that have complex programs or that work with large databases.

For added convenience, hard-disk storage can be divided into four partitions, so you can access applications and data files easily and quickly, as well as separate different kinds of programs and data into logical units for simplified file management and backup. You can also copy part of each partition, or all of the hard-disk files, onto removable floppy diskettes for transportability or separate storage.

Digital's CP/M-86/80 V2.0 and MS-DOS V2.05 operating systems include device drivers to support a hard-disk subsystem, as well as a number of features that give you added flexibility when using the hard disk.

If most of your work utilizes just two or three primary applications and you don't require the extra speed of a hard disk, a second RX50 floppy-diskette drive is an alternative to a hard disk for convenience and easy access to applications and data. With a second floppy-diskette drive, you can work more efficiently by distributing two or three of the application programs you use most often, plus a document or data diskette, among the four diskette drives. Each diskette can be loaded directly into main memory from the keyboard, so you don't have to stop work to exchange diskettes. Or you can use the four drives to access related information stored on different diskettes.

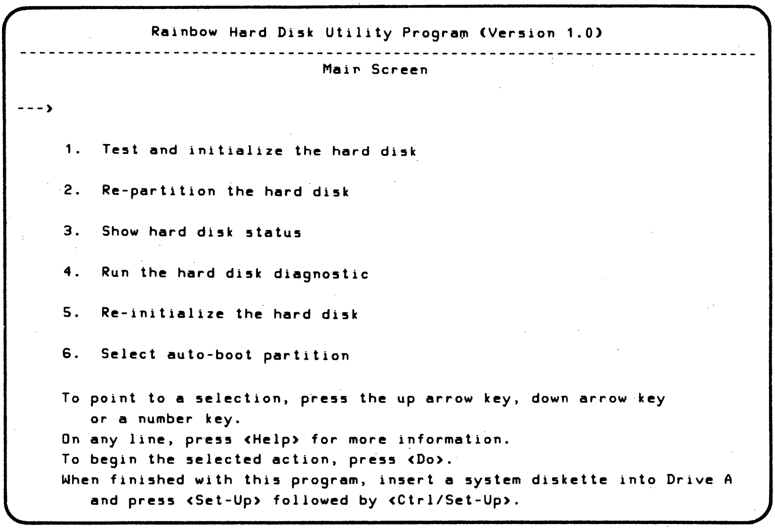
10-Mbyte Hard-Disk Drive Option for Rainbow 100B

- **Order Code:**
  RCD51-BA *10-Mbyte Hard-Disk Drive Option*

This internal hard-disk drive upgrades your Rainbow 100B to a full Rainbow 100+, giving you high-capacity system storage and Winchester boot capabilities, including choice of any partition and auto-boot, with virtually no cost penalty.

The option includes the 10-Mbyte hard-disk drive, a hard-disk controller module, a cable, installation instructions, and a utility diskette that takes you through the procedures necessary to get started using the hard disk. This diskette also includes diagnostic tests. The installation is a straightforward procedure, requiring no more than an hour.

The CP/M-86/80 V2.0 and MS-DOS V2.05 operating systems purchased with your Rainbow 100B include device drivers to support the hard-disk drive. The documentation that comes with these operating systems includes instructions for using the hard disk.



```
              Rainbow Hard Disk Utility Program (Version 1.0)
------------------------------------------------------------------------
                               Main Screen

--->

    1.  Test and initialize the hard disk

    2.  Re-partition the hard disk

    3.  Show hard disk status

    4.  Run the hard disk diagnostic

    5.  Re-initialize the hard disk

    6.  Select auto-boot partition

    To point to a selection, press the up arrow key, down arrow key
       or a number key.
    On any line, press <Help> for more information.
    To begin the selected action, press <Do>.
    When finished with this program, insert a system diskette into Drive A
       and press <Set-Up> followed by <Ctrl/Set-Up>.
```

Main Menu
Winchester Utility Program

10-Mbyte Hard-Disk Drive Option (RCD51-BA) for Rainbow 100B includes:

- 10-Mbyte hard-disk drive
- Hard-disk controller module
- Cable
- *Winchester Disk Option Installation Guide*
- *Winchester Disk Option Utility Program* diskette

5-Mbyte or 10-Mbyte Hard-Disk Upgrade Kit for Rainbow 100 (PC100-A)

- **Order Codes:**
  RCD50-BB *5-MByte Hard-Disk Upgrade Kit*
  RCD51-BB *10-MByte Hard-Disk Upgrade Kit*

With the 5-Mbyte or 10-Mbyte hard-disk upgrade kit for the Rainbow 100 (PC100-A) personal computer, you can easily increase the data storage capacity and access time of your Rainbow 100 without trading in your equipment—and at a very competitive price.

The primary differences between these two hard-disk subsystems are in capacity and access time. The 10-Mbyte hard disk provides storage for up to 5,000 double-spaced pages of text, and its average access time, compared to the 5-Mbyte hard disk, is halved. *See the specifications chart below for a detailed comparison.*

Whichever hard-disk upgrade kit you choose, it comes complete with everything needed to make the upgrade: state-of-the-art winchester-type hard-disk drive (RD50 for the 5-Mbyte kit; RD51 for the 10-Mbyte kit), a disk-controller module, a new power supply to meet the additional power requirements of the hard disk, CP/M®-86/80 V 2.0 and MS™-DOS V 2.05 operating systems, and a supporting documentation kit that includes an installation guide and a system test diskette. You can do the entire installion in about an hour.

Rainbow
100

Minimum Hardware Required	PC100-A with a minimum of 128 Kbytes of memory

RD50 5-Mbyte and RD51 10-Mbyte Hard-Disk Option Specifications

	5-Mbyte Hard Disk	*10-Mbyte Hard Disk*
Height	3.3 inches (8.3 cm)	3.3 inches (8.3 cm)
Width	5.8 inches (14.6 cm)	5.8 inches (14.6 cm)
Depth	8.5 inches (20.4 cm)	8.5 inches (20.4 cm)
Weight	4.5 lbs (2.3 kg)	4.5 lbs (2.3 kg)
Formatted Capacity	5 Mbytes	10 Mbytes
Performance		
Peak Transfer Rate	5 Mbits per second	5 Mbits per second
Rotational Latency	8.33 msec	8.33 msec
Average Access Time	170 msec	85 msec
Media Characteristics		
Density	255 tracks per inch, 7690 bits per inch	345 tracks per inch, 9074 bits per inch
Recording Method	MFM	MFM
Start Time	15 seconds	15 seconds
Stop Time	20 seconds	20 seconds
Rotational Speed	3600 rpm	3600 rpm
Number of Data Platters	2	2
Number of Data Surfaces	4	4
Number of Heads per Surface	1	1

The 5-MByte Hard-Disk Drive (RCD50-BB) Upgrade Kit for the Rainbow 100 includes:

- RD50 5-Mbyte hard disk with controller module
- Power supply
- Documentation kit with installation guide and system test diskette
- CP/M-86/80 V2.0 and MS-DOS V2.05 operating systems

The 10-MByte Hard-Disk Drive (RCD51-BB) Upgrade Kit for the Rainbow 100 includes:

- RD51 10-Mbyte hard disk with controller module
- Power supply
- Documentation kit with installation guide and system test diskette
- CP/M-86/80 V2.0 and MS-DOS V2.05 operating systems

Configuration Notes for all Hard-Disk Options

Whichever hard-disk option you purchase, the disk drive fits in the system box next to the standard RX50 dual-diskette drive. If you have already expanded your storage with an additional floppy drive (Digital RX50-XA), it would have to be removed in order to add the hard disk.

If you install the RCD50-BB or RCD51-BB hard-disk option in your Rainbow 100 personal computer or the RCD51BA in your Rainbow 100B, you cannot add the extended communications option (PC1XX-BB), because the hard-disk controller is mounted on the system board in the same option slot.

Dual-Diskette Drive Option for Rainbow 100 (PC100-A) or Rainbow 100B

- **Order Code:**
  RX50-XA *Dual-Diskette Drive Option*

The RX50 expansion drive option gives you a second dual-diskette drive subsystem, installed internally, that holds two diskettes. Four diskettes can now be inserted into the system simultaneously for a total capacity of 1.6 Mbytes.

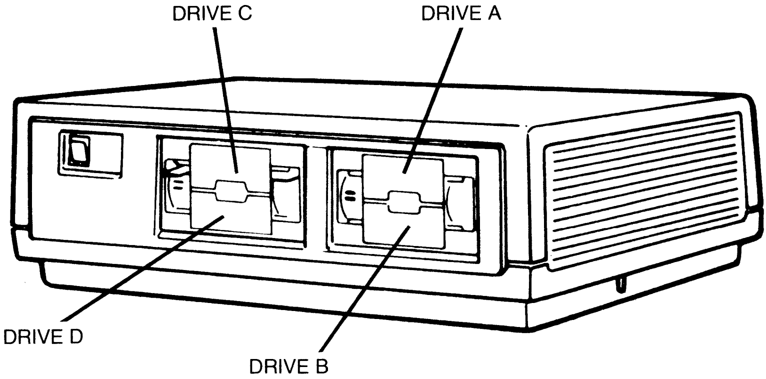
The RX50 dual-diskette drive is identical to the drive that comes standard inside of the system unit: it accommodates two 400-Kbyte diskettes (RX50K) on a single spindle for a total capacity of 800 Kbytes. The RX50 drive requires the same physical space as most single-diskette units yet provides more than twice as much storage.

You install the RX50 expansion drive by simply sliding it into the Rainbow's system unit chassis and plugging in two simple connectors. The entire installation takes less than five minutes.

Each diskette subsystem contains 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 your personal computer to report error status.

The Dual-Diskette Drive Option (RX50-XA) for the Rainbow 100 or 100B includes:

- Floppy-disk drive
- Labels for disk drive
- Ribbon cable
- Standard screwdriver
- *RX50 Installation Manual*


DRIVE C
DRIVE A
DRIVE D
DRIVE B

Rainbow 100B or 100A with Additional Dual-Diskette Drive

Technical-Character Set

- **Order Codes:**
  PC1XX-FA *for Rainbow 100*
  PC1XX-FB *for Rainbow 100B and 100+*

The technical-character set enables the Rainbow personal computer to display technical and scientific characters, including a full set of Greek, mathematical, logic, and component characters (characters that are several lines high). The technical-character set is contained on three ROM chips that replace the system ROM chips located on Rainbow's system board.

The technical-character set ROM chips contain four character sets: USA character set, UK character set, technical-character set, and special line-drawing character set.

It is best to use the technical-character set in conjunction with a text editor or a software package that makes it easy to display technical characters on Rainbow's screen with just a few keystrokes.

On the Rainbow 100B and 100+, you can enter most of the technical characters into your text files by using the Compose Character key on the keyboard. For the remaining technical characters, use a text editor that allows you to enter the appropriate ASCII code directly into the text file. You use this latter method to enter technical characters into your Rainbow 100 text files.

Another way to enter technical characters into your text files is with the shift method. You shift back and forth between the technical-character set and the ASCII character set with escape sequences, using a text editor that accepts control characters. The text editor won't display technical characters on your screen if they are entered this way. To view them, use the Type command from the CP/M-86/80 or MS-DOS operating system.

Once you have entered technical characters into your text file, you can print them on a Letterprinter 100 that supports the technical-character set.

The Rainbow *Technical Character Set Installation and User's Guide* included with the hardware guides you through the installation process. By replacing the standard ROM chips, you lose the multinational character set included with the Rainbow 100B and 100+, and the foreign-character ROM that came with a foreign keyboard Country Kit for the Rainbow 100 (PC100-A).

Rainbow's Technical Character Set (PC1XX-FA or PC1XX-FB) includes:
- Three ROM chips
- *Technical Character Set Installation and User's Guide*

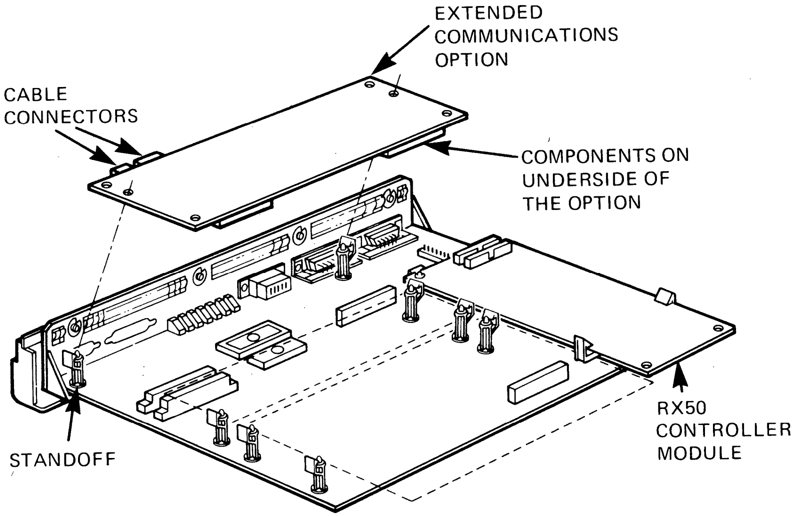
Extended Communications Option for Floppy-Based Systems

- **Order Code: PC1XX-BB**

The extended communications option is a dual-port program-controlled device designed to provide communications capabilities beyond those of the Rainbow personal computer's standard communications port. The self-contained module is capable of handling a wide variety of protocols including asynchronous/byte-synchronous such as DDCMP and Bisync, and bit-synchronous such as SDLC, HDLC, and ADCCP.

One application of the Rainbow's extended communications option allows Rainbow, together with the appropriate software, to communicate with IBM mainframes as an IBM 3270 terminal. Either Bisynch or SNA IBM communications protocols are possible. Using the extended communications option, you can also develop software that communicates with public packet-switching networks (PPSN) that use the X.25 protocol.

The extended communications option provides Rainbow's Intel 8088 CPU with two ports, a high-speed RS422 half duplex interface (port A) and a lower-speed RS423 full/half duplex interface with modem control (port B). These ports allow data to be transferred into and out of Rainbow's memory in a DMA (direct


EXTENDED COMMUNICATIONS OPTION
CABLE CONNECTORS
COMPONENTS ON UNDERSIDE OF THE OPTION
RX50 CONTROLLER MODULE
STANDOFF

Installing the Extended Communications Module in the Rainbow 100B or Rainbow 100 System Unit

memory access) fashion for maximum system performance. This option comes as a single module and is easily mounted on the main system board. It is designed to connect with low- to medium-speed communication lines and allow connection to external devices that can be manipulated under program control.

Note: You can not use the extended communications option if you have, or anticipate purchasing, a hard-disk option or hard-disk upgrade kit. Only one option module fits into the general-purpose expansion slot on the system board–either the extended communications module or the hard-disk controller module.

The Extended Communications Option (PC1XX-BB) for Rainbow 100 and Rainbow 100B includes:

- Extended communications option module
- Communication cable
- Loop-back connector
- Option plate
- Media and Documentation kit
  - *Installation Guide*
  - *Programmer's Reference Guide*
- Diagnostic diskette

System Unit Floor Stand

- **Order Code: PCXXF-BA**

The popular system unit floor stand is a low-cost option designed to "clear the desktop" by housing the system unit of the Rainbow personal computer vertically beside or underneath your workspace, within easy reach.

The floor stand provides a sturdy, attractive enclosure with a broad base which stabilizes and supports the system unit in a position designed to allow proper air circulation for the cooling fan through the stand's vents. A hinged door with a pass-through for cables gives easy access to the rear of the system unit and keeps cables stowed nearly in place.

Placing the system unit inside of the stand is easy and takes only a few minutes.

Rainbow System Unit Floor Stand Specifications	
Height	25.8 inches (65.4 cm)
Depth	17.5 inches (44.5 cm)
Width	7.8 inches (19.7 cm)
Width of base	12 inches (30.5 cm)

Rainbow's System Unit Floor Stand (PCXXF-BA) includes:

- Floor stand

Technical Documentation Kits for Rainbow 100

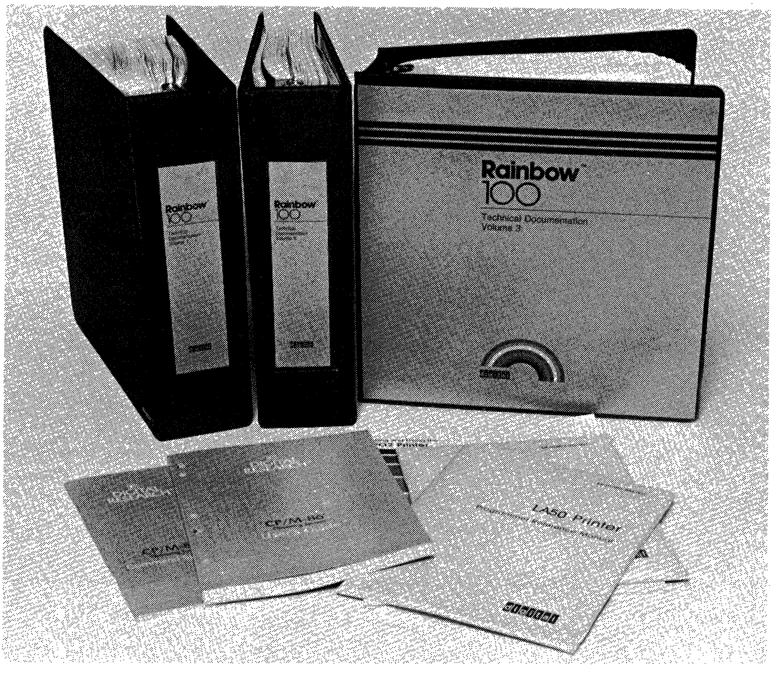
- **Order Codes:**
  QV025-GZ *Rainbow™ MS™-DOS V2.01 Technical Documentation Kit, Complete Set*
  QV043-GZ *Rainbow™ CP/M®-86/80 V1.0 Technical Documentation Kit, Complete Set*

The technical documentation kits for the Rainbow 100 personal computer (PC100-A) are two sets of manuals containing in-depth information about the Rainbow 100's operating systems and system architecture. They will be welcomed by users writing production software or developing add-on hardware for the Rainbow computer, as well as by sophisticated end users who wish to understand the technical details of their machines.

The *Rainbow™ 100 MS™-DOS V2.01 Technical Documentation* kit is a two-volume set of manuals that must be ordered as a set.

The *Rainbow™ 100 CP/M-86/80 V1.0 Technical Documentation* kit is a three-volume set of manuals that are available either as a complete set or individually. See order codes below for individual volumes.

Each volume comes with a three-ring binder and a document divider set.



Rainbow™ 100 MS™-DOS V2.01 Technical Documentation Kit, Volumes 1 and 2 (QV025-GZ) include:

- *Rainbow™ 100 Recommended Software Practices*
- *Rainbow™ 100 An Introduction to Programming the Rainbow 100 Personal Computer*
- *Rainbow™ 100 Terminal Emulation Manual*
- *Rainbow™ 100 PC100 System Specification*
- *Rainbow™ 100 PC100 System Module Specification*
- *Personal Computer Documentor's Guide*
- *Rainbow™ 100 Guidelines for Producing Translatable Products*
- Intel® specifications
  - *8274 Multi-protocol Serial Controller (MPSC)*
  - *Synchronous Communications with the 8274 MPSC*
  - *Asynchronous Communications with the 8274 MPSC*
  - *8273A/8237A-5 High-Performance Programmable DMA Controller*
- *PC100 Rainbow™ 100 System Unit Illustrated Parts Breakdown*
- Letterprinter 100 User Documentation Package
- *Letterprinter 100 Operator and Programmer's Reference Card*
- Letterwriter 100 User Documentation Package
- *Installing and Using the LQP02 Printer*
- *Installing and Using the LA50 Printer*
- *LA50 Printer Programmer Reference Manual*
- MS™-DOS V2.01 operating system reference manuals
  - *User's Guide*
  - *Programmer's Reference Manual*
  - *BIOS Listings*

Rainbow™ 100 CP/M®-86/80 V1.0 Technical Documentation Kit, Volume 1 (QV053-GZ) includes:

- *Rainbow™ 100 Recommended Software Practices*
- *An Introduction to Programming the Rainbow™ 100 Personal Computer*
- *Rainbow™ 100 Terminal Emulation Manual*
- *Rainbow™ 100 PC100 System Specification*
- *Rainbow™ 100 PC100 System Module Specification*
- *Rainbow™ 100 CP/M®-86/80 Software Design & Maintenance Manual*
- *Rainbow™ 100 CP/M®-86/80 BIOS Listings*

Rainbow™ 100 CP/M®-86/80 V1.0 Technical Documentation Kit, Volume 2 (QV054-GZ) includes:

- *Personal Computer Documentor's Guide*
- *Rainbow™ 100 Guidelines for Producing Translatable Products*
- Intel® specifications
  - *8274 Multi-protocol Serial Controller (MPSC)*
  - *Synchronous Communications with the 8274 MPSC*
  - *synchronous Communications with the 8274 MPSC*
  - *8237A/8237A-5 High-Performance Programmable DMA Controller*
- *CP/M®-80 Operating System Manual*

Rainbow™ 100 CP/M®-86/80 V1.0 Technical Documentation Kit, Volume 3 (QV055-GZ) includes:

- CP/M®-86 Operating System reference manuals by Digital Research, Inc.
  - *User's Guide*
  - *Programmer's Guide*
  - *System Guide*
  - *Command Summary*
- Letterprinter 100 User Documentation Package
- Letterwriter 100 User Documentation Package
- *Installing and Using the LQP02 Printer*
- *Installing and Using the LA50 Printer*
- *LA50 Printer Programmer Reference Manual*

Rainbow™ 100 CP/M®-86/80 V1.0 Technical Documentation Kit, Complete Set (QV043-GZ) includes:

- Volume 1
- Volume 2
- Volume 3

Third-Party Hardware and Add-Ons

The following is a list of third-party hardware producers that are currently marketing add-on products for the Rainbow personal computers. This material is presented for your information only and is not intended as an endorsement of any vendor's product. Digital Equipment Corporation does not make, test, sell, or service any of this equipment and will not assume any responsibility if problems occur.

All information, including availability, was supplied by the producers and is taken at face value.

Note: The model number of your Rainbow (i.e., PC100-A, -B2, or -P2) and the configuration of your particular system determines whether or not you can use any given third-party option. Consult the producer for specific information about whether you can use their product on your system, and for all other information pertaining to the product.

VENDOR	**PRODUCT**
AVATAR TECHNOLOGIES, INC. 400-1 Totten Pond Road Waltham, MA 02154 (617) 890-1210	AVATAR PA1000 IBM 3278 PROTOCOL CONVERTER
BRIDGE COMMUNICATIONS, INC. 10440 Bubb Road Cupertino, CA 95014 (408) 446-2981	ASYNCHRONOUS OR SYNCHRONOUS RS-232 TO ETHERNET COMMUNICATIONS SERVER: 8 TO 32 DEVICES. OPTIONAL CONNECT TO IEEE-488, VERSATEC PARALLEL INTERFACE, OR RS-449 SYNCHRONOUS PORTS
	ASYNCHRONOUS RS-232 TO ETHERNET COMMUNCIATIONS SERVER: 4 TO 10 DEVICES OPTIONAL CONNECT TO IEEE-488
CORVUS SYSTEMS 2029 O'Toole Ave. San Jose, CA 95131 (408) 946-7700	EXTERNAL WINCHESTER: 5.9M BYTE 12.1M BYTE 18.4M BYTE
	THE MIRROR, WINCHESTER BACK-UP SYSTEM
	OMNINET
	THE BANK, REMOVABLE TAPE CARTRIDGE
DATA I/O CORPORATION 10525 Willows Road N.E. C-46 Redmond, WA 98052 (206) 881-6444	MODEL 29A UNIVERSAL PROGRAMMER

DATA TRANSLATION, INC. 100 Locke Drive Marlboro, MA 01752 (617) 481-3700	PCDAX/DT311 A/D AND D/A CONVERTER
DIGITAL COMMUNICATIONS ASSOCIATES 120 W. Wieuca Atlanta, Georgia (404) 448-1400	IRMALINE IBM 3270 CONVERTER
HAYES MICROCOMPUTER PRODUCTS, INC. 5923 Peachtree Industrial Blvd. Norcross, GA 30092 (404) 449-8791	SMART MODEM 300 SMART MODEM 1200 SMARTCOM II SOFTWARE
INTERLAN, INC. 3 Lyberty Way Westford, MA 01886 (617) 692-3900	NTS TERMINAL SERVER
INTERMEDIA SYSTEMS 10601 S. Deanza Blvd. #307 Cupertino, CA 95014 (408) 996-0900	R192 KBYTE MEMORY EXTENSION OPTION
MICROSOFT CORPORATION 10700 Northup Way Bellevue, WA 98004 (206) 828-8080	RS232 SERIAL MOUSE
MOUNTAIN COMPUTER, INC. 300 El Pueblo Road Scotts Valley, CA 95066 (408) 438-5650	MODEL 3200 DISKETTE DUPLICATOR
NATIONAL INSTRUMENTS 12109 Technology Blvd. Austin, TX 78727 (800) 531-5066 (512) 250-9119	RAINBOW GPIB-PC: IEEE-488 GENERAL PURPOSE INTERFACE BUS
PERSONAL SYSTEMS TECHNOLOGY 15801 Rockfield Blvd. Suite A Irvine, CA 92714 (714) 859-8871	PERSYST RAINBOW MEMORY EXPANSION MODULE: 64-192K
POLAROID CORPORATION Industrial Marketing 575 Technology Square Cambridge, MA 02139 (800) 225-1618	PALETTE SLIDE GENERATION SYSTEM

QUADRAM CORPORATION 4355 International Blvd. Norcross, Georgia 30093 (404) 923-6666	MICROFAZER DATA BUFFER
QUCES, INC. 3 Quces Drive Metuchen, NJ 08840 (800) 631-5944 (201) 548-2135	HARDRIVE 10-, 16-, 20-, 42-, 57-, AND 84-MBYTE HARD DISK SUBSYSTEMS
STROBE INC. 897 Independence Ave., Bldg. 5A Mountain View, CA 94043 (415) 969-5130	M260 PEN PLOTTER M200 PEN PLOTTER
TPS ELECTRONICS 4047 Transport Palo Alto, CA 94303 (415) 856-6833	PC-350 BAR CODE READER
UNIVATION, INC. 1037 North Fair Oaks Ave. Sunnyvale, CA 94089 (408) 745-0180	MEMORY EXPANSION OPTIONS: DMB 64-192K DMB 192-192K DMB 128-256K DMB 256-256K DMB 448-448K DME 128-KIT DMB 128-192K DMB 384-384K DMB 192-192K 5-MBYTE REMOVABLE HARD DISK WITH RAM: DRD5-64K DRD5-192K DRD5-320K 11M-BYTE INTERNAL HARD DISKS WITH RAM: DHD 11-64K DHD 11-192K DHD 11-320K MEMPROM RAMDISK SOFTWARE UTILITY
VOTRAX DIVISION OF FEDERAL SCREW WORKS 500 Stephensen Highway Troy, MI 48084 (800) 521-1350	VOTRAX TEXT-TO-SPEECH PROCESSOR

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The Rainbow Personal Presentation System A Joint Venture Between Digital and Polaroid

The Rainbow Personal Presentation System is a compact computer image recording system that lets you create 35mm color slides and prints of graphic displays right at your desk.

The Rainbow Personal Presentation System consists of the Polaroid Palette Computer Image Recording System, a Rainbow with at least 256 Kbytes of memory, a graphics option, and compatible graphics application software. A color monitor is recommended.

The Rainbow Personal Presentation System is so fast, you can create a single slide in less than five minutes. A complete slide presentation takes only a few hours—from creating the graphics to shooting and processing the film. Instant color prints are ready within one minute.

The Rainbow Personal Presentation System can save you money. The price of exposures from the Rainbow Personal Presentation System is about 80 cents per slide; a custom slide house might charge you as much as $32 per slide. The Rainbow Personal Presentation System eliminates the high cost of rush-service fees to outside vendors, which can be as high as $100 per slide for last-minute presentation preparation or changes. It also eliminates the hidden cost of missed deadlines and delays.

The system protects confidential information because it never has to leave your office. Information stays right in the Rainbow Personal Presentation System and need not go to a film lab for processing or to an in-house or external slide maker.

The Personal Presentation System is an easy way to increase the impact of your presentations. With color slides, your material can look more impressive than with overhead transparencies.

To use the system, simply attach the 35mm camera unit or the instant print unit to the Palette box. You create the graphic image and control the film exposure with graphics software running on the Rainbow. The exposure settings in the camera unit are set automatically so you don't need to know anything about photographic principles.

With Rainbow's color monitor, you can display up to 16 colors on the screen as you compose your graphics. That's more than enough colors for almost any application and a greater number than other personal computers can display. Because you can display 16 colors on your screen at once, you can preview almost any graphic you create to get exactly the picture you want before exposing the first piece of film.

For those rare applications that require even more colors, the Palette hardware supports up to 72 colors at once with a resolution of 800 by 480 pixels. Applications with sophisticated Palette support, such as GRAPHWRITER, let you create these more complex images at the higher resolution, adapting the screen preview to the 16-color medium-resolution of the Rainbow. The combination of a large color portfolio and high resolution gives a polished, professional look to all graphic and text presentations.

GRAPHWRITER

GRAPHICS COMMUNICATIONS, INC.
200 Fifth Avenue
Waltham, MA 02154
617-890-8778

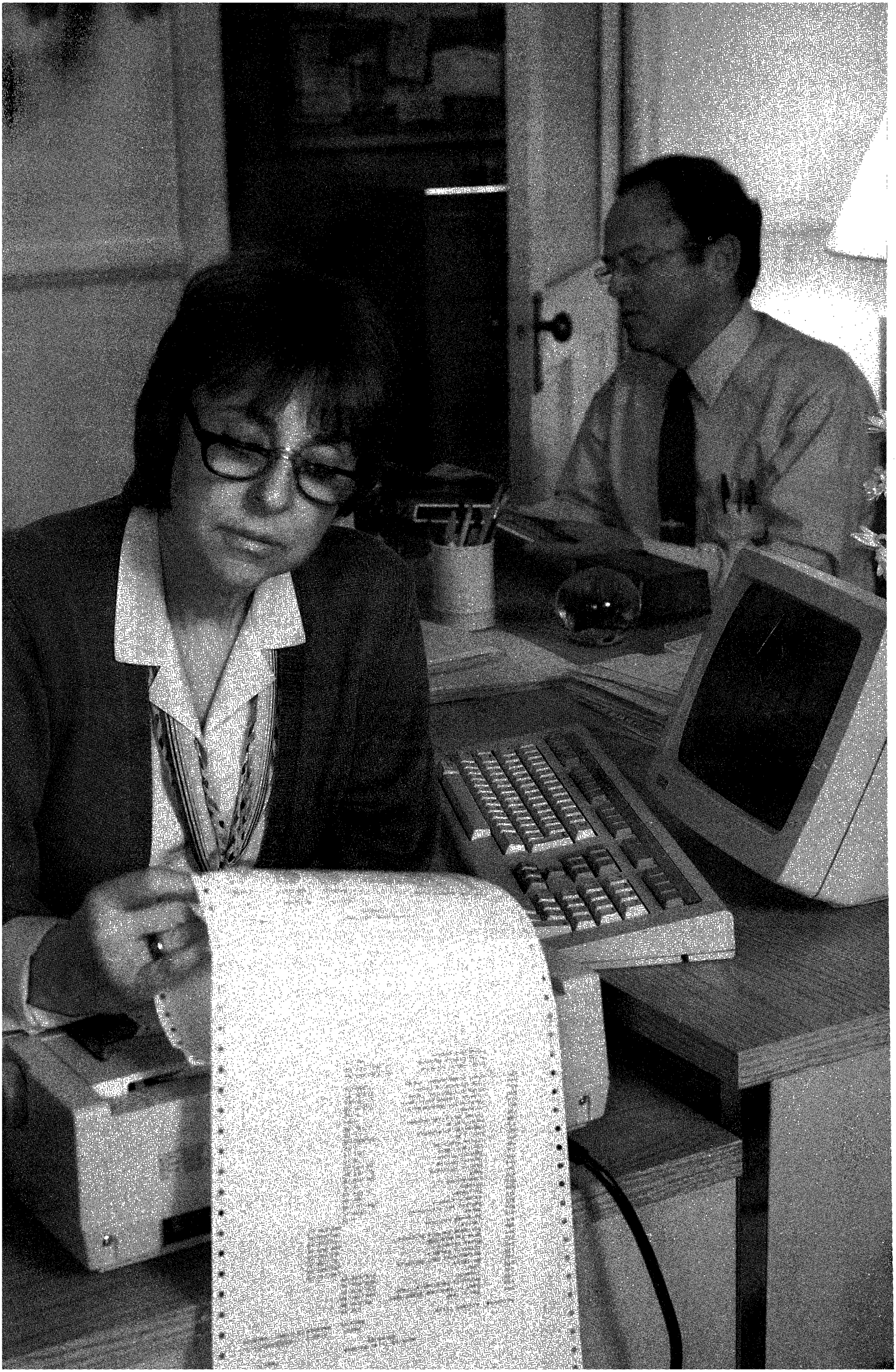
GRAPHWRITER can produce a wide variety of charts. The GRAPHWRITER Basic Set includes formats for pie, bar, line, scatter plot, and word/text charts. The GRAPHWRITER Extension Set has formats for such charts as Gantt, organization, bubble, range, and table. Complete menus, format selection guides, help messages, and function keys make GRAPHWRITER easy to use after only minutes of training. A Palette menu within GRAPHWRITER simplifies the process of turning on-screen images into slides and prints.

CHART-MASTER and SIGN-MASTER

DECISION RESOURCES
21 Bridge Square
Westport, CT 06880
203-222-1974

You can use CHART-MASTER to produce pie, bar, line, scatter area, and high/low/close charts for slides and prints. Charts can be very simple or highly customized through a variety of easy-to-use options. Seven different fonts and 16 type sizes are available for producing titles.

SIGN-MASTER is a text-handling graphics application you can use to produce typeset-quality images for slides and prints. You can produce textual graphics using up to seven different fonts, special symbols, and 16 text sizes—from 10 pitch up to 3 inches tall. It includes special features that let you use italics, intermixed font types, underlining, text placement, and spacing.



Chapter 8

Rainbow's Peripherals and Supplies

Digital Equipment Corporation offers a full range of peripherals and supplies designed especially for the Rainbow personal computer.

This chapter describes Digital's three high-performance printers for the Rainbow: the LA50 Personal Printer, the Letterprinter 100, and the LQPO2 Letter-Quality printer. Digital also offers the LVP16, a six-pen graphics plotter that draws graphics on paper or transparencies with outstanding accuracy.

This chapter also contains a partial listing of other peripherals, such as modems, and accessories and supplies for the Rainbow. For further information, contact your Digital sales representative, Digital Business Center, or authorized Digital retail outlet.

Printer and Plotter Specifications

LA50 Personal Printer	Dot matrix
	100 cps draft quality and 50 cps memo quality
	Full bit-mapped graphics
	40 to 132 columns
	Variable character widths, pitch, and line spacing
	250 printable characters including line drawing and international characters
	User-installable
LA100 Letterprinter 100	Dot matrix
	240 cps draft quality and 30 cps letter quality
	Full bit-mapped graphics
	Courier 10, multinational, and line drawing characters
	Multiple fonts and customized character sets available
	15-inch platen
	User-installable

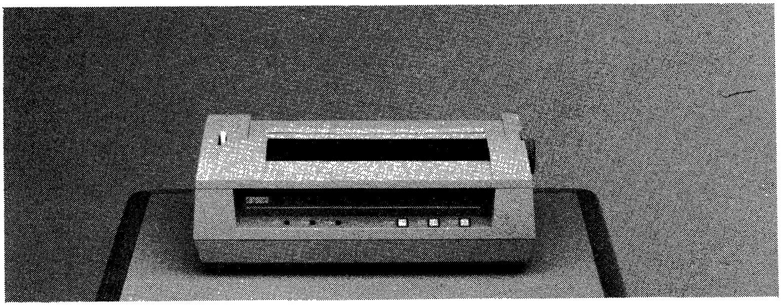
LQP02 Letter-Quality Printer	Daisywheel
	32 cps letter quality
	10- or 12-character pitch, variable line spacing
	Printwheels available in various fonts and character sets
	User-installable
LVP16 Six-pen Graphics Plotter	Six pens
	Paper or transparencies
	10 colors for paper
	7 colors for transparencies
	2 nib sizes
	Accuracy to 0.001 inch
	Speed of 15 inches per second
	User-installable

LA50 Personal Printer

- **Order Code: LA50-RA**

The LA50 Personal Printer is a rugged, compact dot-matrix printer that adds versatile and inexpensive printing to your Rainbow personal computing system.

Because the LA50 has its own microprocessor logic, it can change gears with you as you shift from one job to the next. Use the 100-characters-per-second



bidirectional print setting to make a quick, draft-quality copy of the outline you need for that meeting. Next, slip in your own letterhead stationery and switch to the 50-characters-per-second memo quality for a copy of that important proposal. Memo mode's enhanced printing creates crisper, darker, more fully formed characters. To print out your 13-column spreadsheet on standard 8½-by-11-inch paper, choose 132-column compressed print.

The LA50 underlines, bolds, and prints double-width and compressed characters for headings and emphasis. True descenders (the "tails" on letters like g, j, p, q) make text easily readable. The LA50 also prints quality bit-mapped graphics. You can plot graphs and draw pictures that entail shading and curved lines. All of these characteristics can be changed quickly and easily under program control.

Design flexibility is a plus, too. You can choose the number of characters per inch or the number of lines per inch for each document. Print 10 characters per inch, 80 characters per line for pica, then 12 characters per inch, 96 characters per line for elite. For printing 132 columns on an 8½-inch-wide page, the LA50 prints 16.5 compressed characters per inch. Tabs are spaced eight columns apart, and you can adjust the forms length setting. A multinational character set stored in read-only memory is standard with the LA50, so you don't have to load special character sets or change print mechanisms.

The LA50 printer accommodates office stationery, labels, fanfold "computer" paper, and multipart forms up to a maximum forms thickness of 0.20 inch. Automatic form feed and line feed make aligning the paper easy. The LA50 is ready to take on the jobs you need done, the way you need them done.

The LA50 Personal Printer comes with a standard RS232/RS423 serial interface for direct connection to your Rainbow. It's designed to be placed within easy reach of your personal computer.

You can install the LA50 yourself—all of the connections are easy and straightforward. Maintenance is just as easy. Without using tools you can replace your own snap-in cartridge ribbons and change printheads.

Whenever the power is turned on, the printer performs a number of diagnostic operational checks. Any failure is signalled by control panel indicator lights. You can initiate a printing self-test (swirl pattern) using a button on the front panel.

The LA50 will give the kind of continuous, reliable service you expect from the second largest computer manufacturer in the world.

LA50 Printing Samples (reduced 75%)

LA50 Personal Printer

Professional Features at Low Cost

Digital's LA50 Personal Printer works beautifully with the Rainbow Personal Computer. And this versatile dot-matrix printer fits right on your desk.

VARIABLE PRINT STYLES

Memo Quality - 50 cps for correspondence

The standard 10 cpi for Pica
Printing at 12 cpi in Elite
Compressed print for printing 132 columns on 8 1/2 x 11" paper
Double Width (5 cpi) for headings
Bold printing for emphasis

Draft Quality - 100 cps bidirectional

The standard 10 cpi for Pica
Printing at 12 cpi in Elite
Compressed print (16 cpi) for printing 132 columns on 8 1/2 x 11" paper
Double Width (6 cpi) for headings
Bold printing for emphasis

Bit Map Dot-Addressable Graphics

LA50 Personal Printer Specifications	
Height	5.6 inches (14.2 cm)
Width	16 inches (40 cm)
Depth	11.8 inches (29.5 cm)
Weight	18.7 lbs (8.5 kg)
Printing Area	9 inches (22.5 cm) wide
Printing Speeds	100 characters per second (draft quality)
	50 characters per second (memo quality)
Print Density	7 x 9 dots per inch (draft quality)
	13 x 9 dots per inch (memo quality)
	144 x 72 or 180 x 72 dots per inch (graphics mode)
Print Format	10 (pica), 12 (elite), or 16.5 characters per inch; 5, 6, 8.25 for double-width characters (horizontal pitch)
	6, 8, or 12 lines per inch (vertical pitch)
	80, 96, or 132 print columns
Character Sets	250 printable characters, including 94 ASCII, 81 international characters, 63 Japanese Katakana, and 27 line drawing characters
Buffer Capacity	2,047 characters
Baud Rates	110 to 4,800 bits per second
Interface	EIA, serial RS232/RS423
Parity	Odd, even, mark, or space with 7 data bits per character, selectable;
	Odd, even, or none with 8 data bits per character, selectable
Paper	Cut-sheet office stationery and fanfold
	10 inch (25.4 cm) maximum width
	0.020 inch maximum thickness (multipart forms)

LA50 Personal Printer Specifications	
Power Consumption	180 watts (maximum printing)
Voltage	120V nominal (90 to 128 Vac)
Frequency Range	47 to 63 Hz
Phase	Single
Diagnostics	Power-up electronics self-test User-initiated printing self-test
Power Cord Length	6.6 feet (2 m)
Universal Power Supply	Not Available
Hardware Prerequisite	The Rainbow comes with a BCC04-10 cable for either printer or communication connections. If you require both connections, order another BCC04 cable.

The LA50 Personal Printer (LA50-RA) includes:

- LA50 Personal Printer
- Power cord
- Ribbon
- Pinfeed paper
- *Installing and Using the LA50 Printer*
- *LA50 Printer Programmer Reference Manual*

Letterprinter 100

- **Order Code: LA100-PC**

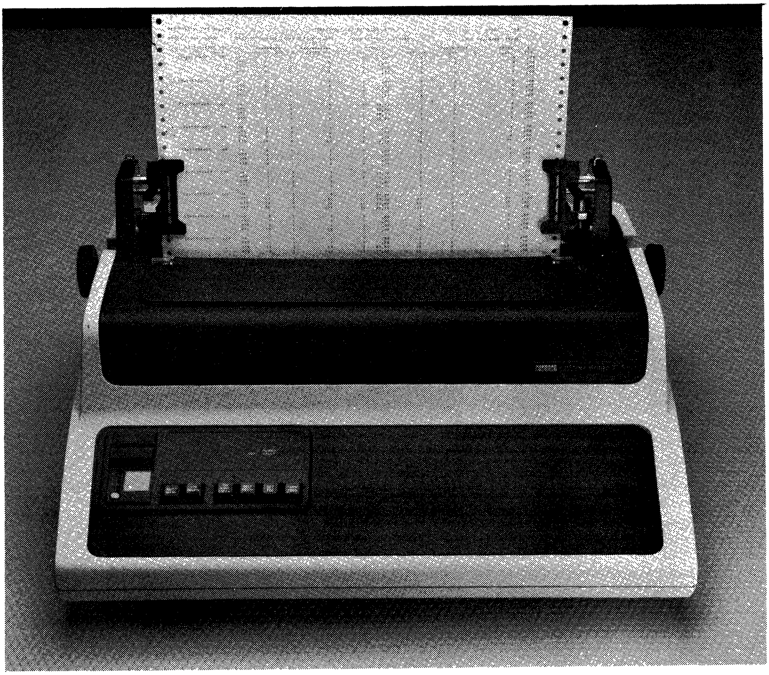
With the Letterprinter 100 you have a top-of-the-line dot-matrix impact printer to work with your Rainbow personal computer. It's about the size of a typewriter, but the microprocessor-controlled Letterprinter 100 (LA100-PC) packs more versatility into that space than any other printer in its class. You get a draft printer, letter-quality printer, and graphics printer all in one unit.

The LA100 printer can produce text in three different print qualities: draft quality, letter quality, and optional memo (intermediate) quality. The LA100 produces really fast, clean draft-quality copy at 240 characters per second using a 7 x 9 dot-matrix bidirectional technique. It overlaps two sets of dots (33 x 18 dot matrix) to produce crisp, letter-quality text at 30 cps. For optional memo quality, it prints a denser dot pattern (33 x 9 dot matrix) at 80 cps.

The LA100 handles graphics beautifully. Use its bit-map dot-addressable graphics capability to faithfully reproduce charts, designs, and pictures you've created on the Rainbow video monitor. You can even combine text with graphics on the same page to add clarity and impact.

With the Letterprinter 100, you can design your documents to best communicate your ideas and to have the greatest impact. You can tell the LA100 how many characters per inch and lines per inch you need. You can change the margins, tabs, and form length just as easily as you switch speeds. The LA100 will store all of these format characteristics, making the setup for a series of documents a one-time job. The LA100 also prints double-width characters and expanded-height capitals for greater effect in labels and headlines.

For maximum print versatility, the Letterprinter 100 can accommodate various character sets and font styles. You can have up to five character ROMs (read-only memory) installed at one time. The LA100-PC's resident capability includes Courier-10 font, Digital multinational character set, and the special (VT100) line drawing character set, utilizing three ROMs. The LA100-PC comes standard with a multifont adapter on the front panel so you can plug in one or two optional ROM font cartridges externally for even greater flexibility. Your choice of optional fonts includes Symbols and English-language fonts for Courier 12,



Printing Samples (reduced 75%)

digital

DIGITAL EQUIPMENT CORPORATION is proud to present the LETTERPRINTER 100. Designed with the famous DECWRITER tradition for performance and reliability, it is the most versatile printer in its class!!

O 240 CPS DRAFT PRINTING

O 30. CPS LETTER PRINTING

O BIT MAP GRAPHICS

For example:

COURIER 10 TYPE FONT	COURIER 10 EXPANDED	DRAFT QUALITY
ORATOR 10 TYPE FONT	ORATOR 10 EXPANDED	DRAFT QUALITY
COURIER 10 TYPE FONT	COURIER 10 EXPANDED	HIGH QUALITY
ORATOR 10 TYPE FONT	ORATOR 10 EXPANDED	HIGH QUALITY

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KEEP TRACK OF SALES TRENDS . . .

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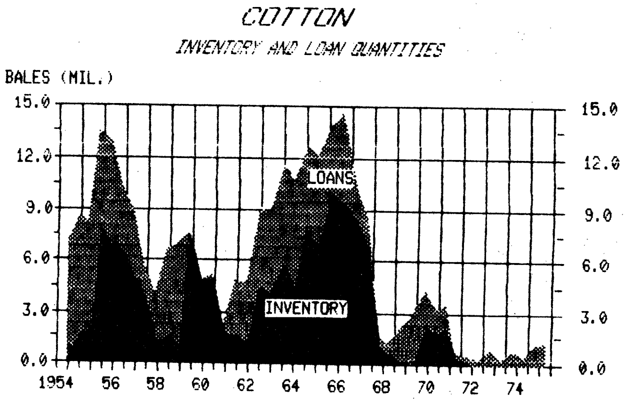


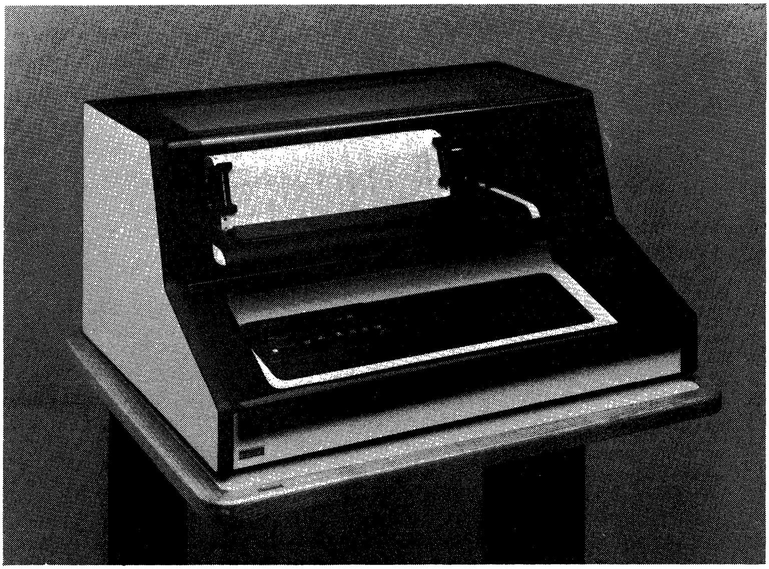
Gothic 10, Gothic 12, and Orator 10. You can change the external fonts any time during printing. When the typeface variety offered by the font options is combined with expanded/compressed character widths and graphics printing, you can easily create many, many different styles. And any combination of styles can be contained within a report, page, line, or even a single word.

The Letterprinter 100 accommodates office stationery, roll paper, fanfold "computer" paper, and multipart forms. Its big, 15-inch carriage is wide enough for spreadsheet work or accounting applications. You can insert single sheets or roll paper as easily as you would feed a typewriter. A tractor feed is standard for the LA100-PC.

A standard EIA interface allows local connection to your personal computer. The LA100 can be connected remotely through modems, and baud rates are switch-selectable.

The Letterprinter 100 is fully modular and contains only four subassemblies. Installation of the printer is very straightforward. When power is turned on, the power-up diagnostic test of the printer's microprocessor checks random access memory (RAM), read-only memory (ROM), and the nonvolatile memory for operation, signalled by control panel indicator lights. The self-test modes permit rapid operational tests. Bell tone indicators let you know when a buffer overflow or head jam occurs. You can replace printheads in seconds. The snap-in cartridge ribbon is also user-replaceable.

This printer provides the ease of use, reliability, and maintainability you expect from Digital printers.



Letterprinter 100 Specifications

Height	7 inches (17.8 cm)
Width	22 inches (55.9 cm)
Depth	15.5 inches (39.4 cm)
Weight	25 lbs (11.3 kg)
Printing Speeds	240 characters per second (draft quality)
	30 characters per second (letter quality)
	80 characters per second (optional memo quality)
Print Density	7 x 9 dots per inch (draft quality)
	33 x 18 dots per inch (letter quality)
	33 x 9 dots per inch (optional memo quality)
	132 x 72 dots per inch (graphics mode)
Print Format	5, 6, 6.6, 8.25, 10, 12, 13.2, or 16.5 characters per inch
	2, 3, 4, 6, 8, or 12 lines per inch
	66 to 217 print columns
	Prints descenders and underlines in all modes
Aspect Ratio	Variable—1.02, 1.12, 1.30, 1.53, 1.83, 2.29, 3.04, or 4.58
Character Sets	Courier 10, multinational character set, and line drawing character set standard
	Other fonts optional
Printhead	9-wire, user-replaceable
Buffer Capacity	400 characters
	4K character option (LA10X-EB)
Baud Rate	50 to 9600 bits per second Split speeds are available
Interface	EIA, serial RS232

Letterprinter 100 Specifications	
Parity	Odd, even, mark, or space; 7 or 8 bits per character, selectable
Paper	Office stationery, rollpaper, fanfold 14.9 inch (37.8 cm) maximum width 3 inch (7.6 cm) minimum width .020 inch maximum thickness (multipart forms)
Power Consumption	55 watts (maximum printing)
Voltage	120V nominal (87-128 Vac range) or 240V nominal (191-256 Vac range), switch-selectable
Frequency Range	47 to 63 Hz
Diagnostics	Power-up self-test
Power Cord Length	8 feet (2.4 m)
Universal Power Supply	Standard, switch-selectable
Hardware Prerequisites	The Rainbow comes with a BCC04 cable for either printer or communication connections. If you require both connections, order another BCC04 cable.

The Letterprinter 100 (LA100-PC) includes:

- LA100 printer
- Power cord
- Ribbon
- *Installation Guide*
- *Operator's Guide*
- *Programmer's Reference Manual*

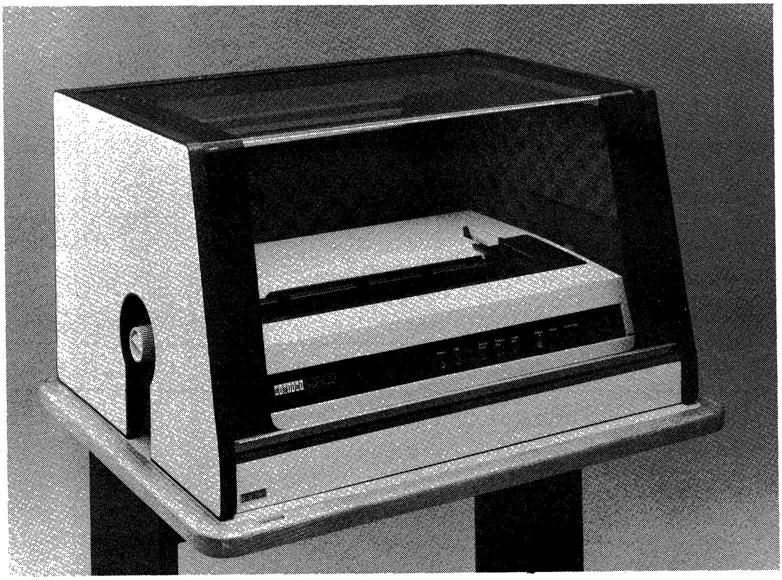
LQP02 Letter-Quality Printer

- **Order Code: LQP02-AA**

The LQP02 Letter-Quality Printer is a versatile desktop printer that uses daisywheel technology. It is ideal for word processing applications or for any job you do on your Rainbow personal computer which demands premium-quality copy.

The LQP02 gives you the quality of type and the print features that you expect from a good office typewriter, and flexibility that few typewriters can match. It prints fully formed characters to produce letter-quality type. Upper- and lowercase letters, symbols, and adjustable settings for margins, tabs, and length are standard. And you can select the spacing between lines (vertical pitch) and the amount of space that each character occupies (horizontal pitch).

The LQP02 produces bold characters with a new technique called "shadow bolding." Each character is struck twice, as in normal bolding. But unlike normal bolding, the second strike is slightly offset from the first. This makes the bold print much more visible, even on photocopies.



The LQP02 prints at a rate of 32 characters per second and uses a bidirectional printing technique that skips over white space to save time.

The LQP02 accommodates office stationery, multipart forms, and labels up to a maximum print width of 13.5 inches. The sheet feeder option handles letterhead stationery automatically. The bidirectional forms tractor permits the use of fanfold paper and forms. The sheet feeder and forms tractor can trigger a visual and an audible indicator that lets you know when the printer has run out of paper.

You can change printwheels as easily as you change paper. Daisywheels are inexpensive, easily interchanged, and available in over 100 type styles and special-purpose fonts.

An EIA interface allows local connection of the LQP02 printer to your personal computer. Rainbow can communicate remotely with the LQP02 through modems; baud rates are switch-selectable.

You can install the LQP02 yourself and easily replace the ribbon cartridges. The printer is modular in design, which makes maintenance, when necessary, easy to perform. Whenever the power is turned on, the printer performs a number of operational checks. The LQP02 has self-test for line feed, and all characters on the printwheel.

All of this adds up to design flexibility and superior document quality in a printer that enhances your Rainbow personal computing system.

A full set of options is available, so you can tailor the LQP02 Letter-Quality Printer to suit your needs.

LQP02 Letter-Quality Printer Specifications	
Height	7 inches (17.8 cm)
Width	25 inches (63.5 cm)
Depth	16 inches (40.6 cm)
Weight	48 lbs (21.8 kg)
Printing Speed	32 characters per second (letter quality)
Print Format	10 or 12 characters per inch, software-selectable
	2, 3, 4, 6, or 8 lines per inch, software-selectable
	132 print columns at 10 characters per inch
	158 print columns at 12 characters per inch
Character Sets	Shannon Text standard
	International, scientific, APL, and barcode character sets available with optional printwheels
Buffer Capacity	256 characters

LQP02 Letter-Quality Printer Specifications	
Baud Rates	75 to 9600 bits per second Split speeds are also available
Interface	EIA, serial RS232
Parity	Odd, even, mark, or space; 7 bits per character, selectable
Paper	Office stationery 15 inch (39.1 cm) maximum width 0.025 inch maximum thickness (multipart forms)
Power Consumption	120 watts, average
Voltage	120 or 240 Vac nominal, switch-selectable
Frequency	60 Hz (range 47 to 63 Hz)
Diagnostics	Power-up self-test
Power Cord Length	6.3 ft (2 m)
EIA Cable Length	25 ft (7.5 m)
Universal Power Supply	Standard, switch-selectable
Hardware Prerequisite	The Rainbow comes with a BCC04-10 cable for either printer or communication connections. If you require both connections, order another BCC04 cable.

The LQP02 Letter-Quality Printer (LQP02-AA) includes:
- LQP02 Letter-Quality Printer with 1 printwheel (Dual Courier)
- EIA cable, 25 foot
- *Installing and Using the LQP02* manual

LVP16 Six-pen Graphics Plotter

- **Order Code: LVP16-AA**

If you want to enhance your written or oral presentations with graphics, use the LVP16 six-pen graphics plotter and your Rainbow personal computer. The LVP16 produces outstanding graphics on transparancies or plain paper at a speed of 15 inches per second with accuracy to 0.001 inch.

You have ten colors to choose from for plotting graphics on plain paper and seven colors for transparencies. The pens are housed in an easy-to-load six-pen carousel. The plotter selects and returns pens from the carousel, capping them after use. The automatic pen-capping keeps pens from drying out so you have consistent, high-quality lines. You can use the same color pens of different widths in your graphics. Thick pens are ideal for headlines and thin pens are most often used for detail.

Several features of the LVP16 make it easy to use. A special light indicates the paper size you have selected. You use the guide control to load paper or transparencies. If you push the "view" button on the front panel of the plotter, the graph you are plotting moves to the front of the plotter so you can see it. Press the button a second time and the plotting continues exactly where it left off.

The LVP16 works best with software that is compatible with the Hewlett Packard HP-7475A six-pen plotter. Not all of Rainbow's graphics software packages support the use of all six of the LVP16's pens.

Designed to sit on the desktop, the LVP16 weighs only 16 pounds (7 kilograms). This highly reliable plotter is customer installable and requires little maintenance.

LVP16 Specifications	
Height	5 inches (12.7 cm)
Width	22.4 inches (56.9 cm)
Depth	14.5 inches (36.8 cm)
Weight	16 lbs (7 kg)
Speed	15 inches per second (maximum)
Noise Level	55 dB average
Media Support	11 inches x 17 inches
	8 1/2 inches x 11 inches
	European A3 (29.7 cm x 42 cm)
	European A4 (21 cm x 29.7 cm)

LVP16 Specifications	
Character Sets	ANSI, ASCII, and 17 international character sets
Voltage	120 v
Frequency Range	48 to 66 Hz
Power Consumption	35 watts (maximum)
Minimum Hardware Required	BCC19-15 cable to connect from Rainbow's communications port to the LVP16.

The LVP16 (LVP16-AA) Six-Pen Plotter includes:
- LVP16 Plotter
- Power cord
- One package (50 sheets) 8 1/2 x 11 graph paper
- One package (50 sheets) 11 x 17 graph paper
- One six-pen carousel
- Ten narrow-width fiber-tip pens (.03 cm) of assorted colors
- Five black wide-width fiber-tip pens (.07 cm)
- *Owner's Manual*
- *Programmer's Reference Manual*
- *Reference Card*

Furniture and Supplies

Whether you're looking for furniture or diskettes, anti-static discharging floor mats or media safes, Digital has the accessories and supplies for you. The complete line of furniture for your personal computers is designed for comfort, aesthetics, and increased productivity. Modems and cables to help your system communicate with other systems are also included.

This section contains a partial listing of the furniture and supplies available from Digital Equipment Corporation. For more information or to order a product, contact your Digital sales representative, Digital Business Center, or authorized Digital retail outlet.

RX50K Diskettes

- **Order Codes:**
  RX50K-10 *for 10 diskettes in library case, with labels*
  RX50K-AJ *for 100 bulk pack (no library cases or labels)*
  RX50K-MT *10 mini-diskettes for library case alone*
  RX50K-DA *for labels alone (300/pkg)*

Digital's RX50K diskettes are 5¼-inch, double-density, single-sided "floppies" made especially for the Rainbow personal computer. They are made to the strict standards of the engineers who designed Rainbow's RX50 dual-diskette drive. These error-free diskettes work with Rainbow's drive to give you long-lasting, top performance.

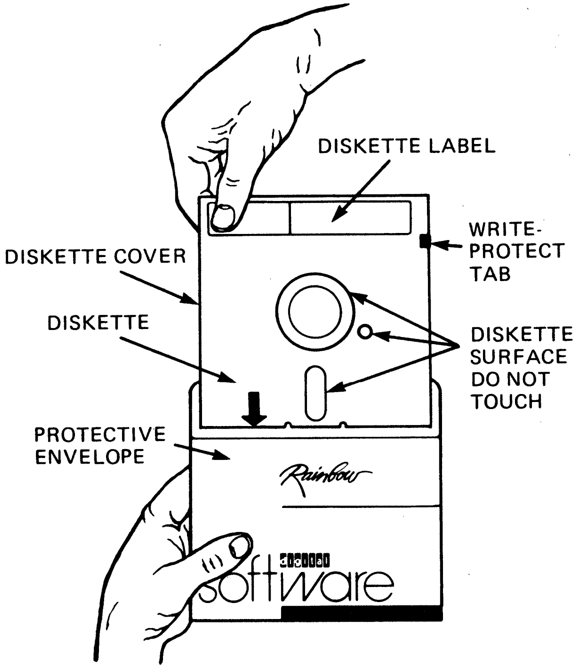
Each diskette has a Digital-developed format of tracks and sectors, applied by precisely-aligned equipment under controlled conditions. This preformatting helps ensure reliable data retrieval when you swap diskettes from drive to drive. An orientation arrow helps you insert your diskettes correctly in the drive. Other features include a write-protect notch to prevent accidental erasure and a smooth surface to extend head life.

For your convenience, you can get diskettes packaged in a library case or a bulk pack—choose whichever is more economical for you. The sturdy gray plastic library case opens for easy desktop reference, and closes like a book for dust-free storage and shipping. Each library case holds 10 diskettes. The 100-diskette bulk package is a lower-cost choice for users who have their own filing systems. The diskette envelopes, which come with all of these packages, have care and handling instructions pictorially and in English.

Always have enough diskettes on hand for data storage and backup.

RX50K Diskette Specifications

Diameter	5¼ inches
Formatted Capacity	409K bytes
Usable Sides	One
Bit Density	5536 flux changes per inch maximum
Track Density	96 tracks per inch
Tracks	80
Sectors per Track	10
Characters (Bytes) per Sector	512

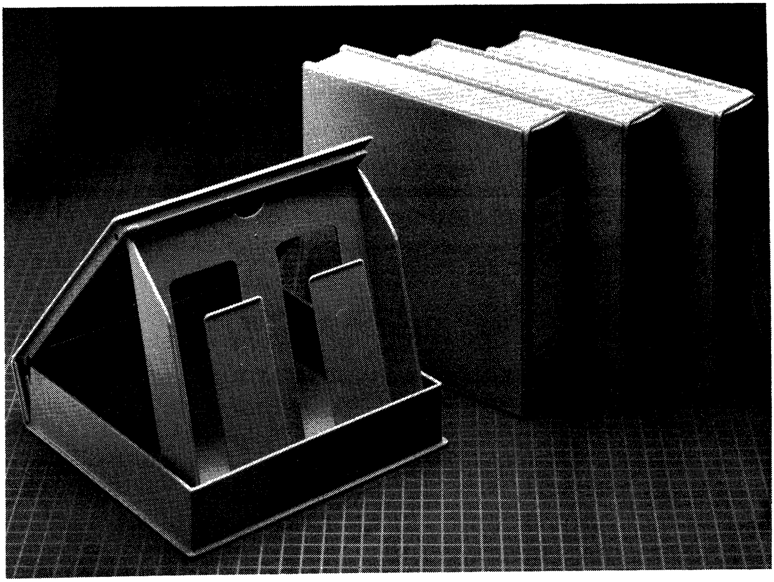

DISKETTE LABEL
WRITE-PROTECT TAB
DISKETTE COVER
DISKETTE
DISKETTE SURFACE DO NOT TOUCH
PROTECTIVE ENVELOPE
Rainbow
digital
software

RX50K Diskette Specifications

Sectoring	Soft (one hole index)
Format	Special Digital RX50K format, written and verified at the factory
Allowable Errors	None
Write Protect	By covering a notch with a supplied label
Orientation Aid	Arrow on diskette lines up with arrow on drive bezel for easy insertion

Diskette Filing and Storage

- **Order Codes:**
  RX50K-DB *Binder for Mini-Diskette*
  RX50K-DC *Desk Box for Mini-Diskette*
  RX50K-DS *Desk Stand for Mini-Diskette*
  RX50K-SF *Suspension Files for 2 Mini-Diskettes (10/pkg)*
  RX50K-DH *Mailers for 5 Mini-Diskettes (10/pkg)*



Digital also offers a variety of filing and storage systems to keep your diskettes organized and safe, and to protect your data from damaging dust. Whether you want to arrange your diskettes for the task at hand or build a library, one of these storage options should meet your needs.

Use the *mini-diskette binder* to store a library of information on your bookshelf or desktop. The vinyl binders let you access data the way you use them—by task. Each binder holds 20 diskettes and is handsomely designed to coordinate with Rainbow accessories.

Keep your diskettes protected, visible, and handy by your Rainbow in the *mini-diskette box.* Index dividers help you organize your diskettes. And the lid can double as a handle. Each box holds 50 diskettes.

With the *mini-diskette desk stand,* the right diskette is always at your fingertips. It holds 30 floppies in non-glare vinyl files. Just flip through to the information you need.

Suspension files, constructed of non-glare, clear vinyl, protect your floppies and provide a convenient storage system. Sliding index tabs simplify referencing and retrieval. You can store both diskettes and hard-copy documents.

Made of heavy-duty corrugated fiberboard with double-wall side and front panels for extra protection, *diskette mailers* are durable but light enough to save on mail cost. It's easy to use the mailers—just fold, lock, tape, and mail!

System Stand

- **Order Code:**
  PCXXF-CD *(for 120 volt system)*

This four-legged gray base is a functional and stable stand for your Rainbow personal computer. The keyboard table's height is adjustable, and a foot switch activates the motorized column (included) to raise and lower the video monitor from five to ten inches above the keyboard table. The swing arm (included) tilts the monitor for proper viewing angles and positions.

Workstation Desk

- **Order Code:**
  PCXXF-CA *(for 120 volt system)*

This 60 x 30 inch gray high-pressure-laminated writing surface with simulated light oak trim and sides provides a durable and spacious work area that is designed to complement and compactly fit the video monitor. Predrilled holes accommodate the electrical assembly (included) on the left or right side, and also allow a second monitor. The system unit fits perfectly into the specially designed molded plastic leg, keeping the system unit off the desktop but conveniently within reach.

Worktable Desk

- **Order Code:**
  PCXXF-CB

You can use the worktable to expand your working area or to hold additional equipment. The worktable evolved from the workstation desk—it is the same table without the motorized column and swing arm or the system unit leg. You can add a Rainbow to the worktable desk by installing the electrical assembly and floor stand.

Electrical Assembly and Hinge

- **Order Code:**
  PCXXF-CC *(for 120 volt system)*

The electrical assembly and hinge can be ordered separately to accommodate an additional monitor. It is a motorized column that enables the smooth height adjustment of the monitor from five to ten inches above table level. The swing arm allows for varied viewing angles and positions (0 to 360 degrees). The hinge is designed to complement and compactly fit the 12-inch monitor.

High-back Chair

- **Order Codes:**
  PCXXF-CM *with arms, light blue fabric*
  PCXXF-CN *with arms, light brown fabric*
  PCXXF-CP *without arms, light blue fabric*
  PCXXF-CR *without arms, light brown fabric*

Digital's chairs are designed to meet differing needs. The charcoal brown, five-star base with casters combines mobility with stability. Pneumatic and manual adjustments for the height and the tilt of the seat allow for maximum comfort and total support to minimize fatigue and increase productivity. This high-back chair is available, with or without arms, in a light blue or light brown flame-retardant nylon fabric.

Mobile File

- **Order Code:**
  PCXXF-CE

The mobile file is a convenient way to store and retrieve diskettes and supplies. The file can be used as a stand-alone unit or placed under the worktable or next to the workstation desk, leaving ample leg room. The mobile file's color and finish complement Digital's complete line of personal computer furniture. This filing system features locking front casters for stability and locking drawers for security.

Monitor Copy Holder

- **Order Code:**
  PCXXF-CH

Designed specifically to fit the 12-inch monochrome monitor, this copy holder keeps source materials where you need them. The gray copy holder snaps easily onto the monitor's right or left side, and adjusts laterally, 90 degrees forward and back, in 10 degree increments. A clip secures up to 100 letter-size sheets of paper, and a sliding line guide helps you keep your place while you work.

Free-Standing Copy Holder

- **Order Code:**
  H980-EF

Digital's free-standing copy holder handles originals up to 8½ x 14⅞ inches and lets you adjust the tilt angle from 15 to 75 degrees for maximum convenience. Special features include a clip to hold up to 100 sheets and a sliding line guide to help you keep your place.

DECmats

- **Order Codes:**

H9850-DA *4 x 6 feet, Driftwood*
H9850-DH *4 x 6 feet, Autumn Bronze*
H9850-DF *4 x 6 feet, Silver Birch*
H9850-DB *4 x 6 feet, Summer Earth*
H9850-DJ *4 x 6 feet, Clear*
H9850-DE *3 x 10 feet, Driftwood*
H9850-DD *3 x 10 feet, Autumn Bronze*
H9850-DC *3 x 10 feet, Silver Birch*
H9850-DJ *4 x 5 feet, Clear*

DECmats are industrial-tough, designer-handsome floor mats that protect your data by relieving electrostatic build-up. Choose from sturdy 100% Zeflon carpet in two sizes and four attractive colors or let your own carpeting show through with a clear mat.

Screen Cleaning Kit

- **Order Code:**

VT1XX-KF

Keeping your video screen clean is simple with Digital's specially formulated screen cleaning kit. The kit contains one four-ounce bottle of anti-ionic cleaning solution and 50 lint-free cloths, for use on glass surfaces only.

Serial Interface Switches

- **Order Codes:**

LQPX2-SW *With 2 female and 1 male connectors in back*
LQPXF-CZ *With 1 female and 2 male connectors in back*

One system can share two printers—or two systems can share one printer. The serial interface switch makes fuller use of your system's resources and helps reduce cabling. You'll find it easy to install and aesthetically designed in silver and brushed aluminum. A two-position rotary switch controls the signal pathways.

DF03 Modems

- **Order Codes:**

DFO3-AA *modem alone*
DF03-AC *modem with autocall*

Digital's DFO3 modems give your Rainbow the ability to "talk" over the phone lines with other computers. A modem gives you access to subscription data resources and timesharing systems and lets you send and receive electronic mail. Designed for use on dial-up telephone network lines, the FCC-approved modems provide either synchronous (1200 bits per second) or asynchronous (300/1200 bits per second) full-duplex communications. The combination of simple, direct connection and the accuracy of medium-speed data transmission is available with or without autocall.

Cables for DF03 Modem and Printers

- **Order Codes:**
  BCC04-10 *10-foot cable*
  BCC04-25 *25-foot cable*
  BCC04-50 *50-foot cable*

Cables to use with your DF03 Modem or to connect your Rainbow to an LA50 Personal Printer, Letterwriter 100, or LQP02 Letter-Quality Printer come in lengths of 10, 25, and 50 feet.

Media Safe & Storage Options

- **Order Codes:**
  H980-FC *media safe*
  H980-FD *fixed shelf (18 ¾*"W x 16"D)
  H980-FE *roll-out shelf (18 ¾*"W x 16"D)
  H980-FF *RK05 wire rack (holds 7 cartridges)*
  H980-FH *RL01/Rl02 wire rack (holds 7 cartridges)*
  H980-FJ *tape hanger bar (holds 20 tapes)*
  H980-FK *diskette tray for fixed shelf (holds 90 diskettes; 2 trays fit on one shelf)*
  H980-FL *microfiche tray (holds 1600 fiche; 3 trays fit on one fixed shelf)*
  H980-FM *diskette insert for roll-out shelf (each row holds 120 diskettes)*

Digital's media safe is UL-approved to 125° F providing the level of protection specified for Digital's RX50 storage media. The safe features a convenient combination locking system and variable storage configurations using optional shelves, racks, trays, and bars.

Media Safe Specifications	
Exterior	
Width	30.8 inches (78.2 cm)
Height	41.0 inches (104.1 cm)
Depth	31.6 inches (80.3 cm)

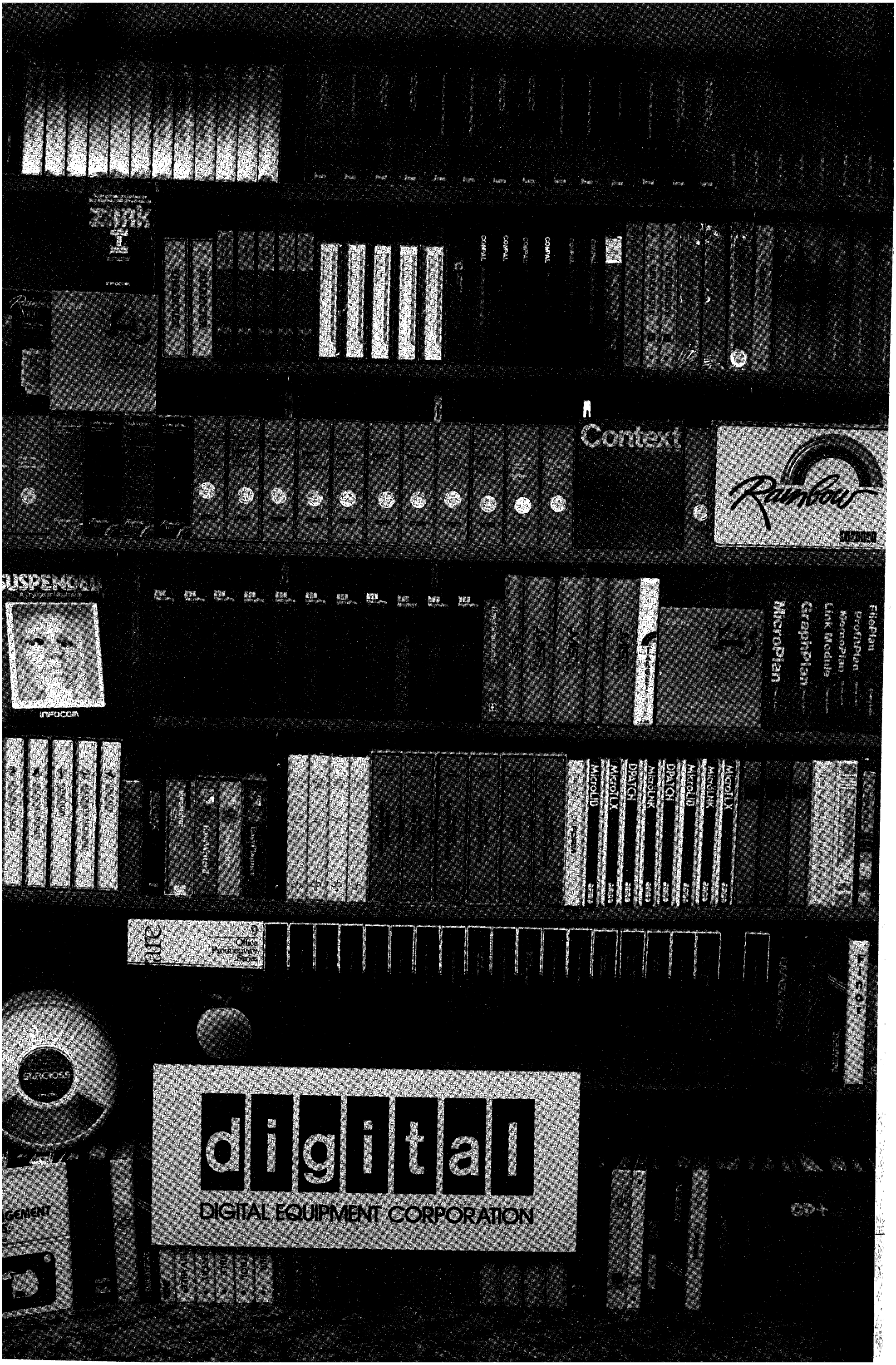
Interior	
Width	19.0 inches (48.3 cm)
Height	27.0 inches (68.6 cm)
Depth	16.3 inches (41.4 cm)
Shipping Weight	830 lbs (373.5 kg)

Diskette Safe

- **Order Codes:**
  H980-FA *diskette safe*
  H980-FB *option package*

Digital's diskette safe is UL-approved to 125° F, providing the level of protection specified for Digital's RX50 storage media. The safe features a convenient key-locking system and holds up to 200 5¼-inch diskettes. An option package is also available to accommodate 5¼-inch diskettes, microfiche, tape, and cartridges.

Diskette Safe Specifications	
Exterior	
Width	22.0 inches (55.9 cm)
Height	21.8 inches (55.4 cm)
Depth	25.4 inches (64.5 cm)
Interior	
Width	9.1 inches (23.1 cm)
Height	12.3 inches (31.2 cm)
Depth	13.4 inches (34.0 cm)
Shipping Weight	390 lbs (175.5 kg)


ZORK
infocom
Context
Rainbow
SUSPENDED
A Cryogenic Nightmare
infocom
MicroPlan
GraphPlan
Link Module
MemoPlan
ProfitPlan
FilePlan
MicroLID
MicroLX
DPATCH
MicroLNK
DPATCH
MicroLID
MicroLNK
MicroLX
9
Office
Productivity
Series
Finar
STARCROSS
digital
DIGITAL EQUIPMENT CORPORATION
GEMENT
CP+

Chapter 9

Rainbow Software

More Than 1000 Applications Available Today!

Software is the key to real solutions for your business and personal computing needs. Because the Rainbow personal computers can run Digital's MS-DOS and CP/M-86/80 operating systems as well as SofTech's UCSD-p and Concurrent CP/M from Digital Research, Inc., you, as a Rainbow owner, can enjoy the best of the industry-standard software worlds.

When you purchase a complete Rainbow system, Digital offers you MS-DOS and CP/M-86/80 together in an economical package, so you don't have to choose between them. These popular operating systems give you access to more than 1000 applications available today for the Rainbow personal computers. And that number continues to grow steadily, ensuring you a broad base of applications from which to choose the best solutions for your needs today *and* tomorrow.

Many of the most powerful applications available can be purchased as Digital products. The Digital Classified Software program offers you a selection of more than 80 high-quality industry-standard applications that are backed by the Digital name and reputation for service and support.

As you read through the descriptions of Digital Classified Software products on the following pages, you'll notice that the packages offered provide a diverse range of applications—from those applicable for use in almost any business or industry to highly-specialized software. You'll also notice the names of many well-known and highly respected software producers, such as the Lotus Development and Microsoft Corporations, participating in the DCS program.

If you don't see a particular application that you need listed among the DCS products, check the software chart that follows. It lists products adapted for Rainbow by third-party vendors as well as DCS products. More than 1000 applications are included, representing many of the best-selling productivity packages in the industry.

Digital Classified Software

Software with a "Seal"

The Digital Classified Software program (DCS) is an evaluation process in which software developed by third-party vendors is tested and then adapted, if necessary, to meet the DCS quality standard and take the best advantage of the Rainbow personal computer's high performance capabilities.

You can purchase DCS products for your Rainbow personal computer through a Digital sales representative, Business Center, or authorized retail outlet.

Applications Advisory Support

Telephone advisory support is available for DCS software with the purchase of an Applications Advisory Support contract for a small monthly fee.

Check the *Software Product Description*, included with each application kit, for the type of optional support available and for the order code.

All the Information You Need to Get Started

Each Rainbow DCS application comes in a sturdy, attractive box containing: the application on an RX50 diskette(s); clear, complete documentation that will guide you in using the application; the *Keys to Digital's Warranty Service* information leaflet; a *Software Product Description;* and a software license.

You Should Also Know...

The minimum hardware requirement for each Rainbow application begins with a complete Rainbow personal computer system—system unit, keyboard Country Kit, and a monitor. Additional hardware and software requirements are listed at the end of each description. However, before purchasing any software product you should also consult the the *Software Product Description* inside of the kit for operating system and other software requirements, including version numbers; minimum hardware, including printer, requirements; Advisory Support Service category and order code; and further information about the application.

Digital licenses Digital Classified Software products. The software programs are normally provided "as is."

The Rainbow DCS Products

Descriptions of the DCS products for the Rainbow personal computers are grouped within the following categories in this section.

Operating Systems
Windowing Systems
Integrated Productivity Packages
Spreadsheets
Equation Solving
Word and Text Processing
Database and Information Management
Financial Management and Accounting
Manufacturing and Distribution
Languages and Programmer Aids
Utilities
Graphics
Communications
Entertainment

Operating Systems

MS-DOS

- **Order Codes:**
  QV062-A3 *MS-DOS V2.05*
  QV066-A3 *MS-DOS V2.05 & CP/M-86/80 V2.0*

MS™-DOS for the Rainbow personal computers is an enhanced implementation of Microsoft's 16-bit disk operating system. MS-DOS provides program execution, file storage, and editing capabilities customized to take advantage of Rainbow's function keys.

This powerful operating system offers sophisticated error-handling functions, time saving utilities such as an MDRIVE facility that keeps programs in memory to speed processing and a "batch" file for commands, a print spooler, and an assembly language compiler.

MS-DOS for Rainbow gives you access to a comprehensive range of industry-standard software applications.

Flexible, Convenient Resources

- MS-DOS reads and writes to Rainbow's hard disk and to RX50 diskettes, and reads 8- and 9-sector IBM single-sided diskettes. You can change disks without resetting the system.
- A "soft" formatter converts RX50 preformatted disks for use with the MS-DOS operating system.
- The MS-DOS "clock" helps you keep track of your work by keeping the time and the date. The DATE command gives you the current date and time. The DIR command displays the exact size of each file as well as the date and time each was last written.

- MS-DOS lets you place commonly-used command sequences into a "batch" file. You create a batch file using the line editor (EDLIN) and execute the entire sequence by typing the name of the file.
- With the PRINT utility, you can work on other computing tasks while files are being printed. Queue as many as eight files to the printer, without waiting for them to print before processing new commands. The PRINT SCREEN utility prints the text on your screen at the touch of Rainbow's Print Screen key.
- The MS-DOS hierarchical directory—or "tree"—structure permits separate groupings of files for different users or projects.
- MS-DOS lets you use "wildcards" for file name searches.
- MS-DOS also includes commands to copy, compare, and check disks; to create, rename, delete, and view files; to display the directory structure; and to create and remove subdirectories.
- A BACKUP program copies files from a hard disk onto your RX50 diskettes. Backup the entire disk or choose individual files for transfer.

Fast and Efficient

- The MDRIVE option lets you allocate unneeded memory to temporarily create another drive, a "virtual" floppy that resides in memory only. Performance with MDRIVE is fast because no reading of or writing to the disk is necessary until the end of your work session.
- MS-DOS keeps a complete file allocation table in memory. Execution is quick because it does not need to read the disk directory each time a read or write is performed.
- Disk space is allocated in small clusters, so you get more data on a disk.

Built-In Editing

- The MS-DOS line editor, EDLIN, takes advantage of Rainbow's function keys to help you create and edit text. Use the (→), Select, Do, Remove, Find, Cancel, Insert Here, and Resume keys. Use these keys outside of EDLIN, too, at the MS-DOS command level.

Sophisticated Error Handling

- A sophisticated error-handling system "traps" errors before data is lost and displays an error message, with a list of options.
- The FORMAT utility marks bad disk sectors so that they will not be written to accidentally.
- MS-DOS keeps a duplicate copy of the disk allocation table to avoid loss of disk file information.

Powerful Programming Features

- MS-DOS includes a relocatable MACRO assembler and a linker program for language compilers and assemblers.
- The software interface for the screen and keyboard can utilize the ANSI escape sequences. This ensures better application transportability.
- A cross-reference utility, CREF, creates cross-reference listings from an assembly-source listing.
- A debugger program provides a controlled testing environment for executable object files.

Documentation

- The MS-DOS operating system comes with a user documentation set, providing well-illustrated, easy-to-understand information on the Rainbow and MS-DOS.
- Additional documentation for software developers or technically oriented users is optionally available in the *Rainbow 100 MS-DOS V2.01 Technical*

CP/M-86/80

- **Order Codes:**
  QV061-A3 *CP/M-86/80 V2.0*
  QV066-A3 *CP/M-86/80 V2.0 & MS-DOS V2.05*

CP/M®-86/80 is one of Digital Equipment Corporation's operating systems for the hard-disk and floppy-diskette drives of the Rainbow personal computer. It combines two powerful industry-standard operating systems, CP/M-86 and CP/M-80, developed by Digital Research, Inc. CP/M-86 runs on Rainbow's Intel 8088® microprocessor, and CP/M-80 is emulated by CP/M-86/80 on Rainbow's Zilog Z80A® microprocessor.

CP/M-86/80 allows you to switch automatically between 8- and 16-bit packages without rebooting or changing system diskettes. The "softsense" feature identifies whether your application is 8- or 16-bit when you load it and routes it to the correct processor.

The CP/M-86/80 operating system offers fast video response, an MDRIVE facility that keeps programs in memory to speed processing, superior memory management, flexible utilities, and I/O device redirection. CP/M-86/80 provides program construction, storage, and editing, along with assembly and program checkout facilities.

Learn Rainbow, an excellent on-screen instruction course, teaches you all you need to know to get started on your Rainbow with CP/M-86/80.

CP/M-86/80 Provides Solutions

- CP/M-86/80 V2.0 gives you media flexibility. The diskette "hard" format utility enables you to use diskettes other than Digital RX50 floppies, as long as they are 5 1/4 inches, single-sided, and double-density (with either 96 or 48 tracks per inch). V2.0 reads Digital's VT180 media, which are 5 1/4-inch, 48-tpi diskettes, and IBM single-sided, 8- or 9-sector diskettes.

File Management

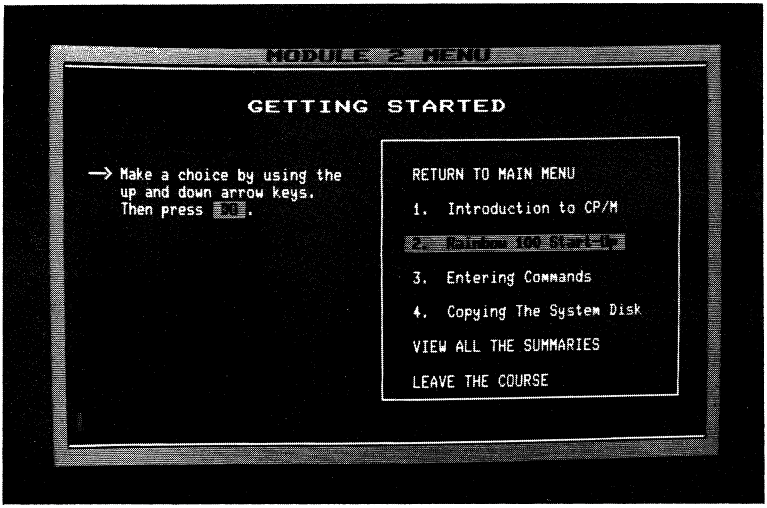
- CP/M-86/80 file management utilities and operating-system calls give you powerful CP/M commands for opening, closing, calling up, identifying, copying, deleting, and managing files.
- The MAINT file management utility lets you look at the contents of a disk with the number of files, records, free space, and write-protected status displayed.
- PIP (Peripheral Interchange Program), a sophisticated file transfer program, transfers files from any part of the system to another. PIP can also display the contents of a file on the videoscreen as it is being transferred, filter out formfeeds, translate uppercase characters to lowercase or vice versa, add line numbers to the destination file, concatenate files, expand tabs to any number of spaces, verify the destination file's correctness, and eliminate parity bits.
- The BACKUP program for the hard disk copies files from the hard disk onto floppy diskettes, and the RESTORE function copies these files back onto the hard disk in the same order they were backed up.

Built-in Editing

- RED, Rainbow's powerful text and file editor, lets you edit text, programs, and files on the screen. You can insert, erase, locate, replace, exchange, move, append, and copy text. To do so, you can use a wide variety of powerful single-letter commands: "i" for insert, "e" for erase, and so on; or use Rainbow's editing keys. The Help function displays an explanation of each of RED's commands.

Fast and Friendly

- The "virtual disk"—or RAM disk—facility uses available system memory for storage, a feature which makes performance very fast indeed. Using the memory drive (MDRIVE) program, memory appears to be a disk drive, so writing data to disk is much faster. Remember to save your data to the actual disk before you turn your system off.
- Rainbow repaints your screen very quickly as you work. Extended console functions provide fast video response, because your data is displayed block by block, rather than character by character.
- A DISK COPY facility makes fast, reliable copies.
- The disk drivers' enhanced error recovery tries to read the data in different ways. Error messages are helpful and easy to understand.
- The extended console functions also give you 16-bit keyboard data which makes function keys, including the Compose Character key, software-programmable. This means that programmers or application programs can use function keys in unique ways.
- CP/M-86/80 V2.0 has clock support that keeps track of the time and date. This feature is available for application programs.



MODULE 2 MENU

GETTING STARTED

→ Make a choice by using the
up and down arrow keys.
Then press DO.

RETURN TO MAIN MENU

1. Introduction to CP/M

2. Rainbow 100 Start-Up

3. Entering Commands

4. Copying The System Disk

VIEW ALL THE SUMMARIES

LEAVE THE COURSE

Easy to Learn and Use

- *Learn Rainbow* on-screen instruction course teaches you fundamentals of personal computing, specifics about Rainbow, and how to use CP/M-86/80, in just a few hours, or less. The modular design lets you learn at your own pace.
- Just press the Help key at the operating system command level for informative, understandable Help messages.

Documentation

- This operating system comes with a user documentation set—*Getting Started* and *User's Guide*—providing well-illustrated, easy-to-understand information on the Rainbow and CP/M-86/80. This documentation is ideal for the first-time user, particulary when used with the *Learn Rainbow* instruction course. For the experienced CP/M and personal computer user, it's a handy reference guide.
- Additional documentation for software developers or technically oriented users is optionally available in the *Rainbow 100 CP/M-86/80 V1.0 Technical Documentation* kit. See the Technical Documentation description in Chapter 7 for order codes and more information.

CP/M-86/80: An 8- and 16-bit operating system	
Prerequisite Software	None
Minimum Hardware Required	128 Kbytes of memory

Integrated Productivity Packages

1-2-3

Integrated Spreadsheet, Information Management, and Graphics

- **Order Code: QA528-C3**

1-2-3™ from Lotus Development Corporation combines the power of three programs for your Rainbow personal computer: a spreadsheet program for "what if" analyses, database commands to organize and select the information you want, and a graphics program for visual representations of your data. 1-2-3 is so fast that you can call up information and graph the results in a matter of seconds. 1-2-3 offers 2048 rows by 256 columns—an exceptionally large work-space for an electronic spreadsheet.

The HELP key provides on-screen instruction for any part of the program. The commands, which are free from computer jargon, are the same throughout the program, saving you the frustration of learning commands from three different sources.

1-2-3 takes advantage of many of Rainbow's special function keys. Since Rainbow's numeric keypad is separate from the arrow keys for cursor movement, you can enter numbers easily. So you'll be able to do your spreadsheet work more

LOTUS
123
LOTUS
1-2-3
LOTUS

efficiently. You'll enjoy the light touch of Rainbow's keyboard and the crisp character display in 80 columns.

You can create bar, pie chart, stacked bar, line, and xy graphs of different sizes with the "/Graph" commands in less than two seconds for visual presentations of your spreadsheets. To use graphs for "what if" analyses, you change a variable on the spreadsheet, touch a key, and draw a graph that displays the results instantly. Once a graph has been created, you can display it in another form in just three keystrokes. 1-2-3 will draw graphs quickly on Rainbow's monochrome monitor or in multiple colors on Rainbow's color monitor.

1-2-3: A 16-bit application	
Prerequisite Software	MS-DOS operating system
Minimum Hardware Required	Graphics Option (PC1XX-BA) 256 Kbytes of memory

GraphPlan-86
Graphics Integrated with Spreadsheet

- **Order Code: QA561-C3**

The GraphPlan™-86 package is powerful graphics software integrated with an electronic spreadsheet for financial professionals. GraphPlan-86 supports a variety of planning activities—such as budgets, forecasts, and "what if" analyses—in businesses of all sizes. Once you have specified the graph parameters, you can flip between spreadsheet and graphic display with a single keystroke. Changes in the spreadsheet are reflected instantly on the graphics screen.

GraphPlan-86 is compatible with the sophisticated financial planning package MicroPlan™-86, so you can load MicroPlan-86 tables directly into GraphPlan-86 to graph the data.

GraphPlan-86, developed by Chang Laboratories, utilizes the GSX™-86 graphics utility that is included with the Rainbow Graphics Option. The GSX-86 software enables GraphPlan-86 to display charts on a wide variety of output devices—including monochrome or color video monitors, dot-matrix printers (LA50 Personal Printer or Letterprinter 100), and pen plotters from Hewlett Packard. When new output devices are supported by GSX-86 in the future, no changes will have to be made to GraphPlan-86.

GraphPlan-86 takes advantage of the Rainbow keyboard. The HELP and DO keys, function keys, editing keys, and the separate numeric keypad are all implemented to make your work easier and more efficient. GraphPlan-86 lets you work on your spreadsheet in 132-column mode, so you can see more information on the screen at once. An online HELP takes you through all operations.

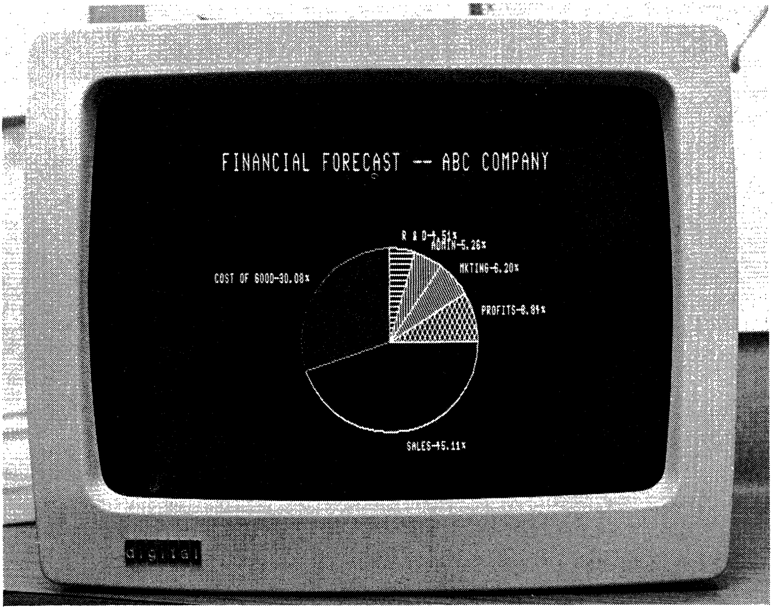
As a spreadsheet, GraphPlan-86 offers the capabilities of a traditional electronic spreadsheet.

In addition, GraphPlan-86 can perform data entry, arithmetic, and logical operations on entire rows and columns of cells, as well as on individual cells. GraphPlan has a very large selection of built-in formulas for percentages, summing, and statistics, plus ranking and sorting of rows or columns to simplify development. You can sort numerical data in ascending or descending order and alphabetize by row or column titles.

GraphPlan-86 initially presents you with a table size of 50 rows by 20 columns. On a Rainbow personal computer with 128 Kbytes of main memory, you can expect to have tables containing up to 3800 data values (or cells). With more memory capacity, you can have larger tables or spreadsheets. GraphPlan-86 automatically uses all available memory for spreadsheets.

GraphPlan-86 lets you display charts of any data from the spreadsheet. You pick the options to customize individual graph formats from a menu. You can graph your spreadsheet data as a pie chart, line graph, horizontal or vertical bars, mixtures of line and vertical bars, and scattergrams. Combine up to six sets of data in one chart.

For pie, bar, and stacked bar charts, you can specify the color for each section and whether it should be filled in solid or hatched, and you can explode pie slices. GraphPlan-86 gives you seven colors to choose from or three shades of grey (or



green or amber, depending on your monochrome monitor model) to display your graphs and charts. For monochrome monitors, there are six different shading patterns to distinguish the different data sets you are graphing. You can get hardcopy printouts of your graphic displays on the dot-matrix LA50 Personal Printer and Letterprinter 100 or on pen plotters from Hewlett Packard.

GraphPlan-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
	GSX-86 (included with Graphics Option)
Minimum Hardware Required	128 Kbytes of memory
	Graphics Option (PC1XX-BA)

Context MBA

- **Order Code: QA551-C3**

Context MBA combines six functions into one integrated software package. The functions include spreadsheet modeling, graphics, database commands, word processing, form design, and telecommunications. With Context MBA, managers can review data quickly to make better-informed decisions. Context MBA manages all of the information you deal with every day thus saving you valuable time.

With Context MBA, you can divide Rainbow's screen into four windows that display the different functions of the program. For example, one window can display a spreadsheet model while the other windows display graphics, forms, or text. This makes it easy to compare or visualize data in different formats.

Spreadsheet

The spreadsheet consists of 999 rows by 95 columns. Each cell may contain graph formulas, text, or custom forms as well as data and mathematical formulas. You can expand a cell to fill the entire screen or a window. This is how you move from one function of Context MBA to another. For example, if you expand a cell containing a graph formula, the screen displays the graph.

Graphics

You can create pie charts, line graphs, bar graphs, area graphs, scatter graphs, and high-low-close graphs using data from a spreadsheet model.

To create a graph, you enter a formula that defines the data and type of graph you want into a cell. You can include legends, patterns, color, titles, axis labelling, and grid formations into these formulas. When you change numbers referred to in the graph formula, the graph changes automatically.

Word Processing

Ideal for managers, the word processor included with Context MBA is very easy to learn and use. It contains 13 commands for functions such as inserting, deleting, and copying text, searching and replacing, moving paragraphs, and more. The print function lets you create reports containing text, graphics, and tables of numbers.

Database

Context MBA lets you design and store a database in the spreadsheet. You can add new information to the database and select the information you want from it easily. And, once you display the database information on Rainbow's screen, you can sort it in many ways.

Forms

With Context MBA, you design custom forms that make adding new information to a database and accessing information very easy. And, you can arrange the data on the form to suit your needs. For example, you can arrange data in a format suitable for mailing labels.

Telecommunications

With the telecommunications commands, you can use one of Context MBA's windows as a terminal to a larger system. You can retrieve information from a company mainframe, for example, for use in a spreadsheet model.

Prerequisite Software	Run-time version of p-System (included)
	CP/M-86/80 or MS-DOS operating system for backup copies only
Minimum Hardware Required	Rainbow personal computer with 256 Kbytes of memory Graphics Option

Spreadsheets

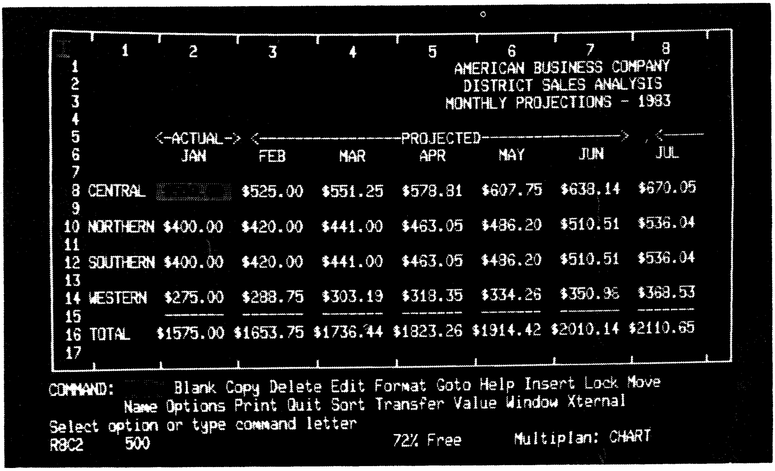
Multiplan-86 and Multiplan

- **Order Codes:**
  QA063-C3 *for CP/M-86/80 version*
  QA588-C3 *for MS-DOS version*

Multiplan™/Multiplan-86 is a general-purpose, interactive tool for people who have to work with tables of numbers for forecasting, planning, budgeting, and analysis. Marketing managers, sales managers, and manufacturing planners can use the Multiplan spreadsheet on their Rainbow personal computer for such things as sensitivity analyses, sales forecasts, financial projections, budgets, schedules, resource plans, trend analyses, cost estimates, and cause-and-effect studies.

Multiplan, developed by Microsoft Corporation, has been tailored to take advantage of the special function keys and display capabilities of the Rainbow personal computer. The electronic worksheet is defined by 255 rows and 63 columns. Multiplan utilizes Rainbow's full 132-character screen display to let you see an entire 12-month cash flow projection, with a 13th column for totals. You simply enter words, numbers, or formulas and Multiplan produces the plan, report, or forecast.

Multiplan is menu-driven, so you don't have to memorize any commands. An on-screen Help prompt displays additional information to lead you through the worksheet process. You can edit Multiplan output with the SELECT word processing program, and SELECT documents can incorporate Multiplan spreadsheet reports.



```
        1        2         3         4         5         6         7        8
 1                                                  AMERICAN BUSINESS COMPANY
 2                                                   DISTRICT SALES ANALYSIS
 3                                                  MONTHLY PROJECTIONS - 1983
 4
 5           <-ACTUAL-> <--------------PROJECTED----------------> , <-----
 6              JAN       FEB       MAR       APR       MAY       JUN       JUL
 7
 8 CENTRAL             $525.00   $551.25   $578.81   $607.75   $638.14   $670.05
 9
10 NORTHERN $400.00   $420.00   $441.00   $463.05   $486.20   $510.51   $536.04
11
12 SOUTHERN $400.00   $420.00   $441.00   $463.05   $486.20   $510.51   $536.04
13
14 WESTERN  $275.00   $288.75   $303.19   $318.35   $334.26   $350.96   $368.53
15          -------   -------   -------   -------   -------   -------   -------
16 TOTAL   $1575.00  $1653.75  $1736.44  $1823.26  $1914.42  $2010.14  $2110.65
17

COMMAND:       Blank Copy Delete Edit Format Goto Help Insert Lock Move
         Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
R8C2     500                          72% Free      Multiplan: CHART
```

When you add or change a value anywhere in the spreadsheet, all related values are modified automatically. By using up to eight "windows", you can view many different parts of the Multiplan spreadsheet at once. Multiplan-86 allows linkage between the worksheet in use and data contained on worksheets that have been filed on the disk. That means you can break down large planning problems into manageable segments with automatic data interchange.

Multiplan and Multiplan-86 Spreadsheet: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system for Multiplan-86; MS-DOS operating system for Multiplan
Minimum Hardware Required	64 Kbytes for CP/M version or 128 Kbytes for MS-DOS version; 256 Kbytes of memory recommended

MicroPlan-86 with Tables Module

- **Order Code: QA282-C3**

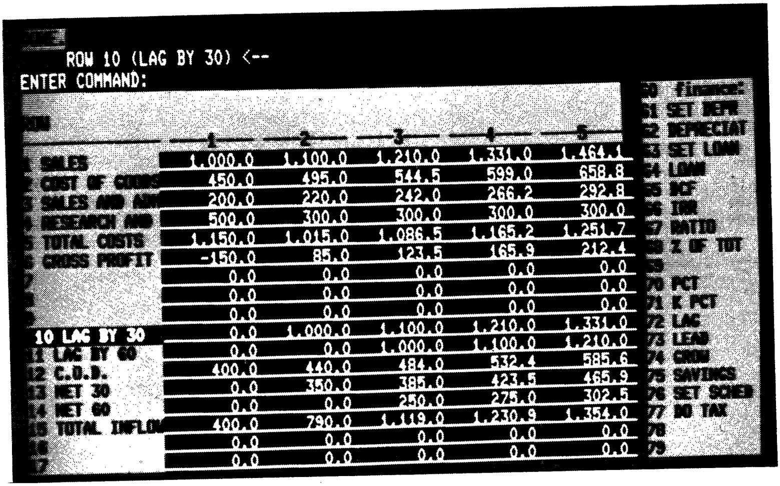
MicroPlan™-86 is a powerful and versatile financial modeling tool for the Rainbow personal computer in the business environment. Although it can be used for simple spreadsheets, MicroPlan-86 contains sophisticated, yet easy-to-use commands and modules that make the work of the accountant or financial analyst less time-consuming.

With MicroPlan-86, you can automatically do complex depreciation, loan analysis, internal rates of return, tax computations, and variance analyses, thus eliminating the possibility of syntax errors when building formulas. Since MicroPlan-86 can work with several tables at once, you can consolidate information from an income statement, balance sheet, and cash flow in one model.

MicroPlan-86 has been tailored to take advantage of the special function keys and the 132-column video display capabilities of the Rainbow personal computer.

The Consolidation/Tables Module of MicroPlan-86 automatically retrieves data from different files for consolidation by extracting only those rows and columns you have specified. The full worksheet size consists of 60 columns by 200 rows, but you can vary this by using the set-up command.

An on-screen menu, with all of MicroPlan-86's commands, is available for fast and easy reference. The built-in Help command provides information for those times when you have forgotten what comes next. MicroPlan-86 is programmable, which means that you can build fully prompting, customized models.



```
   ROW 10 (LAG BY 30) <--
ENTER COMMAND:

              ----1----  ----2----  ----3----  ----4----  ----5----   60 Finance:
1 SALES         1,000.0    1,100.0    1,210.0    1,331.0    1,464.1   61 SET DEPR
2 COST OF GOODS   450.0      495.0      544.5      599.0      658.8   62 DEPRECIAT
3 SALES AND ADM   200.0      220.0      242.0      266.2      292.8   63 SET LOAN
4 RESEARCH AND    500.0      300.0      300.0      300.0      300.0   64 LOAN
5 TOTAL COSTS   1,150.0    1,015.0    1,086.5    1,165.2    1,251.7   65 DCF
6 GROSS PROFIT   -150.0       85.0      123.5      165.9      212.4   66 IRR
7                   0.0        0.0        0.0        0.0        0.0   67 RATIO
8                   0.0        0.0        0.0        0.0        0.0   68 % OF TOT
9                   0.0        0.0        0.0        0.0        0.0   69
10 LAG BY 30        0.0    1,000.0    1,100.0    1,210.0    1,331.0   70 PCT
11 LAG BY 60        0.0        0.0    1,000.0    1,100.0    1,210.0   71 K PCT
12 C.O.D.         400.0      440.0      484.0      532.4      585.6   72 LAG
13 NET 30           0.0      350.0      385.0      423.5      465.9   73 LEAD
14 NET 60           0.0        0.0      250.0      275.0      302.5   74 GROW
15 TOTAL INFLO    400.0      790.0    1,119.0    1,230.9    1,354.0   75 SAVINGS
16                  0.0        0.0        0.0        0.0        0.0   76 SET SCHED
17                  0.0        0.0        0.0        0.0        0.0   77 DO TAX
                                                                      78
                                                                      79
```

MicroPlan-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

SuperCalc and SuperCalc^2

- **Order Codes:**
  QA529-C3 *SuperCalc*
  QA530-C3 *SuperCalc^2*

SuperCalc

The SuperCalc electronic spreadsheet and the Rainbow personal computer take the tedium out of number crunching. With SuperCalc, you can perform "what if" analyses on your spreadsheet information and produce accurate reports quickly so you'll have more time for other tasks.

SuperCalc is ideal for accountants, small-business managers, or corporate planners, but is particularly suited to the professional who works alone. Friendly documentation and a simple menu structure make SuperCalc easy to learn so you can use it in your work only an hour or two after you've started the program.

Among SuperCalc's features are an advanced memory manager that ignores blank cells in the spreadsheet, so your work can take up a larger area without running out of memory; data protection commands that protect entries against accidental changes or deletions; columns can be set as wide or as narrow as you need and you can even "spill" text from one column to the next automatically; split-screen-window commands let you view two areas of your worksheet simultaneously, so you can see formulas and values at the same time; and online help is available at the touch of a key.

If you are using the Rainbow color monitor, SuperCalc will show negative numbers in red and protected entries in yellow. That way you can tell at a glance whether or not your bottom line is in the black!

SuperCalc^2

The SuperCalc^2 electronic spreadsheet offers all of the same capabilities of the SuperCalc program, plus advanced features for more complex spreadsheet applications. The spreadsheet models you create with SuperCalc are compatible with SuperCalc^2 so you can upgrade at any time. The command structure is the same, so you won't need much retraining. The training guide, *10 Minutes to SuperCalc^2*, takes you through the new information quickly.

Using SuperCalc^2, you can build and edit your spreadsheets more quickly than is possible with most other popular electronic spreadsheets; define up to eight new display formats that could include floating dollar signs, embedded commas, percentages, variable decimal places, negative numbers in parentheses, scaling, and zeros as blanks; automatically combine many spreadsheet files into one spreadsheet; share information with dBASE II, the popular database application; hide columns, rows, cells, or blocks with one step when you want to conceal confidential data and formulas; and enter a date into your spreadsheet and reference that date in calculations with the calendar and clock function.

SuperCalc and SuperCalc^2: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

CalcStar

- **Order Code: QA463-C3**

CalcStar®, developed by MicroPro International Corporation, is an electronic spreadsheet package for manipulating textual and numeric data, creating reports, and solving problems. The package automates the production of many financial planning tasks of businesses, such as cash-flow analysis, market-share analysis and planning, sales and profit projections and records, investment-option analysis, and project budgeting and control.

CalcStar gives you complete control with features such as a spreadsheet of 127 columns and 255 rows; complete Help menus available with a single keystroke command; decimal precision; advanced math functions such as linear regression and logarithms; and a scratchpad calculator function.

In taking advantage of the power and performance offered by the Rainbow personal computer, MicroPro has nearly doubled the cell capacity of this version of CalcStar and has fully utilized the Rainbow keyboard. It smoothly and quickly performs scrolling, recalculating, and merging.

Another CalcStar advantage is that it works with MicroPro's family of office productivity tools. Integrate your CalcStar worksheets into WordStar documents and you will have polished and professional documents. MailMerge, MicroPro's list-and-print processing application, can use CalcStar output for personalized form letters that contain financial reports.

CalcStar: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

Equation - Solving

TK!Solver-86 and TK!SolverPacks

- **Order Codes:**
  QA283-C3 *TK!Solver-86*
  QA469-C3 *Financial Management TK!SolverPack*
  QA468-C3 *Mechanical Engineering TK!SolverPack*

TK!Solver-86

TK!Solver™-86, developed by Software Arts, is a complete tool kit and multiple equation-solver that lets you model problems requiring real-number solutions to sets of algebraic equations. A computer programming background is not necessary to use TK!Solver. Models are created using English-language-like statements. You solve models by merely entering values for certain parameters. Alternatively, you can copy and modify models to suit your specific needs.

To create models, you specify "rules" (similar to equations) that relate variables. These relationships are grouped into "sheets," analogous to writing equations on sheets of paper. All models require a rule sheet and a variable sheet, with additional sheets being optional.

You can display two sheets simultaneously, using screen windows, and you can save individual sheets or whole models on disk for future use. TK!Solver-86 will exchange your known variables for unknown variables so that you don't have to reformulate the equations. TK!Solver will manipulate the equations to solve for all possible unknown variables.

TK!Solver's HELP key provides information on various commands and functions. The editor mode lets you correct or modify existing rules, so you can change data easily. The documentation includes a handy card and poster that list TK!Solver's commands and built-in functions for quick reference.

You can get output in tabular and graphic form for varied presentations, viewing formatted output on the screen and then sending it to the printer with a single keystroke.

TK!Solver also has two optional programs: Financial Management TK!Solverpack and Mechanical Engineering TK!Solverpack, with formulas tailored specifically for those applications.

Financial Management TK!SolverPack

Financial Management TK!SolverPack™, which is used with the TK!Solver-86 program, is a series of models designed for financial analysis.

The Financial Management TK!SolverPack, a collection of TK!Solver templates, takes advantage of TK!Solver's features to speed your work in model building (see preceding description of TK!Solver).

Financial Management TK!SolverPack models include: Compound Interest Calculations; Level Debt Service Analysis; Net Present Value/Internal Rate of Return; Bond Swap Analysis: Anticipated Spread Swap; Bond Refunding Decision; Convertible Debt Analysis; Financial Statement Ratio Analysis; Analysis of Operating and Financial Leverage; Cost of Equity Capital: Capital Asset Pricing Model; Cost of Equity Capital: Dividend Growth Model; Black-Scholes Option Pricing; and Option Investment Performance.

Mechanical Engineering TK!SolverPack

Mechanical Engineering TK!SolverPack™, which is used with the TK!Solver-86 program, is a series of models designed to solve selected common problems in the field of mechanical engineering.

The Mechanical Engineering TK!SolverPack, a collection of TK!Solver templates, takes advantage of TK!Solver features to speed your work in model building (see preceding description in TK!Solver).

Mechanical Engineering TK!SolverPack models include: Elastic Bending: Two-point Supported Beam; Elastic Bending: Cantilever Beam; Elastic Torsion Beam; Cylindrical Wall Heat Transfer; Planar Wall Heat Transfer; Thermal Effectiveness of Fins; Fluid Flow in Pipes; Hydraulic System Analysis/Design; Hydrostatic-Hatch Design; Area Moment of Inertia; Mohr's Circle; Helical Spring; and Natural Frequency of Vibration.

TK!Solver-86 and the TK!SolverPacks: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system
	TK!Solver™-86 is required for the TK!SolverPacks
Minimum Hardware Required	128 Kbytes of memory

Word and Text Processing

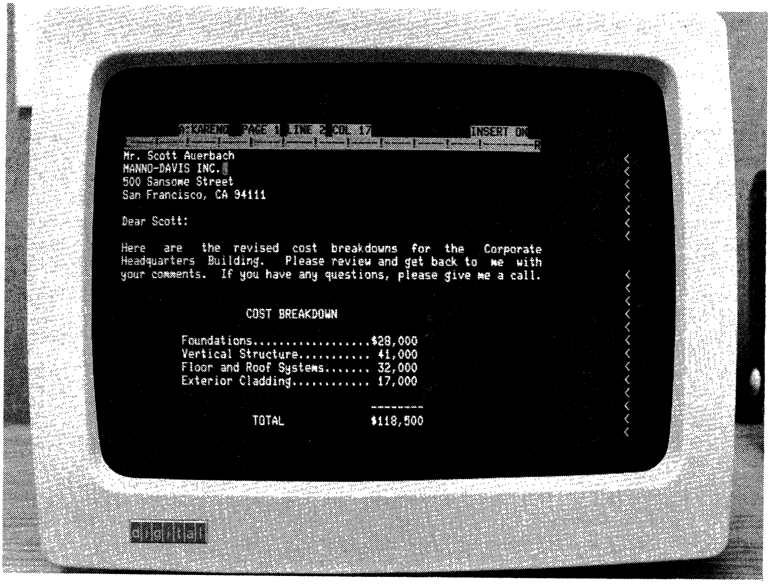
WordStar Word Processing System and Options

- **Order Codes:**
  QA460-C3 *WordStar*
  QA462-C3 *SpellStar*
  QA461-C3 *MailMerge*
  QA570-C3 *StarIndex*

WordStar

WordStar® V 3.3, developed by MicroPro International Corporation, is a powerful production word processing application that is easy to learn and use. Screen-oriented, with a set of menus acting as guides, this system is designed for both beginners and professional users. WordStar gives you simultaneous editing and printing, automatic line wrap, text merge from another file, flexible formatting, easy reset of margins and tabs, column and block move, automatic search and replace, and decimal tabbing.

With WordStar, you can choose whatever level of assistance you require. If you want to merge text from another file, it can be done with a few simple keystrokes. And, WordStar has automatic backup file creation, so you won't lose an important document.



```
         B:KAREN  PAGE 1 LINE 2 COL 17                INSERT ON
L----!----!----!----!----!----!----!----!----!----!----!-------R
Mr. Scott Auerbach                                                  <
MANNO-DAVIS INC.                                                    <
500 Sansome Street                                                  <
San Francisco, CA 94111                                             <
                                                                    <
Dear Scott:                                                         <
                                                                    <
Here  are  the  revised  cost  breakdowns  for  the  Corporate
Headquarters  Building.  Please review and get back to  me  with
your comments.  If you have any questions, please give me a call.   <
                                                                    <
                                                                    <
                COST BREAKDOWN                                      <
                                                                    <
         Foundations..................$28,000                       <
         Vertical Structure........... 41,000                       <
         Floor and Roof Systems....... 32,000                       <
         Exterior Cladding............ 17,000                       <
                                                                    <
                                      --------                      <
                 TOTAL                $118,500                      <
                                                                    <
```

WordStar is perfect for extensive production typing, boilerplating, and report production. For legal, accounting, publishing, or any professionals who have a large quantity of typing, WordStar provides the needed support.

WordStar has been tailored to take advantage of the special function keys on the Rainbow personal computer. You can even reprogram many of the function keys to tailor WordStar to your specific needs.

Among WordStar's other features: comprehensive documentation through a step-by-step training guide, summary guide, menus, and command cards that supply you with quick and easy references; menus that can be adjusted for both new and experienced users; horizontal and continuous scrolling that lets you view and work on the entire document; decimal tabbing, headers, and footers can be automatically positioned for right and/or left alternate pages; ability to change the number of characters and the character height of each line; and print exactly what is displayed on the screen.

WordStar is compatible with the other MicroPro products: if you want to transfer names and addresses from MailMerge® or allow SpellStar® to proofread your documents, you can do it with easy-to-follow instructions.

SpellStar

SpellStar®, MicroPro International Corporation's spelling proofreader for WordStar, locates spelling and typing errors in your text. SpellStar proofreads your copy and checks it against a 20,000-word dictionary based on the *American Heritage Dictionaries* published by Houghton Mifflin Company. You can also create your own dictionaries, adding specialized words you use frequently.

With its large dictionary, SpellStar is also fast. When SpellStar comes across a word not in its dictionary, it flags the word and gives you a choice of leaving the word as is, changing the word, or adding the word to your dictionary.

SpellStar is an optional software package that, when purchased and used on the Rainbow Personal Computer, acts like an option of WordStar. From the WordStar Opening Menu, select the SpellStar option and let MicroPro's spelling proofreader check your work as you type.

MailMerge

MicroPro International Corporation created MailMerge® to work with your WordStar application. This WordStar option, a multipurpose file merging program, lets you produce customized form letters for mass mailings, assemble documents from boilerplate paragraphs, and print mailing labels in three columns—all at a fraction of the time and expense of traditional methods.

MailMerge can merge variable data from a series of files on a disk. When you want to combine a mailing list from one file with a form letter from another file, MailMerge can do it for you.

MailMerge belongs in law offices, sales and distribution operations, finance and accounting departments, or any organization that requires boilerplating like report production and distribution or the creation and mailing of personalized form letters.

MailMerge will work with Digital's LA50 Personal Printer.

MailMerge, working with WordStar: merges variable data into text automatically and continuously; allows you to create a command file to chain print all the chapters of a book without opening and editing each of the files; prints one file after another without limit on the number; prompts you to change disks so that even files from different disks can be chained together;prints one file inside of another file for up to seven levels of nested files; and links WordStar to MicroPro data products.

StarIndex

StarIndex™ software for the Rainbow personal computers is a text organizing and formatting tool created for use with MicroPro's WordStar word processing package. In combination with WordStar, StarIndex provides a low-cost but powerful solution for anyone with sophisticated document-production requirements such as indexing and creating tables of contents or specialized design formats. Such features as automatic repagination—as text is manipulated—of indexes, tables, and pages, make StarIndex invaluable to anyone who must deal with formal presentations of lengthy or complex documents or information retrieved from databases.

StarIndex, working with WordStar: allows creation of alphabetized indexes with subentries; creates tables of contents with up to four levels of emphasis and automatically numbers sections; creates lists of tables and figures, and numbers them in the text; numbers pages, paragraphs, sections, appendices, figures, and tracks them as insertions and deletions are made; and includes a style program for creating and storing personal formats for printing and numbering pages, chapters, sections, and headings.

WordStar and WordStar Options: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system
	WordStar (required for SpellStar, MailMerge and StarIndex)
Minimum Hardware Required	128 Kbytes of memory

SAMNA WORD II

Word Processing

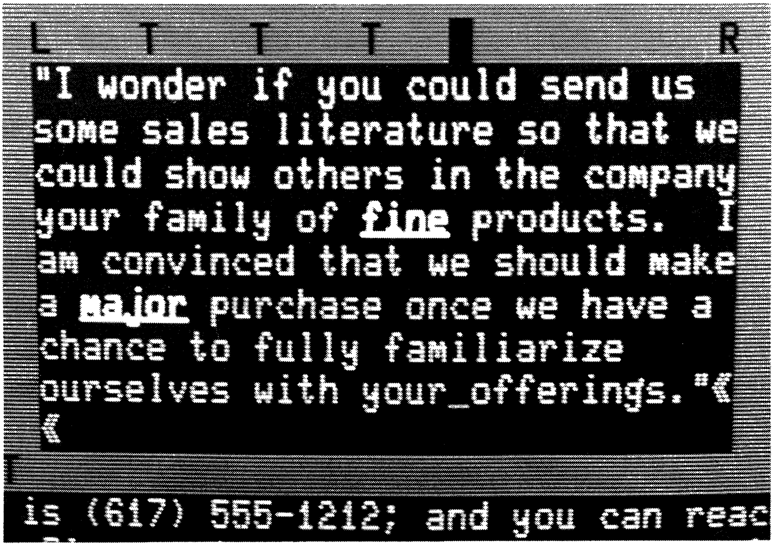
- **Order Code: QA589-C3**

SAMNA WORD™ II brings business word processing to the Rainbow personal computer with easy-to-use features as sophisticated as those of a dedicated word processor. SAMNA WORD II is easy enough for managers to use right away, yet powerful enough to satisfy the most demanding secretaries.

SAMNA WORD II uses function keys and mnemonics rather than menus or command codes. There are no clumsy markers or multikey commands to deal with. And once you start a command by touching one of Rainbow's function keys, SAMNA asks you a short question to get you to the next keystroke.

The prompts at the command level are actually the first of three levels of online "help." A second level of "help"—a step-by-step guide through the function—comes on automatically if you make a mistake. Press the HELP key for the third level of "help," a complete description of the command. Stick-on labels and a keyboard strip come with the package, so you can identify the function keys.

SAMNA WORD II reduces the effort involved in working with statistical documents. For example, you can use the numeric tab feature to automatically align numbers. The horizontal scroll feature creates a wide "page" of up to 132 characters. And, you can electronically fold a wide page in the middle to make it easy to compare columns on your screen.



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"I wonder if you could send us
some sales literature so that we
could show others in the company
your family of fine products. I
am convinced that we should make
a major purchase once we have a
chance to fully familiarize
ourselves with your_offerings."«
«
is (617) 555-1212; and you can reac
```

Among SAMNA's other capabilities: have two files displayed on the screen simultaneously, each operating independently of the other; move or copy a character or a block of text within or between documents, and SAMNA WORD II automatically closes any gap; perform functions automatically as you type: Bold, Underline, Center, Justify, Capitalize, Insert, Indent, Superscript, Subscript, and Double Underline; check quickly through your text for hyphenation possibilities to tighten up right margins; indent a line or a paragraph of text for typing outlines or numbered lists; type a footnote in any format you like; and stack up to five consecutive print jobs to save time.

SAMNA WORD II: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	256 Kbytes of memory

SELECT
Word Processing

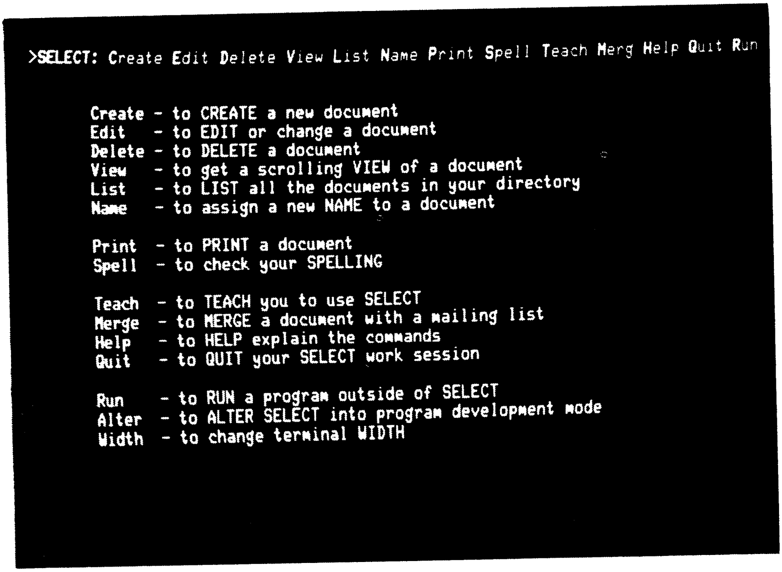
- **Order Code: QA061-C3**

SELECT™ is an easy-to-learn yet sophisticated screen-oriented word processing application with special emphasis on the needs of inexperienced and occasional word processing users. SELECT combines a word processor, spelling checker, mail merge, and on-screen tutorial program in one package. It's ideal for busy professionals who need an easy word processing application to produce reports, letters, lists, and notes right on their personal computers. Because it is self-teaching, SELECT is also particularly valuable for the first-time user who doesn't have the time to attend lengthy training courses but who still needs a powerful word processor.

SELECT has been tailored for the Rainbow personal computer—it takes advantage of Rainbow's special function and editing keys and screen display capabilities.

Select is easy to learn and easy to use: the "Teach" on-screen instruction makes SELECT easy to learn, in as little as 90 minutes; the HELP key provides additional information right on the screen; and the simple menus and prompts lead you through the program.

Select's editing features include the ability to: insert, erase, move, copy, exchange, search for, replace, and locate text within a document;move the cursor freely anywhere you choose on the screen while you're editing with Rainbow's arrow keys; work with more than one document at a time; store up to 25 pieces of text—anything from phrases to whole pages—and recall them at any time with a



```
>SELECT: Create Edit Delete View List Name Print Spell Teach Merg Help Quit Run

        Create - to CREATE a new document
        Edit   - to EDIT or change a document
        Delete - to DELETE a document
        View   - to get a scrolling VIEW of a document
        List   - to LIST all the documents in your directory
        Name   - to assign a new NAME to a document

        Print  - to PRINT a document
        Spell  - to check your SPELLING

        Teach  - to TEACH you to use SELECT
        Merge  - to MERGE a document with a mailing list
        Help   - to HELP explain the commands
        Quit   - to QUIT your SELECT work session

        Run    - to RUN a program outside of SELECT
        Alter  - to ALTER SELECT into program development mode
        Width  - to change terminal WIDTH
```

numerical key(s); check your spelling with an expandable 10,000-word built-in dictionary; incorporate financial spreadsheets created with Multiplan™ within SELECT documents; edit ASCII files; and electronically transfer SELECT documents, using poly-COM™, to other computer systems.

With a few of SELECT's document formatting capabilities, you can: add emphasis to your documents with bold, underline, superscript, subscript, and overstrike; edit and print 132 columns; and vary printing sizes or fonts within a line.

SELECT's advanced printer formatting takes advantage of the special features of the LA50 Personal Printer, the Letterprinter 100, and the LQP02 Letter Quality Printer, supporting variable character sizes and vertical pitches, and font styles. Support for non-Digital printers is optionally available.

SELECT: A 16-bit application

Prerequisite Software	CP/M-86/80 or MS-DOS operating system
Minimum Hardware Required	64 Kbytes of memory for CP/M-86/80 version; 128 Kbytes of memory for MS-DOS version

The BENCHMARK Word Processing System and Options

- **Order Codes:**
  QA426-C3 *Word Processor*
  QA428-C3 *Spelling Checker*
  QA427-C3 *Mail List*

The BENCHMARK Word Processor

The BENCHMARK® Word Processor (V3.0), developed by The Benchmark Corporation, is a full-function word processor designed for high-production office environments. The BENCHMARK on the Rainbow personal computer is appropriate for single users or small and medium-sized office environments. Even beginners or infrequent users can use the full power and sophistication of The BENCHMARK almost immediately. It's so easy to learn to operate, one day or less of self-training is all that's required for most people to catch on to even the most advanced BENCHMARK features and functions.

The BENCHMARK Word Processor doesn't restrict you to one type of word processing: you can draft and edit letters, novels, financial statements, statistical tables, manuscripts, technical and legal documents, and forms. And it takes advantage of Rainbow's superb keyboard and display attributes.

The BENCHMARK Spelling Checker and Mailing List applications are also available to run with the BENCHMARK Word Processor.

The BENCHMARK can process CP/M-generated files, so it makes an outstanding complement to other applications running on your Rainbow, such as time and billing, graphics, accounting, database management, or financial modeling software.

The BENCHMARK Word Processor has easily memorized commands that can be executed with single keystrokes. On-screen prompts assist and direct you. The BENCHMARK is menu-oriented, with selectable levels of self-help prompting panels.

BENCHMARK'S major program modes include: create, revise, view, print, and merge. Additional procedures include copying documents from disk to disk for backup, deleting old documents from a disk, importing or exporting CP/M files, and assigning storage areas on other disks with this mode. All edit features can be used any time there is a document on the screen, regardless of the mode.

While all standard word processing functions and features are included in the BENCHMARK Word Processor, its uniqueness lies in its ease of use and in the availability of these *additional* functions and features: calculator; column manipulation; graphics (lines, boxes, bar charts); keyboard phrase library; horizontal scrolling; operator-defined scrolling of one line or multiple lines, in addition to full-screen scroll; advanced edit ability; enhanced search and replace capabilities with word-only matching and wild-card matching; hyphenation decisions; disabling of word wrap; format or print style can be changed multiple times, even within a single line; and print styles include bold, shadow, superscript and subscript underline, overstrike, and double underscore (if supported by printer).

The BENCHMARK Spelling Checker

The BENCHMARK Spelling Checker, developed by The Benchmark Corporation for the Rainbow personal computer, is designed as a complement to the BENCHMARK Word Processor and the Mailing List System.

The BENCHMARK Spelling Checker compares words in a document to the 27,000 words found in its dictionary. It marks, with brackets, any misspelled words and words not found in its dictionary. You must return to the BENCHMARK Word Processor to correct any words that have been marked.

Most commonly used words are in the dictionary that comes with Spelling Checker. Words that are specific to a profession, places, names, company names, and so on can be added to the dictionary. You can also build your own dictionaries and ignore this general one. Documents can be checked by any one or more of the dictionaries.

Among its other features: you can add to or delete words from the main dictionary; queue up to 99 documents for spelling checks; and use directories of dictionaries and documents to eliminate the need to remember their names and locations.

The BENCHMARK Mail List

The BENCHMARK Mail List is a program you can use to create, maintain, and print lists of all kinds. It is ideal for small and medium-sized businesses with heavy list processing and mailing requirements. You can use it to keep track of information on sales prospects, business clients, and more.

The BENCHMARK Mail list provides many features for speed and versatility. You can: create, delete, or edit entire lists or subsets of lists and combine one or more lists;print mailing labels; create files with up to 14 items (fields) in each entry (record); display the number of entries in a list at any time and select items from a file by date of entry; and store your mail list files and your BENCHMARK Word Processor files on the same disk so you can merge lists with word processing documents.

The BENCHMARK Word Processing System: 16-bit applications

Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory
	132-character printer such as the LA 50 Personal Printer, Letterprinter 100, or LQP 02 Letter Quality Printer.

EasyWriter

- **Order Code: QA559-C3**

EasyWriter,™ developed by Information Unlimited Software and teamed with the Rainbow personal computer, offers comprehensive and flexible word processing functions that are easy to use, even by beginning or infrequent users. Fast and powerful enough for people who do heavy-duty work such as handling boilerplate and integrating external files, EasyWriter is equally ideal for managers, professionals, or infrequent computer users.

EasyWriter gives you full use of the Rainbow's function keys and other custom Rainbow keyboard features. You can move from mode to mode with single keystrokes. And the UNDO function lets you cancel changes made in any document you are editing. For large documents, there is split-screen display, along with vertical and horizontal scrolling that lets the review and editing process flow smoothly. Linking or merging files, both those created with EasyWriter and those from other CP/M-based products, is just one more of EasyWriter's useful features.

It doesn't matter if you work in a small to medium-sized business or a Fortune 1000 company. If you prepare personalized form letters, legal forms, project plans, or financial reports with text, EasyWriter helps you do it. If you are either an expert or a novice at word processing, EasyWriter is geared to helping you get your job done.

EasyWriter: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory
	132-character print such as the LA50 Personal Printer, LA100 Letterprinter, or the LQP02 Letter-Quality Printer

Electric Blackboard
Multi-Window Text Editor

- **Order Code: QA298-C3**

Electric Blackboard™, developed by Santa Cruz Software Services, is a multi-window full screen text editor for personal and small business computer users. Electric Blackboard was developed for people who need to examine, create, or edit large documents with multiple parts or several different documents simultaneously. It combines viewing or editing of up to 10 different documents in single or multiple windows with graphics. And it takes advantage of the Rainbow personal computer's special keys and display attributes.

For fast and efficient viewing and analysis or for text editing, Electric Blackboard is appropriate for programmers or systems analysts, social scientists or researchers doing field or lab work, financial analysts,and any manager, professional, or student who needs to compare information from several different sources.

Electric Blackboard can divide your original wide screen into three smaller windows with one workspace for each separate file that you're editing. Rainbow's 132-column-wide screen means clarity, no matter how many windows you're using or how long your lines of text.

You can install Electric Blackboard in minutes. Clear tutorial documentation and real-world examples make it possible for even those with little or no computer experience to use all of Electric Blackboard's functions and features from day one.

Electric Blackboard: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

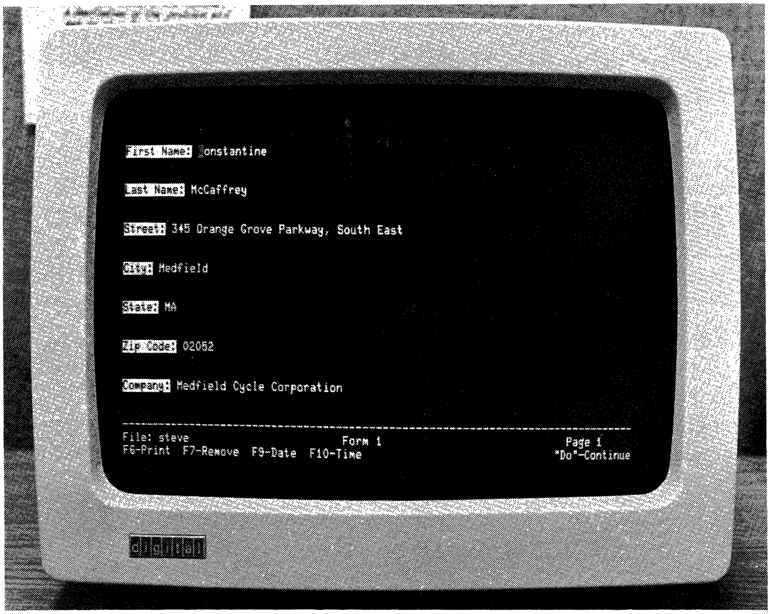
Database and Information Management

PFS:FILE and PFS:REPORT

- **Order Codes:**
  QA575-C3 *PFS:FILE*
  QA577-C3 *PFS:REPORT*

PFS®:FILE is a program for storing and retrieving the information you use every day such as appointment calendars, customer listings, and student data. You can record, file, retrieve, and review information on your Rainbow personal computer in a fraction of the time it would take with a conventional filing system. With PFS:FILE, you arrange your information on a form you design yourself. The program retrieves information in a variety of ways, so you can be as selective as you want. With PFS:FILE, you can store about 2500 simple forms on one of Rainbow's floppy disks.

PFS®:REPORT is a separate program that lets you produce reports in the form of tables from the files you create with PFS:FILE. With PFS:REPORT, you can sort through your PFS data files and perform such arithmetic functions as averages, totals, and percentages.



```
First Name: onstantine

Last Name: McCaffrey

Street: 345 Orange Grove Parkway, South East

City: Medfield

State: MA

Zip Code: 02052

Company: Medfield Cycle Corporation

---------------------------------------------------------------------------
File: steve                              Form 1                    Page 1
F6-Print  F7-Remove  F9-Date  F10-Time                        "Do"-Continue
```

Used together, PFS:FILE and PFS:REPORT provide small and medium-sized businesses or individual users in large corporations with an easy-to-use, yet powerful information management system.

PFS:FILE performs well in a wide range of environments, including business, professional, home, and education. Businesspeople, from managers to clerical personnel, can use PFS:FILE for anything from tracking employee productivity to keeping a daily appointment calendar.

PFS:REPORT helps you prepare presentation-quality reports. PFS:REPORT prints selected information from a PFS file. You can search for information, and you can select information by numeric values using the greater than, less than, or equal to sign, along with the number. Specify the printer you want to use, the page size, and the title for the report. You can create reports of up to 132 characters wide with as many as 20 different columns.

In this final step, you can sort the report; total, average, or count any column; print derived columns (calculated from information in other columns); or identify items by keywords (used to identify information stored in the form of text).

PFS:FILE and PFS:REPORT are so easy to use, you can learn to use them quickly —even if you have little experience with computers. In fact, once you're familiar with PFS:FILE, you're familiar with PFS:REPORT.

You can use PFS:FILE as a stand-alone information management package. PFS:REPORT, on the other hand, works only with PFS:FILE data files.

PFS:FILE and PFS:REPORT: 16-bit applications	
Prerequisite Software	MS-DOS operating system
	PFS:FILE (required for PFS:REPORT)
Minimum Hardware Required	128 Kbytes of memory

dBASE II-86

Relational Database Management System

- **Order Code: QA281-C3**

The dBASE II®-86 application, developed by Ashton-Tate, is a complete database management facility that lets you manage your data with one powerful, user-friendly system. Ideal for all kinds of businesses, dBASE II-86 lets you update, maintain, and utilize a database of your own creation on the Rainbow personal computer.

With dBASE II-86, you can enter your entire corporate data—payroll files, accounting files, invoicing files, customer files—into one information system. As a result, you can produce reports that combine different types of information. You can change data without reprogramming and, as your business grows, you can modify the way you handle information without having to re-enter all of your data.

Using dBASE II's English-like commands, you can easily add, delete, edit, display, print, and manipulate your information. You can write programs to do time billing, job costing, accounting, and reporting. Once you've set up a dBASE II-86 program, even unskilled personnel can accurately manage your data.

DBASE II-86 is a relational database in which each data field is accessed using a label (such as *name* or *address* for a customer base). This means you can change the structure of your data (increase the number of characters in the address field, for example) without destroying the data.

You can use full-screen editing with dBASE II-86, which is helpful to modify or update a few records. Or, you can write a program to modify or add many records. For programmers, the flexible command language allows pass parameters by letting one program send messages and results to another program, and nesting of routines.

Once you input your information, you can find a record quickly by creating an index based on any key field. Finding a record can take less than two seconds. You can also have multiple indices to one database. With dBASE II-86, you can create reports and documents to look like your personal business forms.

dBASE II-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

CONDOR 1 and 3
Relational Database Management System

- **Order Codes:**
  QA156-C3 *CONDOR 1*
  QA158-C3 *CONDOR 3*

The CONDOR® relational data base management system (DBMS), developed by Condor Computer Corporation, can be used to manage data for a wide variety of applications, including accounting, inventory control, project management, cash flow analysis, client tracking, government reports, mailing lists, personnel recruitment, vehicle maintenance, and business planning.

The CONDOR DBMS is ideal for first-time computer users because its operation is very logical and it requires no programming. Its flexibility allows information to be entered, compared, manipulated mathematically, stored, and retrieved for display or printout. You can create data files as your application requires, and you can add to, reorganize, or delete them with simple commands. CONDOR DBMS accepts data in whatever format you establish and processes the data according to your instructions. Report formats are just as easy to develop or modify. And you can create menus which further simplify using CONDOR DBMS for any given application.

The CONDOR DBMS comes in two versions. CONDOR 1 File Manager is designed to manage individual data sets. CONDOR 3 Database Manager includes a report writer and an index (query) facility, which enables quick access to information.

CONDOR 1 File Manager

With CONDOR 1, you can set up databases: reorganize files, enter and process data, post transactions to the files, and print files. You may also create simple input forms to collect data to be entered into a database and later printed. Especially convenient for first-time users are three preprogrammed applications: an activities tracking and project control capability; a sales activity viewing capability; and a label-printing capability.

CONDOR 3 Database Manager

CONDOR 3 provides the same capabilities as CONDOR 1 but, in addition, allows you to join selected data from multiple files to create a new data set with a single statement. You can delete the records of a data set and change a field value in a data set. CONDOR 3 will display selected records of a data set and create a new data set from selected fields of a data set. The REPORT command lets you create, revise, and print a report.

Both Condor 1 and Condor 3 include the following features that enhance productivity: simple yet powerful English-like commands; database files that can be created and modified in minutes; and transaction processing that allows master files to be posted, complete with audit trails.

And both packages feature an impressive database capacity: up to 32,767 records per file, up to 1023 bytes per record, and up to 127 fields per record, with 127 characters per field.

CONDOR 1 File Manager & CONDOR 3 Database Manager: 8-bit applications

Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

IMS Mailing List Management

- **Order Code: QA346-C3**

The Mailing List Management System, developed by International Micro Systems, maintains mailing lists on your Rainbow personal computer and prints labels, envelopes, and multiple copies of specified labels. You can create mailing lists from the customer and employee files used in other IMS software products. IMS™ Mailing List files can also be used with MicroPro's WordStar® to combine names and addresses with continuous-form letters and envelopes.

Even the smallest business can use this product, but it's a natural for a rapidly growing company, since changes to lists are fast and easy to make and the size of your lists is unlimited.

The number of lists that Mailing List can maintain is limited only by the capacity of disk storage available. You can maintain separate lists for different types of customers and you may store multiple lists on a single diskette, or a single list may extend over multiple diskettes.

You can extract new lists from existing lists and combine up to five lists to form a new list. Tailor your list to the purpose at hand—zip code sequence for printing mailing labels, for example. Use lists from other IMS business billing and accounting management systems for envelope printing and for sales and marketing plan implementation.

Mailing lists can be printed on one, two, or three-up mailing labels, or print your lists on paper with one, two, or three entries across. You can even specify the size of your envelope.

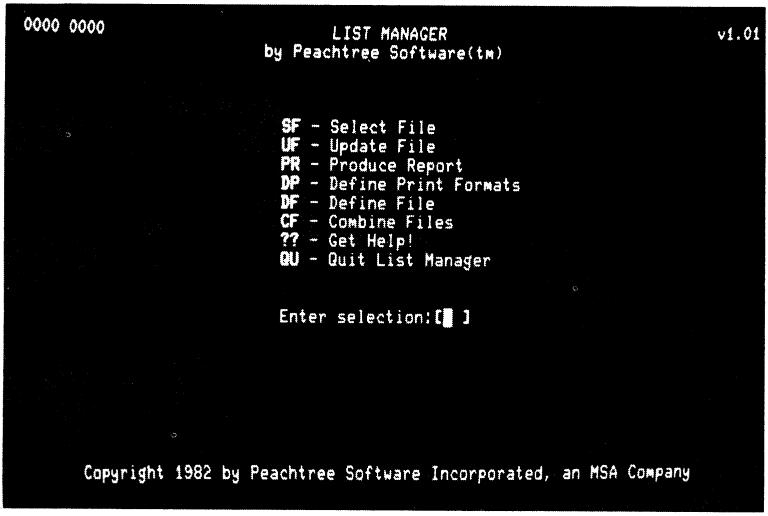
Install and use all Mailing List functions after only minutes of training with detailed, easy-to-follow on-screen instructions. Descriptive, helpful error messages appear in reverse video when applicable.

IMS Mailing List Management: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory
	132-column printer,such as LA50 Personal Printer, Letterprinter 100, or LQP02 Letter Quality Printer

List Manager

- **Order Code: QA277-C3**

List Manager™ is an invaluable tool when you have to keep mailings up to date or retrieve information for a last-minute report. You don't have to hunt anymore for the name, address, or part number you need, because List Manager is an efficient electronic filing system. Whether you are an accountant, personnel manager, teacher, retail store owner, salesperson, real estate broker, lawyer, dentist, or publisher, List Manager can help take the work out of working with lists.



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0000 0000                  LIST MANAGER                          v1.01
                       by Peachtree Software(tm)


                      SF - Select File
                      UF - Update File
                      PR - Produce Report
                      DP - Define Print Formats
                      DF - Define File
                      CF - Combine Files
                      ?? - Get Help!
                      QU - Quit List Manager

                      Enter selection:[█ ]




     Copyright 1982 by Peachtree Software Incorporated, an MSA Company
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List Manager helps you set up each list with fill-in prompts. Define the standard information you want in the list—up to 14 categories—like name, address, phone number, identification number, and interests. Once you've done this, simply enter the information for each item. List Manager creates and displays the form for completion. It's just as easy to update a list. In the case of a mailing list, List Manager will automatically place the new names in alphabetical order. You can even add and delete a category of information at a later date.

List Manager has been tailored for the Rainbow: it takes advantage of Rainbow's special function and editing keys and screen display capabilities. You can view 132 characters at once if you choose.

List Manager also lets you: retrieve any record in five seconds or less using any of three independent indexes; create a mailing list in 15 minutes or less; store up to 2000 records on one Rainbow floppy disk, with up to 500 characters per record; print lists in a variety of formats; incorporate list text produced with List Manager into a document created with SELECT™-86 word processing. This is especially useful for form letter production.

List Manager: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory; 128 Kbytes of memory are recommended

Financial Management and Accounting

Tax Decisions

- **Order Code: QA320-C3**

Tax Decisions™, developed by Eagle Software Publishing, is a planning aid for tax professionals to design effective tax plans on the Rainbow personal computer. The major objective of Tax Decisions is to minimize tax liability prior to the end of a tax year. Tax Decisions is easy to use, yet it provides sophisticated planning features. It gives you before and after effects of increased taxable income, and calculates tax liabilities using rate schedules, income averaging, or the minimum and alternative tax allowance—then selects the best method.

Tax Decisions delivers tax plans with computer speed, accuracy, and neatness. The similarity between Tax Decisions screens and actual tax forms means you can easily build tax plans with little prompting.

You may formulate up to five separate tax plans using Form 1040 and a combination of 16 schedules and forms. Each graph and comparative report illustrates a client's tax liability in a single plan, or displays a detailed comparison of all available plans. The Change Plan feature creates new plans by borrowing selected information from existing ones.

The current tax laws included are: alternative minimum tax, energy tax, and the deduction for marriage penalty and installment sales payments. To protect you from tax law changes, Tax Decisions is supported by a continuous update service from Eagle Software Publishing.

Among the features that enhance productivity: key lines of Form 1040 can be displayed in both graph and report format; you can post a value directly to a line on the 1040 screen if there is no need to call up the supporting schedule screens; you can easily create alternate plans by copying an existing client plan and making changes in a "same as, except" manner; and you can estimate quarterly tax liabilities.

If you return the Eagle Tax Decisions warranty card, you are entitled to a free update service for one year from date of purchase. After the first year of free updates, there will be a nominal update charge. Updates will be provided twice a year (February and September).

Tax Decisions: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system MBASIC-86
Minimum Hardware Required	128 Kbytes of memory

Financier Tax Series

- **Order Code: QA517-C3**

The Financier™ Tax Series for the Rainbow personal computers is a powerful, multiple-year, multiple-case planning and analysis program that can maximize the amount of useful information returned from the effort of entering raw tax data. The series was designed by tax, investment, and accounting professionals *for* tax professionals, and for individuals who want to understand the tax impact of financial transactions.

Financier is easy to use, requires little accounting or computer background, and has extensive built-in error checking.

Among the Financier Tax Series features: tax-planning spreadsheet allows the simultaneous consideration of multiple cases covering different facts and years; optional graphing feature lets you see the impact of adding or subtracting income, deductions or credits from any of the seven most frequently-used tax cases; tax can be computed for 1982, 1983, 1984, 1985 and after -- includes regular tax, alternative minimum tax, add-on minimum tax, income averaging, and consideration of limitations on the use of credits, except for foreign tax credits; depreciation program retains history and computes depreciation for fixed assets; tax help is keyed to common tax guides; tax tables for 1982, 1983, and 1984 are included for tax calculation purposes; and a tax table for 1985 and after is included for planning purposes, with zero indexing adjustment.

Financier Tax Series: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory
	Rainbow graphics option (for graphing feature)

TARGET Financial Modeling

- **Order Code: QA219-C3**

TARGET Financial Modeling™, developed by Comshare Target Software, is a comprehensive business planning system designed for financial professionals who need to handle large, sophisticated models. TFM allows serious modeling and analysis in accounting, marketing, banking, insurance, and other financial disciplines using the Rainbow personal computer.

TARGET Financial Modeling has sophisticated features but is not complex to use. You can display the entire logic file on the screen or print it out. You can do comprehensive management reporting by selecting and saving multiple report specifications from the same model. In addition, you have a choice of binary or ASCII files so you can easily transfer models to disk for access by a text editor on a database.

TFM can build models using the familiar spreadsheet method or with the traditional command file technique. In either case, TFM uses plain English commands, making it easier to follow the model's logic.

TFM can generate customized reports. Lines and columns can be specified in any order, skipped, rearranged, or repeated. Up to 25 reports can be stored for a single model, which may be compatible with word processing and database management systems.

Among TFM features that enhance productivity: you can work from a worksheet or a matrix; includes "what if" command; offers advanced modeling operations such as net present value; interfaces with both personal computer and mainframe systems in both directions, so you can transmit files to another system and receive files from that computer; and help screens are available throughout the system.

TARGET Financial Modeling: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

Money Decisions

- **Order Codes:**
  QA301-C3 *Money Decisions I*
  QA302-C3 *Money Decisions II*

Money Decisions™ I and II, developed by Eagle Software Publishing, provide a comprehensive collection of business and financial problem-solving tools. Seventy preprogrammed routines provide frequently needed calculations for making decisions in business management, accounting, real estate, banking/finance, financial planning, annuities/investments, and estate planning: Money Decisions Volume I contains 34 routines to solve general business problems. It may be used alone or in conjunction with Money Decisions Volume II, which contains 36 additional problem-solving routines.

Since each solution is preprogrammed, you only have to insert the appropriate values to obtain results. You can evaluate several alternatives—as in "what if" situations—by changing just one variable.

Among the features that make money decisions easy to use are a calculation mode for entering data; ability to generate output graph or bar chart format;

ability to create presentation quality reports with the print option; single-keystroke commands; comprehensive and easy-to-follow documentation; and an on-line tutorial.

Money Decisions I

Among the solutions included in Money Decisions Volume I software:

- Investments
  Future value of an investment
  Initial investment
  Regular withdrawals from an investment
  Internal rate of return on an investment
  Regular deposits
  Continuous interest compounding
- Loans
  Principal on a loan
  Remaining balance on a loan
  Annual interest rate on a loan
  Mortgage amortization table
  Adjusted rate mortgage payments
- Business Management
  Lease/purchase analysis (present values)
  Depreciation rate
  Tax depreciation schedule
  Optimal production quantity

Money Decisions II

Money Decisions Volume II consists of three categories of solutions: investments, statistics and forecasting, and business management. Here is just a sampling:

- Investments/Finance
  Accrued interest on bonds
  Present value of an annuity
  Mortgage comparison analysis
  Financial statement ratio analysis
  Maximum purchase price for acquisition/merger
- Statistics and Forecasting
  Risk adjusted net present value
  Payoff matrix analysis
  Moving average forecasting
  Expected value computation
  Average growth rate—projections

- Business Management
  Fixed and variable production costs
  Production alternative cost comparison report
  Equipment cost analysis (present value)
  Inventory turnover ratio/average projections
  Mutual effect of bonus payments and taxes

Money Decisions I and II: 16-bit applications

Prerequisite Software	CP/M-86/80 operating system MBASIC-86 (QA066-C3)
Minimum Hardware Required	128 Kbytes of memory

MBSI RealWorld Business Software

- **Order Codes:**
  QA293-C3 *General Ledger*
  QA291-C3 *Accounts Receivable*
  QA292-C3 *Accounts Payable*
  QA296-C3 *Payroll*
  QA297-C3 *Inventory Control*
  QA295-C3 *Sales Analysis*

If your accounting and business operations are growing by leaps and bounds, MBSI™ RealWorld™ can help you keep things under control with powerful reporting capabilities, superior audit trails, and excellent security protection. Now available for Digital's Rainbow personal computer, the MBSI RealWorld accounting packages, written in COBOL, are ideal for the needs of the small business environment where the accounting operation is split into separate functions.

Each module's screen formats and keyboard usage are strictly consistent from one program to the next. User manuals are clearly written with step-by-step installation instructions. The MBSI RealWorld accounting software also provides password protection along with back-up and restore procedures so that information important to the running of your business remains safe and confidential.

All but the Sales Analysis module can function as stand-alone systems.

MBSI RealWorld General Ledger

MBSI RealWorld General Ledger lets you handle all the necessary calculations and reports involved with running a financial operation. Highly flexible and customer-installable, RealWorld General Ledger communicates in ordinary English and uses standardized screen formats.

Among the General Ledger's features: the Chart of Accounts holds codes governing the handling of an account throughout the system, automatically reverses general-journal transactions in the next period, and controls the format and description content of all financial statements.

MBSI RealWorld Accounts Receivable

MBSI RealWorld Accounts Receivable is designed to help you achieve a better cash flow. When using the Accounts Receivable system, you know that your entries are automatically recorded by the General Ledger system.

Among the Accounts Receivable's features: gives you information on the last payment, the account balance, and sales volume and gross profit history; lets you enter, edit, and calculate finance charges automatically; define up to four aging periods, and track aging systemwide by either invoice date or due date; and lets you tailor a statement cycle for each account.

MBSI RealWorld Accounts Payable

MBSI RealWorld Accounts Payable helps you control your outward cash flow. You can obtain a Cash Requirements Report showing past and currently due items. The Accounts Payable system will even print your vendor checks for you.

Among the Accounts Payable's features: the Accounts Payable Vendor File holds many fields of information; each new payable transaction can be distributed to an unlimited number of General Ledger accounts; a Cash Requirements Report shows you past and currently due items with any valid discounts; the Pre-Check Writing Report shows all vouchers selected for payment; and it prints your vendor checks in a stub-over-check pre-numbered format.

MBSI RealWorld Payroll

MBSI RealWorld Payroll handles things like sliding pay scales, job classifications, sick pay, and vacation pay—without changing the structure of your payroll department. This module automatically interfaces with the General Ledger system, recording the distribution of all payroll activity to various General Ledger accounts.

Among the Payroll's features: an easily maintainable system control file allows you to set systemwide parameters that tailor the payroll to your business and a look-up file helps you define the General Ledger accounts for making payroll distributions, define the deductions and miscellaneous earnings used in the payroll system, easily maintain your federal, state, and city withholdings, as well as earned income credit (EIC) tax tables, FICA (for both employee and employer portions), FUI, and SUI percentages and maximums, and automatically calculate gross pay, taxes, EIC, and any voluntary deductions.

MBSI RealWorld Inventory Control

MBSI RealWorld Inventory Control is for small distributors to follow and process the flow of goods. With this system, you have complete and up-to-date information on price lists, back orders, and stock status.

Among Inventory Control's features: perform item costing on either a weighted average, LIFO, or FIFO basis; set up miscellaneous items in the item file; perform item receivings on an interactive basis; enter orders for immediate billing or for partial or whole billing later; define special sale prices, with starting and ending sale dates; add to, change, or delete open orders at any time prior to billing; print tickets for all or selected open orders; and print invoices for all appropriate orders using preprinted forms.

MBSI RealWorld Sales Analysis

MBSI RealWorld Sales Analysis gives you a framework to enter raw data and emerge with refined results. Designed for use with MBSI's RealWorld Accounts Receivable and Inventory packages, you can print the sales analysis reports at any time without changing the databases from which they draw their information.

Among Sales Analysis' features: show period-to-date and year-to-date sales, cost of sales, and gross profit figures for each customer, and perform sales analysis by customer type, customer sales volume, responsible salespeople, item, item category, and item sales volume.

MBSI RealWorld Business Software: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system
	MBSI Inventory Control or Accounts Receivable (required only for MBSI Sales Analysis)
Minimum Hardware Required	256 Kbytes of memory
	132-character printer such as LA50 Personal Printer, Letterprinter 100, LQP 02 Letter Quality Printer.

Multi Journal Accounting (MJA) System

- **Order Codes:**
  QA399-C3 *General Ledger*
  QA401-C3 *Accounts Receivable*
  QA402-C3 *Accounts Payable*
  QA400-C3 *Payroll and Personnel*

The Multi Journal Accounting (MJA™) system, developed by Prodata, lets you maintain complete records of different types of business activity. The modules —

Payroll and Personnel, Accounts Payable, Accounts Receivable, and General Ledger—can operate as stand-alone units or together.

MJA is a video-based software system with menu-driven modules. Data entry screens are formatted with easy-to-understand prompts and include full online error reporting. The compiled BASIC runtime library (BRUN) is included with this package.

Among the MJA features found in all modules: fully illustrated user manuals; batch verification reports and editing facilities; and password protection for many functions.

MJA General Ledger

The MJA General Ledger application lets you generate complete, up-to-date financial statements. Among the General Ledger features: you can generate customized income statements and balance sheets; you can provide departmentalized statements as well as full or partial consolidations; you can perform the periodic closeouts at any time; and you can prepare amortization schedules.

MJA Accounts Receivable

MJA Accounts Receivable allows management to control sales, cash flow, and income. For more profitable sales management, you can easily spot fast and slow moving items as well as high- and low-profit contributions. Among the Accounts Receivable features: customer master file includes 12 fields; both Balance Forward and Open Item customers can be maintained; aging criteria and finance charges are user-definable; you can record non-A/R-type cash income as well as customer payments and prepare and print customer statements either for a single customer or for the entire master file.

MJA Payroll and Personnel

MJA Payroll and Personnel lets you maintain a roster of active and inactive employee pay records along with a breakdown of payroll costs by job or department. Among the Payroll and Personnel features: employee records consist of more than 15 different fields; pay periods can be calculated six ways; earned income credits can be calculated automatically; and there is a 50 state payroll tax capability.

MJA Accounts Payable

MJA Accounts Payable lets you maintain a list of vendors, transactions, and payments. Flow is improved by scheduling disbursements to take maximum advantage of vendor terms and discounts while maintaining good vendor relations through timely payments. Among the Accounts Payable features: vendor master file includes nine fields; user-definable aging criteria; full features for preparing vendor disbursement checks; prepare general purpose disbursements; and discount feature that provides for EOM dated and dollar discounts.

Multi Journal Accounting System: 8-bit applications	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	256 Kbytes of memory

IMS Job Accounting and Fund Accounting Systems

- **Order Codes:**
  QA330-C3 *Job Accounting*
  QA329-C3 *Fund Accounting*

IMS Job Accounting

The Job Accounting System, developed by International Micro Systems, is designed for the construction and other contractor-related industries where revenues and expenses must be maintained and reported on a per-job basis and in consolidated form. It's ideal for contractors doing subdivision work as well as individual jobs, and it's also appropriate for small and medium-sized businesses that are production job shops.

Revenues and expenses are tracked and reported against both job and total business budgets. The Job Expense Report shows budgeted amount, current expenditures, and total expenditures to date. The system also tracks and reports encumbered funds (funds for which a commitment has been made but for which an expense has not yet been incurred).

IMS Fund Accounting

The Fund Accounting System, developed by International Micro Systems, provides revenue and expense control as well as reporting for churches, schools and universities, government, and other nonprofit organizations. Fund Accounting provides the equivalent of a general ledger system for nonprofit organizations and associations. It's ideal for organizations with multiple projects funded by one source, as well as for multiple accounts each with one project. So it's suitable, for example, for universities to use in managing federal and state grants.

Fund Accounting will track revenues and expenses, report them against account budgets, and print the percentage of budget remaining on expense accounts. Expense reports show budgeted amount, current expenditures, and year-to-date expenditures. Fund Accounting also tracks and reports on encumbered funds.

Customize IMS Job Accounting and IMS Fund Accounting to Your Needs

IMS Job Accounting and IMS Fund Accounting are customizable to help make the software specific to each company. You can: customize forms and report formats, use up to eight job sublevels or consolidation, and define job numbers to a maximum of 20 positions.

Both applications also provide the following features that make them easy to use: menus and English-language prompts,descriptive header screens showing recovery procedures and clear error messages, a data-file capacity limited only by the amount of disk storage available, individually printable job account inquiries, and instantly available expense status for any category.

IMS Job Accounting and IMS Fund Accounting: 8-bit applications	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

Attorney's Time and Billing

- **Order Code: QA495-C3**

The Attorney's Time and Billing system, developed by Bear Computers, Inc., is a set of application programs designed to handle the timekeeping and client-billing functions of a law office. It includes an Accounts Receivable module for cash collections and finance-charge processing.

This powerful application can help you increase your billable hours and improve your cashflow through easily implemented automation of office billing procedures and efficient management of receivables. You can also use Attorney's Time and Billing to generate professional productivity reports and to keep clients informed about work being done on their cases.

The Attorney's Time and Billing system lets you: perform on-line editing and data inquiry using information from master files; define up to 999 billing codes to describe a service performed or expense activity and add, change or delete codes to reflect a current billing structure; maintain up to three billing rates for each attorney; select the billing frequency and degree of statement detail for each case; accumulate contingency-case activity for final billing only; print contingency-case activity reports without the billing amounts; print billing statements on your firm's standard letterhead or on pre-printed forms; accumulate month-to-month and year-to-date time and dollars billed for productivity reports by attorney, case, case category, and billing code; report nonbillable time; use Account Inquiry to display or print open accounts receivable and work-in-progress selectively; take advantage of file purging routines which transfer closed cases to archive diskettes; interface to General Ledger system; and keep a complete audit trail of all transactions.

Attorney's Time and Billing: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system MBASIC-86
Minimum Hardware Required	128 Kbytes of memory

IMS Dental Office Management System

- **Order Code: QA334-C3**

The IMS Dental Office Management System is a software package developed for use in a single dental office or in a clinic with several dentists. The package computerizes many office procedures so dentists and staff are free to devote more time to patient care. It also saves time and money and reduces the possibility for billing errors.

IMS Dental Office Management helps you gain greater control over cash flow. It creates a statement at the conclusion of an appointment so patients can pay on the spot; prepares monthly statements, for families or individuals, showing balance forward, payments received, new charges, and new balances; generates aged trial balances for any patient; maintains up to eight different insurer forms plus a generic form approved by the ADA; retrieves treatment and billing information from a patient's file, and prepares an insurance form; and prepares an annual summary of treatments and charges for patients to use when filing their income taxes.

Use of the IMS Dental Office Management System can also result in better time management, with a corresponding improvement in staff productivity. You can maintain an appointment calendar for each dentist and hygienist to simplify the task of planning and modifying work schedules. The system also facilitates the planning and execution of extended treatments and automatically prepares reminders for periodic checkups and prophylaxis.

You'll find the IMS Dental Office Management System easy to use. The system displays menus and prompts to guide you through individual functions.

IMS Dental Office Management System: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory 132-character printer, such as LA50 Personal Printer, Letterprinter 100, or LPQ02 Letter-Quality Printer

Manufacturing and Distribution

IMS Manufacturing Inventory Control System

- **Order Code: QA331-C3**

The IMS Manufacturing Inventory Control System is a software package developed specifically for manufacturers. If you're responsible for a small but growing manufacturing operation, the IMS Manufacturing Inventory Control System will prove invaluable in your day-to-day business. Because the system automates many information management functions, it saves time and money, improves productivity, and provides a greater degree of control over resources such as equipment, labor, materials, and capital.

This application helps you manage the following functions of inventory control:

Bills of Materials: Once you enter a part or subassembly into the inventory file, you can easily incorporate it into any bill of material. The system also processes multiple-level bills of material.

"Where-Used" Lists: This system tracks where every part and subassembly is used. You can generate lists by part, subassembly, or finished goods.

Material Requirements Planning: The MRP function lets you balance inventories against requirements and project future material requirements.

Status Tracking: This system can be used to track the status of purchase orders. You can find easily what items have been ordered, the quantity, the dollar amount, the vendor, the issue and due date, and past-due orders. The system also generates production status reports.

Inventory Adjustment: The system automatically adjusts inventory in response to purchasing and receiving transactions, and to production status. In addition, the system records transfers, credit memos, and lost materials to help maintain inventory accuracy.

Work Orders: Lets you create work orders for finished goods or subassemblies in triplicate, along with a level-one bill of material. The work orders show what item you are manufacturing, the quantity, and the due date. There is space to add material and labor costs so you can maintain accurate costs for each manufactured item.

You'll find the IMS Manufacturing Inventory Control System easy to use. The system displays menus and prompts to guide you through individual functions. You initiate these functions with one or two keystrokes and the system automatically flags errors to keep database information accurate.

IMS Manufacturing Inventory Control System: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

IMS Wholesale/Retail Distribution System

Distribution Management

- **Order Code: QA332-C3**

With the IMS Wholesale/Retail Distribution System and a Rainbow personal computer, distributors can have tighter control over inventories. Developed specifically for wholesale and retail distributors, this distribution management system helps to automate many information management functions.

The Wholesale/Retail Distribution System, developed by International Micro Systems, is easy to use and performs a variety of functions that can help reduce costs, provide better customer service, and control cash flow. It produces purchase orders on preprinted forms or as computer printouts. It automates order entry and backordering. It prepares invoices, complete with shipping information and generates aged trial balances, sales status reports, and commission statements for salespeople. And it automatically adjusts inventory balances based on merchandise received and items invoiced.

Here are just a few of the features for each function:

Purchase orders are easy to cut. Entry errors are caught automatically. When the order is completed, the system prints it out either on a preprinted form or as a computer form. At any time, the system will prepare an order status report showing items on an order, quantity, vendor, and scheduled receipt date.

Sales information is easy to track. Overstocked and understocked items can be readily identified. A stock item report summarizes standard average cost against dollars sold. A monthly sales register lists and totals each invoice, showing gross sales, discount, sales tax, freight charges, salesperson, and commission due. The system also prepares individual commission statements.

The Order Processing system maintains a customer master file which contains the address, sale terms, discounts, tax, current account balance, sales year-to-date, and customer identification number. While an order is being prepared, the system automatically retrieves information from both the customer and inventory files to speed processing.

When an invoice is prepared, the system automatically reduces the inventory count, increases customer and items sales amount, and posts accounts receivable. It prints out the invoice, including carrier, date shipped, and shipping charges.

On request, the system will list backordered items by item or customer. As backordered items become available, the system automatically allocates them and prints a shipping order, using information from the original order.

The Cash Flow system automatically calculates discounts for early payments. It will also list all accounts individually with balance and shows both current and past due accounts receivable. For all functions, menus and prompts are displayed on the video terminal to guide you. Most functions can be initiated with one or two keystrokes. Customer master file records are updated automatically. The capacity of data files is limited only by the amount of disk storage available, so the system can grow with your business.

IMS Wholesale/Retail Distribution System: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory
	132-character printer, such as LA50 Personal Printer, Letterprinter 100, or LQP02 Letter Quality Printer

Languages and Programmer Aids

MBASIC-86
Programming Language

- **Order Code: QA066-C3**

When you want to design your own BASIC program for your Rainbow personal computer, Microsoft's MBASIC®-86 is the answer. It's an industry-standard tool for writing BASIC programs. MBASIC-86 provides real programming power in the easy-to-learn BASIC (Beginner's All-purpose Symbolic Instruction Code) programming language. BASIC is a conversational language that uses simple English language-like statements and familiar notations to perform programming operations. BASIC is so easy that it's one of the most widely-used computer programming languages in the world today—its users ranging from elementary school students to professional engineers to business owners.

MBASIC-86 also gives you access to the world of public domain programs, so you can run hobby, astronomy, electronics, and other programs you find in popular magazines.

MBASIC-86 is the most extensive implementation of BASIC available for personal computers. It meets the requirements for the ANSI subset standard for BASIC and, in addition, supports many features seldom found in other BASICs.

MBASIC-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory; 128 Kbytes recommended

CBASIC-86
Programming Language

- **Order Code: QA472-C3**

CBASIC-86,® developed by Digital Research, Inc., is an implementation of BASIC that has become the standard programming language for developing commerical business applications. BASIC (Beginner's All-Purpose Symbolic Instruction Code) is an easy-to-use, conversational programming language using simple, English-like statements and familiar notations. CBASIC-86 maintains the simplicity of BASIC, while offering you the power of a structured, high-level language.

CBASIC-86 has both a compiler, to translate your source program into intermediate code, and a run-time interpreter, to execute the compiled code. Its unique intermediate file compilation reduces the amount of memory required for individual programs and speeds processing.

Programmers are freed from using line numbers and can use long variable names, making CBASIC-86 easy to use and program listings more readable. CBASIC-86's 14-digit decimal arithmetic provides a high degree of accuracy, making it especially useful in accounting and other applications involving a number of calculations.

CBASIC-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

MWC-86
C Language Compiler

- **Order Code: QA068-C3**

The C compiler MWC-86™ is a development package for programmers writing microcomputer programs in the C language on the Rainbow personal computer. Like the C language, MWC-86 is a very efficient tool. It consists of several large programs or phases that allow you to compile, link, and load C source programs for execution. You also can link object modules produced by the compiler with those produced from assembly code by the assembler. The phases include a preprocessor, compiler parser, compiler code generator, compiler optimizer, 8086 assembler, and linking loader.

The C compiler is rapidly being accepted as a standard in compilers across several operating systems. Source programs are portable, so you can transfer information from one computer to another with little modification. A C program written on a Digital VAX computer often can be re-compiled and debugged on the Rainbow.

The standard I/O and math libraries are compatible with UNIX™ V7. And a Rainbow-specific library, containing C functions that utilize the extended console BDOS functions, gives you easy access to the operating system, I/O ports, and firmware routines.

MWC-86 also includes:support for data aggregates, including arrays, structures, and unions; numeration and void data types; and a floating point.

MWC-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

RM/COBOL
ANSI-Standard COBOL Compiler

- **Order Code: QA465-C3**

RM/COBOL is a reliable, industry-standard COBOL compiler. Created for the efficient development and execution of COBOL business applications, this GSA certified implementation of the ANSI 74 COBOL standard supports all standard COBOL file access methods at the highest ANSI level.

With the RM/COBOL compiler, you can create portable applications software on your Rainbow personal computer because the identical compiler is available on mainframes, minicomputers, and microcomputers. So, software applications you develop using the RM/COBOL compiler and Rainbow will execute on any RM/COBOL-compatible system as long as machine resource requirements are met. And RM/COBOL supports hundreds of proven business applications written in RM/COBOL on the market today.

The compiler offers powerful interactive screen-handling capabilities to increase flexibility and speed in program development. These features include: interactive terminal control, cursor line and column positioning, and easy maintenance of screen/field attributes.

RM/COBOL does not require a link-edit step for program execution. Instead, when you execute an RM/COBOL program, the compiler generates a very compact object code. This speeds execution and reduces disk storage requirements. Extended computational data types, including binary and IBM-format packed-decimal, also reduce storage requirements.

RM/COBOL features interactive debugging during program execution, for more efficient program development. You can debug your program interactively in three ways: by setting multiple breakpoints, stepping through the program one statement at a time, or examining and changing the value of data items during program execution. Cross-references of all program labels and data items and clear error messages with errors undermarked in the source listing, also make for faster debugging.

With more than 100,000 installations since 1976, the RM/COBOL compiler is often chosen for the development and execution of COBOL business applications.

RM/COBOL: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

PASCAL/MT+86
Programming Language

- **Order Code: QA475-C3**

PASCAL/MT+86™ for the Rainbow personal computer, developed by Digital Research, Inc., is a superset of International Standards Organization (ISO) standard Pascal programming language, extended for more speed and versatility. Unlike traditional Pascal compilers, which use pseudo-code or some other intermediate form, PASCAL/MT+86 compiles directly to machine code, making your programs execute faster. PASCAL/MT+86 rivals assembly language in efficiency when compiling to native machine code.

PASCAL/MT+86's speed and accuracy make it a popular choice for program applications development in business and industry. Its ease of use and versatility also make it suitable as an educational tool for college and high school students.

The PASCAL/MT+86 system includes a compiler, a linker, a run-time support library, an assembler, a disassembler, and a symbolic program debugger.

PASCAL/MT+86 provides: extended data types such as integer, CHAR, Boolean, multidimensional arrays, user-defined types and constants, sets, enumerated types, and subrange types; separate modular compilation; "ROMable" machine code; enhanced arithmetic functions; and direct access to specific memory locations.

PASCAL/MT+86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

FABS-86
Assembly Language Subroutine for File Maintenance

- **Order Code: QA299-C3**

FABS-86,™ developed by Computer Control Systems, is a customer-installed assembly language subroutine that maintains key files for fast data retrieval in large data files. FABS-86 (Fast Access B-tree Structure) is designed to be called by higher-level languages such as MBASIC-86. A basic knowledge of a higher-level programming language is required in order to use FABS-86.

FABS-86 performs data retrieval at high speed by maintaining data record keys in separate files that allow sequential and multipath access to data records. Keys never need re-sequencing, and the key file is totally independent of the data files. Multiple primary keys can be maintained in one key file providing access to data files on more than one key.

Among its features and functions: duplicate and multiple primary keys are supported; and the keys are normally maintained in the file as ASCII characters.

FABS-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system MBASIC-86 (QA066-C3)
Minimum Hardware Required	128 Kbytes of memory

AUTOSORT-86
Assembly Language Subroutine

- **Order Code: QA300-C3**

AUTOSORT-86,™ developed by Computer Control Systems, is a high-speed assembly language sort/merge/select subroutine designed for use with MBASIC-86 on the Rainbow personal computer. AUTOSORT-86 can function smoothly, either standalone or as a subroutine of the applications language. It's easy to install on your Rainbow personal computer and to incorporate into existing programs. This efficient tool for applications programmers increases productivity because it runs faster than a BASIC language sort, even on large files.

The sort and merge subroutines allow the merging of two files into one, and you may specify sort parameters during runtime. The selectable features include the deletion or retention of records, comparing up to four independent keys. Speed is achieved by storing the entire TPA (transient program area) on the disk before sorting, to maximize the sort-buffer size.

AUTOSORT-86 places no limit on file size; the file size will be limited by your operating system and the available file work space on your disk.

Among Autosort-86's features: record lengths may be 5000 bytes or more as long as the available sort buffer is 40 Kbytes or larger; you can sort fixed-length records with a maximum of 10 keys, either ascending or descending, independently on each key; and MBASIC-86 string, integer, single-precision, and double-precision fields are supported by both the Sort and the Select feature.

AUTOSORT-86: A 16-bit application

Prerequisite Software	CP/M-86/80 operating system MBASIC-86 (QA066-C3)
Minimum Hardware Required	At least 128 Kbytes of memory for incorporating AUTOSORT-86 into an MBASIC-86 program 64 Kbytes of memory for using the standalone sort

Utilities

DPATCH
Disk Error Recovery System

- **Order Code: QA362-C3**

DPATCH™ is a disk-utility program you can use to help ensure the integrity of your stored data. DPATCH attempts to recover information from damaged floppy and hard disks and recovers erased files if the disk space for that file has not been reused.

With DPATCH, you can display and alter the information in a file that cannot be read otherwise. This utility looks directly at the data in a file even if a bad spot on the disk surface has damaged the data. DPATCH examines the surface of the disk and flags I/O errors in existing files, or in unallocated areas. Bad sectors are stored in a special file so that they will not cause errors in your active files. The operation does not damage any data on the disk.

You can print a log of each DPATCH session.

DPATCH is easy to use—even if you have little experience with computers. You just choose a function from the menu, and the program prompts you for additional information needed. Even though DPATCH is easy to use, it contains sophisticated features that experienced programmers will find valuable.

DPATCH: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of memory

CP+
CP/M Operating System Utility

- **Order Code: QA419-C3**

CP+,™ developed by Taurus Software, is a series of programs that interfaces with the Rainbow's CP/M®-86/80 operating system. You use English-language menus and/or multiple-choice instructions to complete all basic computer and operating system functions. CP+ makes it easy to examine a disk's directory, make file copies, and magnetically clean a disk.

CP+ includes: an alphabetized catalog of the file names with a 50-character description appendage that enables you to do faster; easier file searches by eliminating hard to remember abbreviations; a facility to string application programs together in a "jobstream" that allows programs to be executed in sequence, automatically; an advanced print function that utilizes a ten-file print queue facility, so that you can print multiple copies on user-defined paper formats; a facility for easy examination of the contents of file (e.g., test, work files, print queue) that has a user-controlled page scrolling function; and error messages displayed in a "user friendly" format.

CP+ is entirely transient; when not in use, the entire TPA (transient program area) is available.

The instruction tutorial is coordinated with a step-by-step "Teach Yourself" section in the *User Guide*. The tutorial covers all of the fundamental computer functions through a series of interactive exercises, using CP+ menus run in a demonstration mode. All functions are executed, but actually only simulated on the screen, creating a risk-free learning environment.

CP+: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

SIDEWAYS
Printing Utility

- **Order Codes:**
  QA552-C3 *V1.0 for CP/M-86/80*
  QA590-C3 *V2.1 for MS-DOS*

SIDEWAYS,™ the printing utility from Funk Software, gives you all the spreadsheet columns you need with one simple command. Because SIDEWAYS makes your files print horizontally along continuous feed paper, your output can be hundreds of columns wide, rather than the conventional 80- or 132-character limit. You also can create output with multisized characters and fonts for display purposes.

SIDEWAYS integrates fully with LOTUS 1-2-3, Multiplan, and SuperCalc, so these spreadsheet packages are never too wide for SIDEWAYS. Since this package is also compatible with most word processing packages, you can use SIDEWAYS to obtain large schedules, pert charts, and tables.

SIDEWAYS takes advantage of the dot-addressable-graphics capability on Digital's LA50 Personal Printer and LA100 Letterprinter. You can choose from two character fonts with sizes ranging from tiny to extra large. SIDEWAYS recognizes all alpha-numeric characters, linefeeds, carriage returns, formfeeds, tabs, and backspaces. There is an optional double-strike mode for added print density. And you can define the amount of character and linespacing along with the margin and print dimensions.

SIDEWAYS: An 8-bit CP/M or a 16-bit MS-DOS application

Prerequisite Software	CP/M-86/80 or MS-DOS operating system
Minimum Hardware Required	64 Kbytes of memory for CP/M-86/80 version; 128 Kbytes of memory for MS-DOS version
	LA50 Personal Printer or LA100 Letterprinter 100

Graphics

Rainbow ReGIS

Remote Graphics Instruction Set

- **Order Code: QA743-C3**

ReGIS (Remote Graphics Instruction Set) is a Digital-developed graphics depictor protocol designed for effective communications between a bit-mapped terminal and a host computer. The Rainbow ReGIS package gives your Rainbow personal computer the ReGIS graphics capability of Digital's VT240/VT241 video terminals. Rainbow ReGIS lets you create graphics remotely (over a communications line) or locally.

ReGIS provides commands for creating and manipulating graphics and text images. You can draw pictures on ReGIS with lines, curves, and circles, and you can include text characters in pictures. Rainbow ReGIS images can use four colors or four shades of grey, green, or amber, depending upon your video monitor model. You can further vary graphic objects by using shading and line patterns.

Rainbow ReGIS is suitable for business, scientific, educational, and art graphics. Want to write computer games on your Rainbow personal computer? Try ReGIS animation. With Rainbow ReGIS, you can either create graphic displays yourself or take advantage of existing ReGIS graphics programs. ReGIS is valuable in an environment where a number of Rainbow users who aren't programmers can benefit from ReGIS programs already running on a host computer system. For example, in an educational institution, students working on Rainbows can get computer-aided instruction and use courseware residing on a VAX system.

Graphics Communications

The ReGIS graphics protocol is designed for conciseness and easy transportation of code from a host to the Rainbow personal computer.

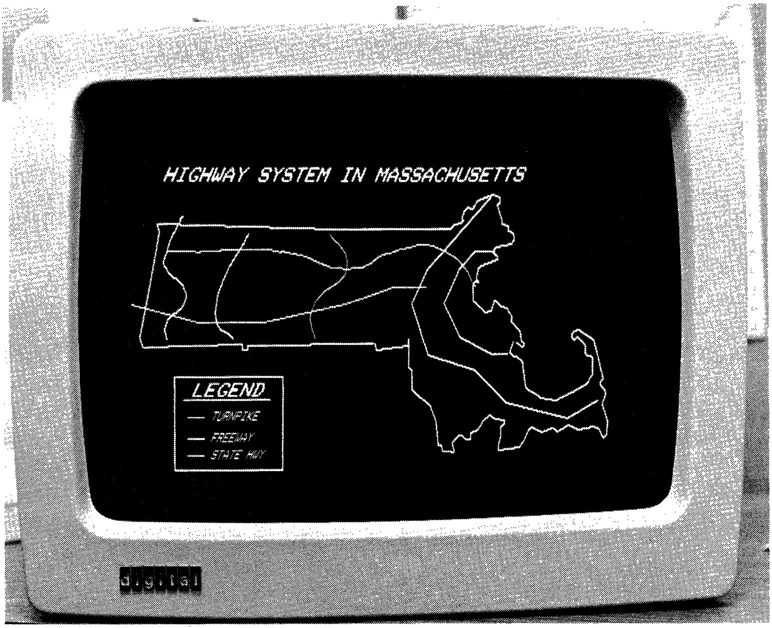
Used with the poly-TRM™ program of the poly-COM™ communications software, Rainbow ReGIS software allows a Rainbow to emulate VT240/VT241 ReGIS as a terminal to a host. This means that you have access to ReGIS programs running on a large computer system and can display the graphic images those programs produce on your Rainbow's screen.

Using Rainbow ReGIS software locally, you can create and display ReGIS files on your Rainbow or produce ReGIS output from local programs, without additional communications software.

Creating Graphics with ReGIS

You can create ReGIS graphics displays simply by writing ReGIS commands and then telling your Rainbow to Type [filename]. More frequently, you will want to write programs that include ReGIS commands to output graphics. Use any programming language that can incorporate ASCII text, such as MBASIC®-86 and MWC-86.

Print your Rainbow ReGIS graphics on an LA50 Personal Printer or Letterprinter 100. You can print everything that is displayed on your screen or just a portion of it.


HIGHWAY SYSTEM IN MASSACHUSETTS
LEGEND
TURNPIKE
FREEWAY
STATE HWY
digital

ReGIS: A 16-bit application	
Prerequisite Software	CP/M-86/80 or MS-DOS operating system
	poly-COM for communications
Minimum Hardware Required	128 Kbytes of memory
	Graphics option module (PC1XX-BA)
	Communications line for remote use

GSX-86
CP/M Graphics Software

- **Order Code:** *included with Graphics Option PC1XX-BA*

GSX™-86 is the graphics system extension for Rainbow's CP/M-86/80 operating system, providing graphic output through standard operating-system calls. Designed to take advantage of Rainbow's graphics module (PC1XX-BA option), GSX-86 incorporates graphics capability into the operating system and provides a virtual interface to graphics devices for 16-bit CP/M graphics application programs. When you load GSX-86 on your Rainbow, it becomes an integral part of CP/M-86, running on the Intel 8088 microprocessor.

Why is GSX-86 important to you? GSX-86 must be enabled for a GSX-based graphics application program to run on the Rainbow personal computer. For example, to display the charts GraphPlan™-86 created from your spreadsheet, you have to load GSX-86. Or, if you want to do some graphics programming in the BASIC language, you can use CB-86™ with GSX-86.

Reduces Programming Effort for Software Producers

GSX-86 reduces programming effort for graphics applications because it provides a common programmer interface to graphics that is compatible with CP/M-86. GSX works by addressing primitives such as polylines, markers, and text characters. You can combine text and graphics in the same image. The standard U.S. ASCII character set is implemented in GSX-86.

The Advantage—Program Portability and Device Independence

Application programs interface to GSX-86 by passing parameters through standard function calls. This makes the object code that utilizes GSX-86 highly transportable between personal computers from different vendors, providing they run under a CP/M-86 operating system.

GSX translates these standard calls, which are similar to the operating system's BDOS conventions, to meet the requirements of specific graphics output devices—video monitor, dot-matrix printer, or pen plotter. Drivers for specific graphics devices translate the GSX-86 calls to the unique characteristics of a given device. Since specific characteristics of the graphics device are not visible to the application program, GSX-86 provides device independence.

GDOS and GIOS

The major components of GSX are the Graphics Device Operating System (GDOS) and the Graphics Input/Output System (GIOS). The GDOS and GIOS path to graphics devices is parallel to the BDOS and BIOS path in CP/M.

GDOS provides a standard interface to graphics that is constant, regardless of specific devices or host hardware, just as BDOS standardizes disk interfaces.

In addition, GDOS performs coordinate mapping. GDOS does a linear transformation of the two-dimensional coordinate values specified by an application program and maps them to the corresponding device-specific space. The normalized device coordinate space maps to the full measure of each axis in a display. If a display or print surface is not square, GDOS scales the coordinate values differently for the X and Y axes. An application program that needs to know the actual size of a display surface can obtain this information from the width and height data returned by GSX when a workstation is opened.

Because GSX-86 uses primitives, rather than addressing pixels, it can make full use of each device's capabilities. Though Rainbow's high-resolution monochrome or color monitors will show off your graphics beautifully and eliminate eye fatigue as you create your images, GSX-86 can also, as an example, take advantage of the LA50 Personal Printer's even higher resolution (denser dot pattern) for your hardcopy of the same graphics images.

The GIOS consists of a set of files holding device drivers. GDOS intercepts and services graphics calls by first loading the required device driver module, a GIOS file, from the disk. GSX-86 requires a unique device driver for each different graphics device on the Rainbow.

Multiple graphics devices can be supported under GSX-86 within a single application. By referring to devices with a workstation identification number, an application program can send graphics information to any one of several devices. Only one device driver resides in memory at a time, maximizing the memory available for application programs.

GIOS performs the graphics primitives according to the inherent capabilities of the graphics device. In some cases a device driver emulates standard GDOS capabilities which are not provided by the graphics device hardware. For example, some devices require that dashed lines be simulated by a series of short vectors generated in the device driver.

Printing Your Graphics

The GSX-86 package includes a set of drivers for graphic output devices, so you can make hardcopies of your graphics. Drivers for the LA50 Personal Printer and the Letterprinter 100 are supported. Drivers for Hewlett Packard HP7470A and HP7220C pen plotters are supplied "as is" and are not supported by Digital Equipment Corporation. You may install additional device drivers if needed.

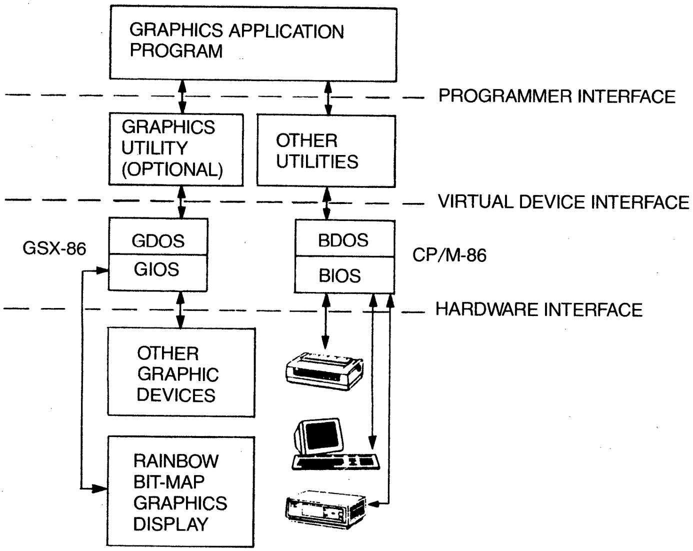
Additional Components

The GSX-86 package also contains the following programs:

- GSX-86 installation procedure
- RGI (Rainbow Graphics Interpreter)
- Binding to MWC-86™ (Mark Williams C)
- Diagnostics for graphics hardware option (PC1XX-BC)

These programs are included for purposes of diagnostics, installation verification, and your convenience. *Note: They are not supported by Digital Equipment Corporation nor covered by the standard warranty.*

CP/M-86 Graphics Structure


GRAPHICS APPLICATION PROGRAM
PROGRAMMER INTERFACE
GRAPHICS UTILITY (OPTIONAL)
OTHER UTILITIES
VIRTUAL DEVICE INTERFACE
GSX-86
GDOS
GIOS
BDOS
BIOS
CP/M-86
HARDWARE INTERFACE
OTHER GRAPHIC DEVICES
RAINBOW BIT-MAP GRAPHICS DISPLAY

BDOS—BASIC DISK OPERATING SYSTEM
BIOS—BASIC INPUT/OUTPUT SYSTEM
GDOS—GRAPHIC DEVICE OPERATING SYSTEM
GIOS—GRAPHIC INPUT/OUTPUT SYSTEM

GSX-86: A 16-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	Memory required varies with application and driver, minimum of 256 Kbytes recommended
Hardcopy Devices Supported	LA50 Personal Printer (as graphics printer)
	LA100 Letterprinter 100 (as graphics printer)
	LPV16 pen plotter**
	Hewlett-Packard HP 7470A and HP 7220C pen plotters**

**Device driver delivered as is. Requires BCC19-15 cable. LPV16 is supported as a two-pen plotter.

Daisy-Aids
Letter-Quality Graphics for Daisywheel Printers

- **Order Code: QA228-C3**

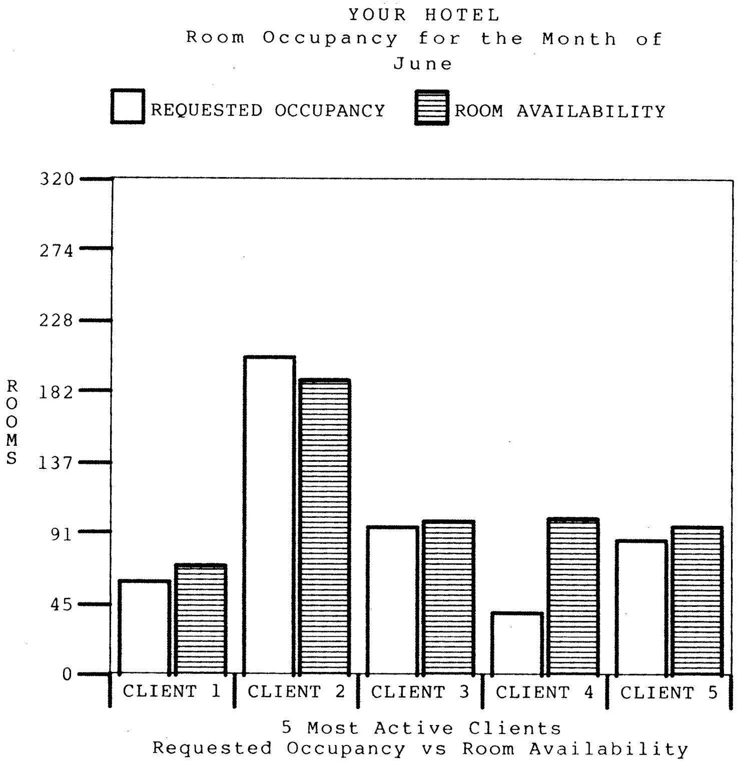
Daisy-Aids™ Version 2.0 graphics software, developed by Escape Computer Software with the unsophisticated user in mind, is designed for any office environment where graphs and charts are used. Daisy-Aids consists of three plotting programs for use with a daisywheel impact printer.

The sophisticated graphics and charts you create with Daisy-Aids can be incorporated in reports or presentations you produce on your Rainbow personal computer and printed on an LQP02 Letter-Quality Printer—Digital's daisywheel printer—for clearer, more professional communication of ideas, trends, and relationships among important data. Text/graphics integration becomes possible with Daisy-Aids.

Daisy-Aids creates line graphs, bar charts, scatter plots and diagrams, pie charts, and block charts using a full-character letter-quality daisywheel printer—all in minutes.

Daisy-Aids is easy to install. It prompts you to answer questions about your printer, print wheel, and the default values you want when running the program. It's menu-driven, with all options shown at the bottom of the screens. You can change or update the data in a particular graph as often as needed.

Daisy-Aids can operate with other programs, including some word processing, financial modeling, and spreadsheet software, because ANSI FORTRAN source code is included in this package.



DAISY-AIDS Graphics Printed on LQP02 (Reduced 65%)

Daisy-Aids: An 8-bit application	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory
	Daisywheel printer, LQP02 is recommended

Communications

poly-COM Communications
Combined Terminal Emulation and File Transfer

• Order Code: QA193-C3

The poly-COM™ communications software (formerly called poly-XFR™ CP/M Communications) is ideal for Rainbow personal computer users who need terminal emulation capabilities with flexible, easy-to-use file transfer between a variety of hosts and operating systems. With poly-COM you can share data and programs with any area of your business—without spending most of your time trying to make the link.

The poly-COM communications package, developed by Polygon Associates, consists of four main components: poly-TRM is a terminal emulator designed for interactive communications and transmission (uploading and downloading) of ASCII text files. Poly-XFR and HST are paired components designed for error-free transmission and format conversion of files between your Rainbow personal computer and a variety of other computers and operating systems. SWITCH, the fourth component, lets you operate your Rainbow from a remote location.

This communications software has been specially adapted to take advantage of Rainbow's function keys and the display capabilities of the Rainbow personal computer. Poly-COM combines the application for the CP/M-86/80 operating system and the version for the MS-DOS operating system in one package.

TRM: Easy-to-Use Terminal Emulation and File Transfer

Under control of poly-TRM, Rainbow emulates a wide variety of Digital and other ASCII start/stop terminals. Among its features: menu displays help you set up terminal characteristics quickly and easily; you can transmit to and from the screen and floppy disks, and to Rainbow's optional printer; you can assign strings of up to 60 characters to each of 13 user-defined keys; and you can save complete sets of parameters on Rainbow's disk.

TRM lets you send files of ASCII text down the communications line to the host and receive from the line into a text file (no special software is required for the host). This means that documents, electronic mail messages, and other data communications, may be composed on Rainbow, then transmitted to the host. This minimizes connect time and transmission costs.

XFR and HST: Flexible File Transfer

The XFR and HST programs add capabilities to the basic text file transfer provided in poly-TRM. The system with which Rainbow is communicating must also be running HST, which is supported on a wide variety of systems. With these programs you can send files containing binary (non-printable) characters. XFR and HST check the integrity of each block of data to ensure secure transfer. XFR and HST also handle format conversion of data files between operating systems. This means that files created on Rainbow can be used on a variety of systems not running CP/M or MS-DOS, and that data can be extracted from host databases and reformatted for use on Rainbow.

Poly-XFR lets a Rainbow talk to the following systems, providing they are running their version of the Polygon HST program:

Digital Mini-computers	**Operating System**
PDP-11	RSX-11M V4.0 RSX-11M-PLUS V2.0, RSTS/E V7.2, or RT-11 V4.0
VAX	VAX/VMS V3.0

Other Personal Computers	**Operating System**
VT180	CP/M-80 V2.2
DECmate II	CP/M-80 V2.2
Apple II™	Apple DOS or CP/M Softcard
IBM PC™	PC-DOS or CP/M-86
TRS-80™ Model II™	CP/M
Xerox 820™	CP/M
Osborne 1™	CP/M

SWITCH: Remote Operation of Rainbow

The SWITCH component of poly-COM allows you to leave your Rainbow personal computer in the office with an auto-answer modem and dial into it from another system or terminal. You can then run applications on your Rainbow or invoke HST and transfer files. This is particularly useful if you have a Rainbow and another personal computer—one at the office and one at home.

poly-COM: A 16-bit application	
Prerequisite Software	CP/M-86/80 or MS-DOS operating system
	Appropriate poly-XFR (HST program) software for host system for error-free file transfer
Minimum Hardware Required	64 Kbytes of memory for CP/M version; 128 Kbytes for MS-DOS version
	Direct (hardware) connection or asynchronous modem

poly-XFR for Digital's VT180 (QA138-C2), DECmate II (QA202-C3), PDP-11 (QA141-CD for RSTS/E; QA140-CD, -CH, or -CY for RT-11; and QA139-CD, -CH, or -CY for RSX), or VAX (QA142-CG, -CM, or -CY) host systems

Note: The last character of the order code signifies the media.
2 = RX18 single-density 5 1/4-inch diskette
3 = RX50 double-density 5 1/4-inch diskette
D = 9-track 800-bits-per-inch (bpi) magtape (NRZI)
G = TU58 DECtape II cartridge
H = RL02 disk cartridge
M = 9-track 1600-bits-per-inch magtape (PE)
Q = RL01 disk cartridge
Y = RX01 single-density 8-inch diskette

Licenses for these software products are required for each local and host system.

poly-BSC/3270 Communications
IBM Terminal Emulator

- **Order Code: QA206-C3**

The poly™-BSC/3270 communications package enables you to access an IBM® host computer system using Binary Synchronous Communication (BSC) protocol from a Rainbow personal computer. This software is designed for interactive data communications and allows Rainbow to appear as a terminal of the IBM 3270 family when running IBM mainframe applications, such as transaction processing and database inquiry/update.

Poly-BSC/3270 lets a Rainbow personal computer emulate various members of the IBM 3270 Information Display System family of controllers, display stations, and printers. Under control of poly-BSC/3270, your Rainbow's keyboard and video monitor act as the keyboard and console of a single IBM 3270

Display Station. Rainbow recognizes the mainframe's communications commands, so you can communicate interactively with an IBM host.

With poly-BSC/3270, Rainbow communicates with IBM systems configured to support remote communications to any of the following 3270 hardware:

- 3271 Control Units (model 2) with an attached 3277 Display Station (model 2) and an attached 3284 (model 2) or 3286 (model 2) buffered printer
- 3274 Control Units (model 1C, 21C, 31C, or 51C configuration support A, B only, optioned for BSC) with an attached 3277 (model 2) or 3278 (model 2) Display Station and an attached buffered printer
- 3275 Control Unit Display Stations (model 2) with an attached 3284 (model 3) unbuffered printer
- 3276 Control Unit Display Station (model 2) with an attached buffered printer

Rainbow provides many display system features of the 3271/3274/3277, 3275, and 3276 (except where noted) including:

- EBCDIC communication with translation to and from ASCII at the Rainbow console and simulated printer
- The 3277 78-key typewriter keyboard or a 3278 style keyboard
- All standard program attention keys, including CLEAR, ENTER, TEST REQUEST, and twelve PF keys and two PA keys (3278 mode)
- Cursor positioning keys, TAB, BACKTAB, and NEWLINE
- Support for all standard commands, including write, erase/write, read buffer, read modified, copy (3271/3277 only), and erase all unprotected
- Support for all standard orders, including start field, set buffer address, insert cursor, programmed tab, repeat to address, and erase unprotected to address
- The dial feature for point-to-point connection (3275 and 3276 only)

Poly-BSC/3270 operates on full- or half-duplex communication lines. It also supports point-to-point and multipoint connections. The maximum line speed is 9600 baud half-duplex on dedicated lines.

Among its advanced capabilities: file upload to formatted or unformatted screens via command script files; file download; session logging; unattended operation; programmatic interface; and On-line HELP.

Poly-BSC/3270 lets you control all important configuration parameters. You can save complete sets of poly-BSC/3270 configuration parameters on a diskette. Poly-BSC/3270's on-screen menus simplify setup of configuration parameters for device emulation and control of the emulator.

You can easily install poly-BSC/3270. The required hardware connection uses Rainbow's standard communications port or the low-speed port of the extended communications option (PC1XX-BB).

poly-BSC/3270: A 16-bit application	
Prerequisite Software	CP/M-86/80 or MS-DOS operating system
Minimum Hardware Required	128 Kbytes of memory
	Synchronous modem

poly-BSC/RJE Communications
IBM RJE Station Emulator

- **Order Code: QA208-C3**

With poly-BSC/RJE™ communications software, the Rainbow personal computer emulates an IBM host remote job-entry (RJE) station, thus giving you access to IBM mainframes. This software package is designed for advanced data communications and provides the means to access the extensive information files maintained in powerful central processors using your Rainbow.

Poly-BSC/RJE, developed by Polygon Associates, enables you to enter batch processing jobs into an IBM host system from your Rainbow. This IBM Communications software can be used to submit jobs to an IBM host RJE subsystem, to retrieve output from the host after the job is completed, and to transmit and receive files from an IBM host system or another Rainbow running poly-BSC/RJE. Communication is under a subset of the IBM Binary Synchronous Communication (BSC) protocol.

When running IBM Communications, Rainbow emulates two of the most popular IBM remote job-entry stations, the IBM 2780 Data Transmission Terminal and the IBM 3780 Data Communications Terminal. Most standard and optional features of these devices are supported.

Poly-BSC/RJE provides Rainbow with batch-mode access and file transfer to the large database and technical analysis capability of the IBM host. It transmits files to and retrieves files from an IBM host system or another Rainbow running poly-BSC/RJE. In addition, you can have the emulator either print the files locally—on an LA50, an LA100, or an LQP02—or save them to a Rainbow disk.

Poly-BSC-RJE operates in full- or half-duplex communication mode over point-to-point communications lines. The maximum line speed is 9600 baud on half-duplex or dedicated lines.

You can easily install poly-BSC/RJE. The required hardware connection uses Rainbow's standard communications port or the low-speed port of the extended communications option (PC1XX-BB).

poly-BSC/RJE: A 16-bit application	
Prerequisite Software	CP/M-86/80 or MS-DOS operating system
Minimum Hardware Required	128 Kbytes of memory Synchronous modem

PhoneLink CP/M Communications & The Bridge CP/M Emulator

CP/M Compatibility Tools

- **Order Codes:**
  PhoneLink only
  QA325-C3 *for Rainbow*
  QA268-CM *for VAX with VMS*
  QA270-CM *for PDP-11 with RSX*
  QA272-CM *for PDP-11 with RSTS/E*
  The Bridge only
  QA152-CM *for VAX with VMS*
  QA155-CM *for PDP-11 with RSX*
  QA273-CM *for PDP-11 with RSTS/E*
  Both The Bridge and PhoneLink
  QA269-CM *for VAX with VMS*
  QA271-CM *for PDP-11 with RSX*
  QA274-CM *for PDP-11 with RSTS/E*

PhoneLink™ CP/M Communications and The Bridge™ CP/M Emulator are designed to provide an integrated approach to CP/M compatibility for Digital Equipment Corporation computers. Developed by Virtual Microsystems, Inc., The Bridge supports a standard CP/M-80 environment on VAX and PDP-11 systems. PhoneLink adds CP/M communications on all Bridge host computers as well as the Rainbow personal computer.

Each system you want your Rainbow to communicate with must be running the PhoneLink software. If, for example, you want your Rainbow to talk to a VAX computer, you must have PhoneLink-PC100 on your Rainbow and PhoneLink-VMS running on that VAX.

PhoneLink

PhoneLink CP/M communications software supports direct Rainbow-to-Rainbow communications or communication between Digital minicomputers and the Rainbow 100 at speeds up to 19.6 kilobaud. PhoneLink allows files to be transferred via modem or RS232 link. PhoneLink is available for the following Digital computers: VAX systems running the VAX/VMS operating system and

PDP-11 computers running the RSX-11M, RSX-11M-PLUS, or RSTS/E operating system.

The VMS, RSX, and RSTS/E versions of PhoneLink support batch-mode communications, which allows a prespecified series of commands to execute without operator intervention.

The Bridge

The Bridge is an emulator which supports the CP/M-80 operating system. The Bridge allows minicomputer users access to CP/M application software within the native operating system environment. It is available for the following Digital computers and operating systems: VAX computer systems running the VAX/VMS operating system and PDP-11 computers running the RSX-11M, RSX-11M-PLUS, or RSTS/E operating system.

As a software emulator, The Bridge requires no special hardware and supports the 8080 instruction set. Most CP/M-80 application software and utilities will run under The Bridge as they do on an actual microcomputer.

Files created under The Bridge are in CP/M format and seem to be stored on floppy disks. In fact, they are stored on hard disk, providing faster access time and greater storage capacity. You simply specify the size of these "virtual floppies," which can be as large as four Mbytes, at creation. The "virtual floppy" then grows dynamically up to the specified size.

The Bridge for VMS, RSX, and RSTS/E offers multi-user access and includes utilities to read and write industry-standard CP/M format 8-inch floppies (IBM 3740 single-density with CP/M directory structure).

PhoneLink-PC100: A 16-bit application

Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

Entertainment

Mysteries and Adventures
Infocom Games

- **Order Codes:**
  QA541-C3 *ZORK I*
  QA542-C3 *ZORK II*
  QA543-C3 *ZORK III*
  QA549-C3 *THE ZORK TRILOGY*
  QA544-C3 *DEADLINE*
  QA547-C3 *STARCROSS*
  QA545-C3 *WITNESS*
  QA546-C3 *SUSPENDED*

Infocom's interactive fiction games are among the best-selling recreational software applications on the market. More sophisticated and intellectually challenging than most video-arcade games, these text-only adventures and mysteries engage you in solving original problems that require logic and creative thinking.

The Infocom advantage in the rapidly growing market of prose games is twofold. It begins with INTERLOGIC,™ a powerful machine language used to create programs that incorporate vast amounts of information. One result—all of these games speak *your* language. INTERLOGIC English is a breakthrough command language that understands hundreds of words and accepts complex sentences, rather than the traditional one- or two-word simple commands that often slow down the action and frustrate the player.

Secondly, you'll find that these games are as absorbing—and as hard to put down—as a good book. The plots are complex, the problems original, and the outcomes variable, depending upon the courses of action taken each time a game is played.

Each game has been tailored for the Rainbow personal computers, and each includes documentation which is often as imaginative as the game itself.

ZORK I

ZORK™ I is the first episode of Infocom's best-selling adventure series. As an explorer in the world of Zork, you wander through a vast underground complex discovering riches and combatting danger. Dwarves, monsters, and thieves are here to hinder your great quest.

ZORK II

ZORK II returns you to the underground kingdom to encounter volcanoes, dragons, princesses, and the Wizard of Frabozz. You must use the skills of a master adventurer to solve the intricate riddles placed in your path.

ZORK III

ZORK III takes you on a journey from the ancient high-arched aqueduct system to the Land of Shadow where the puzzles you encounter will test your problem-solving abilities. Your greatest challenge is to discover your goal—something you do not know at the start.

THE ZORK TRILOGY

THE ZORK TRILOGY offers the adventurer all three quests at a savings over the price of separately purchased packages.

DEADLINE

DEADLINE™ is one of the great murder mysteries of the computer age. It is the chance for you, who have had dreams of becoming the world's most renowned detective, to solve one of the most baffling cases in the annals of criminology.

STARCROSS

STARCROSS,™ Infocom's mind-bending science fiction first, launches you into the year 2186 and the depths of space. You are destined to rendezvous with a gargantuan ship from the outer reaches of the galaxy to explore as startling, complex, and enthralling a world as any in Infocom's universe.

WITNESS

WITNESS™ is a hard-boiled "whodunit" thriller which masterfully reconstructs the great detective era of the Thirties. As Chief Police Detective for a quiet burg on the outskirts of Los Angeles, you're up against your toughest case yet.

SUSPENDED

SUSPENDED™ awakens you to the nightmare of a deep-space planet in crisis. Only you, manipulating six engaging robots to solve an assortment of realistic problems, can bring the twilight world of Contra back under control.

The Infocom Games: 16-bit applications	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	64 Kbytes of memory

Business-Simulation Games

Blue Chip Software Games

- **Order Code:**
  QA539-C3 *Millionaire*
  QA581-C3 *Tycoon*

Blue Chip Software's entertainment packages for the Rainbow personal computers are sophisticated investment-simulation games that let you learn about investing while having fun. Each game challenges you to pit your expertise, whether you're a novice or pro, against a market that fluctuates weekly and in which price changes are not random numbers, but actual market trends. Documentation and on-screen presentations of market reports, graphs, and news stories heighten the sense of reality and help you find that perfect opportunity to make your fortune.

Millionaire

Blue Chip Software's Millionaire™ recreates the excitement and tension of trading in the stock market. You will buy and sell 15 different, recognizable stocks from five industry groups over the course of 77 weeks (turns) of transactions. Millionaire keeps you well informed with weekly updates on margin accounts, buy and sell transaction reports, graphs, computer-generated news stories and trading options.

Tycoon

Tycoon,™ from Blue Chip software, is a game that compresses the excitement of 52 weeks of commodity trading into a few hours of fun. You begin with a hypothetical $10,000, and in simulated weeks make purchase decisions based upon a steady stream of business and news information. As your profits increase, you progress through a series of levels which involve increasingly sophisticated trading.

Millionaire and Tycoon: 8-bit applications	
Prerequisite Software	CP/M-86/80 operating system
Minimum Hardware Required	128 Kbytes of main memory for Tycoon; 64 Kbytes for Millionaire

Referral Software

If you're looking for a specific software application for your Rainbow personal computer, check the following chart which lists *Digital Classified Software* and software adapted for Rainbow by third-party vendors.

The Rainbow can run over 1,000 software packages today and the number is growing continually. These software packages span all markets, encompassing general as well as vertical applications.

In the chart of *Referral Software for the Rainbow Personal Computer,* products are listed by application category:

Accounting Software
Communications Software
Construction
Database Management
Education (K-12)
Engineering
Farm, Agriculture
Finance
Games and Entertainment
Government
Graphics
Home, Personal
Insurance
Languages and Programmer Aids
Legal
Medical, Dental
Manufacturing
Miscellaneous Applications
Project Management
Real Estate
Sales
Spreadsheets and Modeling
Statistics
System Software
Taxes and Tax Planning
Word and Text Processing

The third-party software packages listed on the following pages are owned or supplied by the companies noted in the chart. The addresses and telephone numbers of many of the third-party vendors are listed at the end of this section.

To place an order for third-party software, contact your nearest authorized Digital retail outlet.

Order *Digital Classified Software* from your Digital sales representative, Digital Business Center, or authorized Digital retail outlet.

For a list of authorized Digital retail outlets, call 1-800-DIGITAL.

Concurrent CP/M-86

Concurrent CP/M™-86 (CCP/M-86), from Digital Research, Inc., brings multitasking to the Rainbow personal computer. This operating system runs up to four applications simultaneously. With the Rainbow and Concurrent CP/M-86, you can greatly increase your productivity by performing up to four tasks at once.

Each application runs in its own Concurrent CP/M-86 console. You switch between applications instantly by pressing the Control key and a console number (1, 2, 3, or 4) on the numeric keypad.

With CCP/M-86, you can print a document, check the spelling of another document, and sort a database while working interactively with a spreadsheet program. Or, you can switch consoles in one keystroke to send an electronic mail message without losing your place in the application running on the Rainbow. A single keystroke puts you right back where you were.

CCP/M-86's M-DRIVE feature lets you transfer large amounts of data quickly between applications. The M-DRIVE command turns some of Rainbow's large amount of memory into a virtual floppy. You save data to the M-DRIVE instead of the floppy or hard disk to make transferring data very fast.

The Rainbow Advantage

Rainbow's version of Concurrent CP/M-86 includes an extra console (Console 0) that has a system monitoring utility program. You monitor the status of the whole system at once with a single keystroke.

With Rainbow and CCP/M-86, you can define different screen characteristics for each of the four consoles. For example, you can set the screen to display 132 columns on one console while another console displays text in reverse video. You can set the screen displays of consoles to other characteristics such as VT52 terminal emulation and more. The system changes the settings automatically when you switch consoles.

Define multiple sets of programmable function keys for use in the four consoles. You can have two active sets in each console—one set for the Concurrent CP/M-86 command level and one for use within the application program.

The GSX-86 graphics software is included with Rainbow's version of Concurrent CP/M-86. Although the system displays graphics in only one of the four consoles at a time, you can run graphics programs on other consoles perfoming such functions as drawing graphs on a plotter or printing graphics on a dot-matrix printer.

Only 16-bit CP/M-86 applications run under the Concurrent CP/M-86 operating system.

Minimum Hardware Required	Rainbow personal computer with 256 Kbytes of memory Hard disk recommended

Referral Software Chart

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Accounting					
ADS SOFTWARE, INC.					
ACCOUNTS PAYABLE		✓		✓	
ACCOUNTS RECEIVABLE WITH INVOICING	QA542-C3	✓			
ACCOUNTS RECEIVABLE		✓		✓	
PAYROLL		✓		✓	
GENERAL LEDGER		✓		✓	
INVENTORY		✓		✓	
INVOICING WITH A/R-INVENTORY		✓		✓	
SMALL BOOKKEEPING SERVICES		✓		✓	
AHA, INC.					
SOLOMON ACCOUNTS PAYABLE		✓			
SOLOMON ACCOUNTS RECEIVABLE		✓			
SOLOMON CONSOLIDATED ACCOUNTING		✓			
SOLOMON JOB COSTING		✓			
SOLOMON ORDER ENTRY		✓			
SOLOMON PAYROLL		✓			
AID DATA SYSTEMS, INC.					
GENERAL ACCOUNTING SYSTEM			✓	✓	
AMERICAN BUSINESS SYSTEMS, INC.					
BACS ACCOUNTS PAYABLE		✓	✓		
BACS ACCOUNTS RECEIVABLE		✓	✓		
BACS GENERAL LEDGER		✓	✓		
BACS ORDER ENTRY/INV CONTROL		✓	✓		
BACS PAYROLL		✓	✓		
BACS-BUS ACCTG CONTRL SYSTEM		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
CLIENT ACCOUNTING SYSTEM		✓			
AMERICAN COMPUTER SOFTWARE					
ACCOUNTS PAYABLE		✓	✓		
ACCOUNTS RECEIVABLE		✓	✓		
GENERAL LEDGER		✓	✓		
PAYROLL		✓	✓		
THE BOTTOM LINE		✓	✓		
THE FIRM (ACCTG SYSTEM)		✓	✓		
THE PROFESSIONAL TIME/BILLING		✓	✓		
AMERICAN INTEGRITY SYSTEMS, INC.					
ACCOUNTS PAYABLE		✓	✓	✓	
ACCOUNTS RECEIVABLE		✓	✓	✓	
GENERAL LEDGER		✓	✓	✓	
INVENTORY CONTROL		✓	✓	✓	
SALES ORDER ENTRY		✓	✓	✓	
ARTICULATE PUBLICATIONS, INC.					
GENERAL LEDGER		✓	✓		
ASK MICRO, INC.					
ACCOUNTS PAYABLE			✓	✓	
ACCOUNTS RECEIVABLE			✓	✓	
GENERAL LEDGER			✓	✓	
INVENTORY			✓	✓	
JOB COSTING			✓	✓	
PAYROLL			✓	✓	
POINT-OF-SALE			✓	✓	
BALCONES COMPUTER CORPORATION					
THE BOSS FINANCIAL ACCOUNTING		✓			
THE BOSS INVENTORY ACCOUNTING		✓			
THE BOSS PAYROLL MANAGEMENT		✓			
THE BOSS TIME BILLING SYSTEM		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
BEAR COMPUTERS, INC.					
PROFESSIONAL TIME & BILLING		✓	✓	✓	
BPI SYSTEMS, INC.					
ACCOUNTS PAYABLE		✓			
ACCOUNTS RECEIVABLE		✓			
GENERAL ACCOUNTING		✓			
PAYROLL		✓			
COMPAL, INC.					
ACCOUNTANTS CLIENT SYSTEM		✓			
ACCOUNTS PAYABLE		✓			
ACCOUNTS RECEIVABLE		✓			
GENERAL LEDGER		✓			
INTEGRATED ACCOUNTING I		✓			
INTEGRATED ACCOUNTING II		✓			
INVENTORY CONTROL		✓			
PAYROLL		✓			
PROBILL I		✓			
PROBILL II		✓	✓		
COMPUTER PROGRAM ASSOCIATES					
ACCOUNTING SYSTEM		✓			
CLIENT WRITE-UP			✓	✓	
ORDER ENTRY			✓	✓	
CPAIDS, INC.					
CLIENT WRITE-UP WITH PAYROLL		✓			
CYMA CORPORATION					
CLIENT ACCOUNTING		✓	✓	✓	
ACCOUNTS PAYABLE		✓	✓	✓	
ACCOUNTS RECEIVABLE		✓	✓	✓	
GENERAL LEDGER		✓	✓	✓	
INVENTORY/ORDER PROCESSING		✓	✓	✓	
MULTI-STATE PAYROLL		✓	✓	✓	
SMALL BUSINESS		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
GENERAL BUS SYS-4 MODULE		✓	✓	✓	
GENERAL BUS SYS-5 MODULE		✓	✓	✓	
FLORIDA DATA SYSTEMS, INC.					
ACCOUNTS PAYABLE		✓	✓		
ACCOUNTS RECEIVABLE		✓	✓		
GENERAL LEDGER		✓	✓		
INTEGRATED ACCOUNTING PACKAGE		✓	✓		
INVENTORY CONTROL		✓	✓		
PAYROLL		✓	✓		
FRANKLEN COMPUTER SYSTEMS, INC.					
CPA-11		✓	✓	✓	
FRONTIER SOFTWARE					
PROFESSIONAL TIME ACCOUNTING		✓	✓		
HAYDEN SOFTWARE COMPANY					
ACCOUNTS PAYABLE		✓			
ACCOUNTS RECEIVABLE		✓			
BILL OF MATERIALS		✓			
DEALER UTILITIES		✓			
GENERAL LEDGER		✓			
INVENTORY		✓			
PAYROLL		✓			
INTERNATIONAL MICRO SYSTEMS					
IMS FUND ACCOUNTING	QA329-C3	✓			
IMS JOB ACCOUNTING	QA330-C3	✓			
INTERSOFT, INC.					
INTEGRATED ACCOUNTING SYSTEM		✓			
TRANSPORTATION TRACKING SYSTEM			✓		
MAINSTREET COMPUTER PRODUCTS					
ACCOUNTS PAYABLE		✓	✓		
ACCOUNTS RECEIVABLE		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
GENERAL LEDGER		✓	✓		
INVENTORY CONTROL		✓	✓		
PAYROLL		✓	✓		
SYSTEMS MODULE		✓	✓		
MCBA, INC.					
CUSTOMER ORDER PROCESSING			✓	✓	
FIXED ASSETS/ DEPRECIATION			✓	✓	
ACCOUNTS PAYABLE			✓	✓	
ACCOUNTS RECEIVABLE			✓	✓	
GENERAL LEDGER			✓	✓	
INVENTORY			✓	✓	
JOB COSTING			✓	✓	
PAYROLL			✓	✓	
MDS ASSOCIATES, INC.					
MYTE MYKE ACCOUNTS PAYABLE		✓		✓	
MYTE MYKE GL/FINANCIAL PROJ.		✓		✓	
MYTE MYKE INVENTORY CONTROL		✓		✓	
MYTE MYKE ORDER ENTRY/BILLING		✓		✓	
MYTE MYKE PROTIME TIME & BILLING		✓		✓	
MYTE MYKE SALES/REPORT WRITER		✓		✓	
MICRO BUSINESS APPLICATIONS					
A/R WITH INVOICING		✓	✓	✓	
ACCOUNTS PAYABLE/ CHECK WRTG		✓	✓	✓	
ACCTG/DBASE II INTERFACE		✓	✓	✓	
FIXED ASSET ACCOUNTING		✓	✓	✓	
G/L WITH FIN REPT WRITER		✓	✓	✓	
INVENTORY CTRL WITH INVOICING		✓	✓	✓	
MBA ACCOUNTANT		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
MULTI COMPANY OPTION		✓	✓	✓	
MULTISTATE PAYROLL/ CHECKS		✓	✓	✓	
P.O. & REQUISITIONS		✓	✓	✓	
PROFESSIONAL TIME ACCOUNTING		✓	✓	✓	
SUPERCALC INTERFACE FOR G/L		✓	✓	✓	
MICRO INFORMATION SYSTEMS, INC.					
JOBSHOP		✓	✓		
THE MAGIC QUILL (CLIENT)		✓	✓		
MICROCOMPUTER CONSULTANTS					
ACCOUNTS PAYABLE		✓			
ACCOUNTS RECEIVABLE		✓			
INVENTORY CONTROL		✓			
JOB COST CONTROL		✓			
PURCHASING		✓	✓		
SALES ORDER ENTRY		✓	✓		
OCCUPATIONAL COMPUTING CO., INC.					
A/R WITH BILLING AND INVENTORY				✓	
ACCOUNTS PAYABLE				✓	
FIXED ASSETS				✓	
G/L & CLIENT WRITE-UP				✓	
JOB COSTING				✓	
MFG INVENTORY CONTROL				✓	
ORDER ENTRY				✓	
PAYROLL WITH UNION & LABOR DIST.				✓	
OPEN SYSTEMS, INC.					
SOFTWARE FITNESS A/P		✓	✓	✓	
SOFTWARE FITNESS A/R		✓	✓	✓	
SOFTWARE FITNESS GENERAL LEDGER		✓	✓	✓	
SOFTWARE FITNESS INVENTORY		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
SOFTWARE FITNESS JOB COST		✓	✓	✓	
SOFTWARE FITNESS PAYROLL		✓	✓	✓	
SOFTWARE FITNESS SALES ORDER		✓	✓	✓	
OSPREY BUSINESS SOFTWARE, INC.					
ACCOUNTS PAYABLE				✓	
ACCOUNTS RECEIVABLE				✓	
GENERAL LEDGER				✓	
INVENTORY CONTROL				✓	
INVOICING				✓	
PACIFIC DATA SYSTEMS					
-MONEY-TRACK-					✓
PEACHTREE SOFTWARE, INC.					
ACCOUNTS PAYABLE/8		✓		✓	
ACCOUNTS RECEIVABLE/8		✓		✓	
CLIENT POSTING/ ACCOUNTING		✓		✓	
GENERAL LEDGER/8		✓		✓	
INVENTORY CONTROL/8		✓		✓	
PAYROLL/8		✓		✓	
SALES INVOICING		✓		✓	
SALES TRACKER		✓			
PEARLSOFT					
ACCOUNTING PEARL			✓	✓	
PRAIRE DATA SYSTEMS					
A/P WITH PURCHASE ANALYSIS			✓		
A/R WITH SALES ANALYSIS			✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
PRODATA, INC.					
MJA ACCOUNTS PAYABLE	QA402-C3	✓			
MJA GENERAL LEDGER	QA399-C3	✓			
MJA PAYROLL AND PERSONNEL	QA400-C3	✓			
MJA ACCOUNTS RECEIVABLE	QA401-C3	✓			
PROFESSIONAL DATA MANAGEMENT					
ACCOUNTING PACKAGE			✓		
REALWORLD CORPORATION					
MBSI ACCOUNTS PAYABLE	QA292-C3		✓		
MBSI ACCOUNTS RECEIVABLE	QA291-C3		✓		
MBSI GENERAL LEDGER	QA293-C3		✓		
MBSI INVENTORY CONTROL	QA297-C3		✓		
MBSI PAYROLL	QA296-C3		✓		
MBSI SALES ANALYSIS	QA295-C3		✓		
RVA TECHNOLOGY, INC.					
FLEXACCOUNT ACCOUNTS PAYABLE		✓	✓		
FLEXACCOUNT ACCTS RECEVBL		✓	✓		
FLEXACCOUNT GENERAL LEDGER		✓	✓		
FLEXACCOUNT INVENTORY CONTROL		✓	✓		
FLEXACCOUNT ORDER PROCESSING/INVENTORY		✓	✓		
FLEXACCOUNT PAYROLL		✓	✓		
FLEXACCOUNT PURCHASING		✓	✓		
FLEXACCOUNT SALES ANAL/COMM		✓	✓		
SMALL BUSINESS SYSTEMS, INC.					
ACCOUNTS PAYABLE		✓		✓	
ACCOUNTS RECEIVABLE		✓		✓	
GENERAL LEDGER		✓		✓	
INVENTORY		✓		✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
ORDER ENTRY		✓		✓	
PAYROLL		✓		✓	
SOFTTRAN CORPORATION					
ACCOUNTS PAYABLE				✓	
ACCOUNTS RECEIVABLE				✓	
GENERAL LEDGER				✓	
INVENTORY MANAGEMENT				✓	
SALES ORDER ENTRY				✓	
SOFTWARE-16 INTEGRATED ACCTG				✓	
SOFTWARE LIBRARIES, INC.					
THE BUSINESS LIBRARY PAYROLL SYSTEM				✓	
THE BUSINESS LIBRARY ACCOUNTS PAYABLE				✓	
THE BUSINESS LIBRARY ACCOUNTS RECEIVABLE				✓	
THE BUSINESS LIBRARY GENERAL LEDGER				✓	
THE BUSINESS LIBRARY INVENTORY CONTROL				✓	
THE BUSINESS LIBRARY SALES ORDER ENTRY				✓	
THE BUSINESS LIBRARY PURCHASE ORDER TRACKING				✓	
THE LIBRARIAN (BASE SW)				✓	
SSR CORPORATION					
INFOTORY (HARD DISK VERSION)				✓	
INFOTORY INVENTORY MANAGEMENT				✓	
STAR SOFTWARE SYSTEMS					
A/P WITH PURCHASE ORDERS		✓	✓	✓	
ACCOUNTS RECEIVABLE W/INVOICING		✓	✓	✓	
GENERAL LEDGER		✓	✓	✓	
PAYROLL		✓	✓	✓	
THE ACCOUNTING PARTNER		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
STATE OF THE ART					
ACCOUNTS PAYABLE					✓
ACCOUNTS RECEIVABLE					✓
BUDGET & FINANCIAL REPORTS					✓
GENERAL LEDGER					✓
INVENTORY					✓
PAYROLL					✓
SALES/INVENTORY CONTROL					✓
STRUCTURED SYSTEMS GROUP					
ACCOUNTS PAYABLE		✓	✓	✓	
ACCOUNTS RECEIVABLE		✓	✓	✓	
GENERAL LEDGER		✓	✓	✓	
INVENTORY CONTROL		✓	✓	✓	
ORDER ENTRY		✓	✓	✓	
PAYROLL		✓	✓	✓	
SUNBURST SOFTWARE, LTD.					
ACCOUNTS PAYABLE			✓	✓	
ACCOUNTS RECEIVABLE			✓	✓	
ESTIMATING JOB COSTING			✓	✓	
GENERAL LEDGER			✓	✓	
INVENTORY CONTROL			✓	✓	
PAYROLL			✓	✓	
POINT-OF-SALE			✓	✓	
PROFESSIONAL MGMT PACKAGE			✓	✓	
PROFESSIONAL TIME & BILLING			✓	✓	
SYSTEMS PLUS, INC.					
CLIENT MANAGER (CPA)			✓	✓	
TCS SOFTWARE, INC.					
TCS LEDGER SYSTEM		✓		✓	
TCS TOTAL ACCOUNTING SYS		✓		✓	
TCS TOTAL INVENTORY		✓		✓	
TCS TOTAL LEDGER		✓		✓	
TCS TOTAL MATERIALS		✓		✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
TCS TOTAL PAYABLES		✓		✓	
TCS TOTAL PAYROLL		✓		✓	
TCS TOTAL RECEIVABLES		✓		✓	
TCS TOTAL SALES		✓			
TCS TOTAL UTILITIES		✓		✓	
TIMBERLINE SYSTEMS, INC.					
ACCOUNTS PAYABLE					✓
ACCOUNTS RECEIVABLE					✓
GENERAL LEDGER					✓
INVENTORY MANAGEMENT					✓
PAYROLL					✓
STARTER SET ACCOUNTING PACKAGES					✓
UNIVAIR, INC.					
ACCOUNTS PAYABLE		✓	✓		
ACCOUNTS RECEIVABLE		✓	✓		
GENERAL LEDGER ACCTG. SYS		✓	✓		
INVENTORY CONTROL		✓	✓		
USER FRIENDLY SOFTWARE, INC.					
CUTE		✓	✓		
Communications Software					
ADVANCED MICRO TECHNIQUES					
MICROEZLINK		✓			
MICROTLX		✓			
ARTICULATE PUBLICATIONS, INC.					
INTERCOM COMPLETE		✓	✓		
INTERCOM UTILITIES		✓	✓		
BENCHMARK/METASOFT CORPORATION					
TELECOM			✓	✓	
CAWTHORN SCIENTIFIC GROUP					
CTL: COMPUTER-TELEX LINK		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
TXL: TELEX-LINK			✓	✓	
D.J.R. ASSOCIATES, INC.					
FMS EASY-LINK		✓	✓	✓	
DIGISOFT COMPUTERS, INC.					
MAIL-COM		✓		✓	
DYNAMIC MICROPROCESSOR ASSOC.					
ASCOM		✓	✓		
HAYES MICROCOMPUTER PRODUCTS					
SMARTCOM TWO			✓		
IE SYSTEMS, INC.					
ACCULINK		✓	✓		
MICROPROCESSOR ASSOCIATES					
VU-LINK (ELECTRONIC MAIL)			✓	✓	
MICROSTUF, INC.					
CROSSTALK			✓		
MYCROFT LABS, INC.					
MITE-80		✓			
MITE-86			✓		
POLYGON ASSOCIATES, INC.					
POLY-BSC/3270	QA206-C3		✓	✓	
POLY-BSC/RJE	QA208-C3		✓	✓	
POLY-COM	QA193-C3		✓	✓	
TICOM SYSTEMS, INC.					
REMCOM					✓
VIRTUAL MICROSYSTEMS, INC.					
PHONELINK & THE BRIDGE	QA325-C3		✓		
WOOLF SOFTWARE SYSTEMS					
MOVE-IT		✓			

Construction

AID DATA SYSTEMS, INC.					
CONSTRUCTION			✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
COMPUTER PROGRAM ASSOCIATES					
CONSTRUCTION ACCOUNTS PAYABLE			✓	✓	
CONSTRUCTION ACCOUNTS RECEIVABLE			✓	✓	
CONSTRUCTION GENERAL LEDGER			✓	✓	
CONSTRUCTION INVENTORY			✓	✓	
CONSTRUCTION PAYROLL			✓	✓	
JOB COSTING & GENERAL LEDGER			✓	✓	
CONSTRUCTION DATA CONTROL, INC.					
CONSTRUCTION ACCOUNTS PAYABLE		✓	✓		
CONSTRUCTION ESTIMATING		✓	✓		
CONSTRUCTION GENERAL LEDGER		✓	✓		
CONSTRUCTION JOB COST		✓	✓		
CONSTRUCTION PAYROLL		✓	✓		
CONSTRUCTION ESTIMATING		✓	✓		
CONTRACTOR MANAGEMENT SYSTEMS					
ESPRI-CONSTRUCTION ESTIMATION		✓		✓	
CYMA CORPORATION					
CONSTRUCTION MANAGEMENT		✓	✓	✓	
FLORIDA DATA SYSTEMS, INC.					
PROJECT MANAGEMENT CONSTRUCTION		✓	✓		

Database Management

ABACUS DATA, INC.					
INFORMA		✓			
INFORMA-5			✓	✓	
INFORMA-10			✓	✓	

Producer	**DCS**	**CP/M-86/80 8-bit**	**CP/M-86/80 16-bit**	**MS-DOS**	**p-System**
INFORMA-15			✓	✓	
INFORMA-20			✓	✓	
AMERICAN TRAINING INTERNATIONAL					
D.B. POWER (DBASE II)		✓			
APPLIED BUSINESS SOFTWARE					
ABS INFO. MANAGEMENT SYSTEM		✓	✓		
ARTICULATE PUBLICATIONS, INC.					
DATAMERGE (FILE MANAGER)		✓	✓		
ASHTON-TATE					
DBASE II	QA281-C3		✓	✓ *	
FRIDAY!		✓	✓	✓	
CONDOR COMPUTER CORP.					
CONDOR 1	QA156-C3	✓			
CONDOR 3	QA158-C3	✓			
D.J.R. ASSOCIATES, INC.					
FMS 80		✓			
FMS 81		✓			
DBI SOFTWARE PRODUCTS					
ADVANCED SYSTEM PAC		✓		✓	
SYSTEMPAC		✓		✓	
DIGITAL RESEARCH, INC.					
SUPERFILE		✓			
FLORIDA DATA SYSTEMS, INC.					
MBASE		✓	✓		
FOX & GELLER, INC.					
DUTIL (DBASE II INTERFACE)		✓		✓	
QUICKCODE				✓	
FYI, INC.					
SUPER-FILE		✓			
INNOVATIVE SOFTWARE, INC.					
T.I.M. IV			✓		

* Not DCS

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
INTERNATIONAL MICROCOMPUTER SW.					
BISYBASE			✓	✓	
LINK SYSTEMS, INC.					
DATAFAX				✓	
MARTIN MARIETTA DATA SYSTEMS					
KEEPIT			✓	✓	
SORTIT				✓	
MICRO APPLICATIONS GROUP					
MAG/BASE 2		✓	✓	✓	
MAG/BASE 3		✓	✓	✓	
MAG/BASE 1		✓	✓	✓	
MAG/SAM		✓	✓	✓	
MICRO INFORMATION SYSTEMS, INC.					
THE SCHEDULER		✓	✓		
MICRO-AP					
SELECTOR		✓	✓	✓	
MICROPRO INTERNATIONAL CORP.					
DATASTAR		✓		✓	
INFOSTAR	QA444-C3		✓		
SUPERSORT I		✓		✓	
SUPERSORT II		✓		✓	
MICRORIM, INC.					
MICRORIM DBMS		✓	✓	✓	
MICROSTUF, INC.					
INFOSCOPE				✓	
ORGANIC SOFTWARE, INC.					
DATEBOOK		✓	✓		
PEACHTREE SOFTWARE, INC.					
CALENDAR MANAGEMENT		✓		✓	
INFORMATION ACCESS		✓		✓	
LIST MANAGER	QA277-C3	✓			
PEARLSOFT					
PERSONAL PEARL		✓	✓		
PERFECT SOFTWARE, INC.					

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
PERFECT FILER		✓			
SOFTWARE PUBLISHING CORPORATION					
PFS:FILE	QA575-C3			✓	
PFS:REPORT	QA577-C3			✓	
SOFTWARE SOLUTIONS, INC.					
DATAEASE				✓	
SORCIM CORPORATION					
SUPERDATA		✓	✓		
SSR CORPORATION					
OMNIFILE				✓	
STATCOM CORPORATION					
CRTFORM		✓	✓		
INFOMGR		✓	✓		
STRUCTURED SYSTEMS GROUP					
ANALYST		✓	✓	✓	
Q SORT		✓	✓	✓	
T/MAKER COMPANY					
T/MAKER II		✓			
TCS SOFTWARE, INC.					
TCS Q REPORT				✓	
TCS SIMPLE		✓		✓	
TICOM SYSTEMS, INC.					
FINAL FORM					✓
USER FRIENDLY SOFTWARE, INC.					
IT		✓	✓		
UVEON COMPUTER SYSTEMS, INC.					
OPTIMUM EXECUTIVE SERIES			✓		
OPTIMUM PROFESSIONAL SERIES			✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Education, School District (K-12)					
APPLIED EDUCATION SYSTEMS					
DAILY ATTENDANCE ACCTG		✓	✓		
EDUCATION ASSESSMENT		✓	✓		
GRADE REPORTING SYSTEM		✓	✓		
TEST SCORING SYSTEM		✓	✓		
HOUGHTON MIFFLIN TSC DIVISION					
GUIDANCE INFORMATION SYSTEM				✓	
LANGUAGE: MECHANICS				✓	
LANGUAGE: PARTS OF SPEECH				✓	
LANGUAGE: SENTENCE STRUCTURE				✓	
LANGUAGE: USAGE				✓	
MATHEMATICS 3-6: DECIMALS				✓	
MATHEMATICS 3-6: FRACTIONS				✓	
MATHEMATICS 3-6: WHOLE NUMBERS				✓	
MATHEMATICS 7-8: DECIMALS				✓	
MATHEMATICS 7-8: FRACTIONS				✓	
MATHEMATICS 7-8: GEOMETRY				✓	
MATHEMATICS 7-8: WHOLE NUMBERS				✓	
READING: STUDY SKILLS				✓	
READING: WORD ATTACK				✓	
READING: WORD STRUCTURE				✓	
THE ANSWER (TEST/SCORING)				✓	
WTJA—JOB SEARCH				✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
RESOURCE SOFTWARE INTL., INC.					
ADD 2 DIGITS WITH CARRY		✓			
ADDING 2 DIGITS W/O CARRY		✓			
LEARN & PRACTICE DECIMALS		✓			
LEARN & PRACTICE DECIMALS		✓			
LEARN & PRACTICE DISCOUNTS		✓			
LEARN & PRACTICE EQUIV. FRAC.		✓			
LEARN & PRACTICE FRACTIONS		✓			
LEARN & PRACTICE PERCENTAGES		✓			
LET'S HAVE FUN COMPARING		✓			
LET'S HAVE FUN COUNTING		✓			
LET'S HAVE FUN SUBTRACTING		✓			
LETTER WRITING		✓			
MULTIPLYING SINGLE DIGITS		✓			
SENTENCES I: COMBINING		✓			
SENTENCES II: CLASSIFYING		✓			
SIMPLE ADDITION		✓			
SIMPLE DIVISION		✓			
SUBTRACTION I		✓			
SUBTRACTION II		✓			
VERBS I: PAST TENSE/PART		✓			
VERBS II: LINKING VERBS		✓			
VOCABULARY BUILDING I		✓			
VOCABULARY BUILDING II		✓			
VOCABULARY BUILDING III		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Engineering					
AMERICAN COMPUTERS & ENGINEERS					
SCADA/A-I: MODULE PACKAGE		✓			
SCADA/A: 2D/3D BEAM-TRUSS		✓			
SCADA/B: HI RES GRAPHICS		✓			
SCADA/C: LOW RES GRAPHICS		✓			
SCADA/D: DYNAMIC ANALYSIS		✓			
SCADA/E: PLATE ELEMENT		✓			
SCADA/F: PLANE STRESS ELEMENTS		✓			
SCADA/G: 8 NODE SOLID ELEMENTS		✓			
SCADA/H: STEEL DESIGN		✓			
SCADA/I: CONCRETE DESIGN		✓			
BOFFIN, INC.					
GOOFIE				✓	
HIPO				✓	
HOGO				✓	
HORNBIL				✓	
PAMDA				✓	
QUICKIE				✓	
UHLOG				✓	
DISCOTECH MICROCOMPUTER PRODUCTS					
BEAM-1:BEAM ANALYSIS/DESIGN		✓			
COGO-COORDINATE GEOMETRY		✓			
DISCOSPECS-ARCHITECT WP		✓			
EDM/TOPOGRAPHIC SURVEY		✓			
ELFAN		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
FDP-FOUNDATION DESIGN PACKAGE		✓			
FINDER:FIELD NOTE DATA REDUCTION		✓			
FOOTING-ISOLATED FOOTING DESIGN		✓			
HCS-HORIZ. CURVE STAKING		✓			
MAPCHECK PARCEL PERIMETER		✓			
NRG-1:CALIF. TITLE 24 RESIDENT		✓			
PGB-PIER/GRADE BEAM DESIGN		✓			
PLOTTER-POINT TO POINT PLOTTING		✓			
POLEM-POLE EMBEDMENT DESIGN		✓			
RETWALL-RETAINING WALL DESIGN		✓			
STADIA-STADIA REDUCTION		✓			
THE ESTIMATOR		✓			
THE FRAMING CALCULATOR		✓			
TILTWALL-CONCRETE TILE-UP WALL		✓			
VERTICURVE-VERTICAL CURVE DESIGN		✓			
WATNET-WATER NETWORK ANALYSIS		✓			
ECOM ASSOCIATES, INC.					
DEC/CD-1 CONCRETE BEAM DESIGN			✓		
DEC/CD-2 CONCRETE COLUMN DESIGN			✓		
DEC/CD-3 FLAT SLAB ANALYSIS			✓		
DEC/CD-SD CIVIL ENGINEERING PACK			✓		
DEC/FA-3 GENERAL FRAME ANALYSIS			✓		
DEC/SD-1 STEEL BEAM DESIGN			✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
DEC/SD-2 STEEL COLUMN DESIGN			✓		
ELITE SOFTWARE DEVELOPMENT, INC.					
BUILDING ENERGY ANALYSIS		✓	✓		
COMMERCIAL HVAC LOAD (FIFTY-ZONE)		✓	✓		
COMMERCIAL HVAC LOAD (FIFTY-ZONE)		✓	✓		
COMMERCIAL HVAC LOAD (UNLIMITED)		✓	✓		
LIFE CYCLE ECONOMICS		✓	✓		
LIGHTING CALCULATIONS		✓	✓		
SERVICE SUPPLY PIPE SIZE		✓	✓		
SHORT CIRCUIT CALCULATION		✓	✓		
STATIC REGAIN DUCT SIZING		✓	✓		
U-FACTOR CALCULATIONS		✓	✓		
ISYS CORPORATION					
MICRO/SCAN-83: STOCK PORT			✓		
NATIONAL INSTRUMENTS					
RAINBOW GPIB-PC: IEEE-488			✓		
SOFTWARE ARTS, INC.					
MECHANICAL ENG TK!SOLVER PACK	QA468-C3		✓		
TATUM LABS					
ELECTRONIC CIRCUIT ANALYSIS		✓		✓	

Farm, Agriculture

ADS SOFTWARE, INC.					
ADS VETERINARIANS		✓		✓	
AGRADATA, INC.					
HERDSMAN (DAIRY MANAGEMENT)		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
AGRI-MANAGEMENT SERVICES					
BEEF FEEDLOT MANAGEMENT			✓	✓	
DAIRY MANAGEMENT SYSTEM			✓	✓	
FEED PLANT MANAGEMENT			✓	✓	
GROVE & ORCHARD MGMT			✓	✓	
HORSE MANAGEMENT SYSTEM			✓	✓	
LAND & CROP MANAGEMENT			✓	✓	
PLANT NURSERY MANAGEMENT			✓	✓	
POULTRY GROWER OPS MGMT			✓	✓	
SWINE MANAGEMENT SYSTEM			✓	✓	
ARTICULATE PUBLICATIONS, INC.					
MICROMED VETERINARIAN		✓	✓		
BRUBAKER & ASSOCIATES, INC.					
FARM PROFIT PLAN (CROP MODEL)				✓	
COUNTRYSIDE DATA					
AG-FINANCE		✓			
AG-MARKETER		✓			
AG-PAYROLL		✓			
AG-PLANNER		✓			
COW/CALF MANAGEMENT		✓			
SWINE MANAGEMENT		✓			
FARM MANAGEMENT, INC.					
THE FINANCIAL MANAGER			✓		
FBS SYSTEMS, INC.					
DEPRECIATION PLUS				✓	
MARKET WINDOW-COMMODITIES				✓	
SEC. OF AGRI-HERD AUDIT			✓		
SEC. OF AGRI-MICROMIXER			✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
SEC. OF AGRI-SOW AUDIT		✓			
SEC. OF AGRI-TRANSACTIONS		✓			
HARRIS TECHNICAL SYSTEMS/AGDISK					
AG-DISK CROP/LIVESTOCK					✓
CORN/SOYBEAN MANAGEMENT SERIES I					✓
COW/CALF TEMPLATE					✓
CROP MANAGEMENT TEMPLATE					✓
FINANCIAL MANAGEMENT SERIES ONE					✓
MACHINERY MANAGEMENT SERIES ONE					✓
SWINE FINISHING TEMPLATE					✓
SWINE MANAGEMENT SERIES ONE					✓
RED WING BUSINESS SYSTEMS, INC.					
ACCOUNTS PAYABLE				✓	
ACCOUNTS RECEIVABLE				✓	
ASSET MANAGEMENT				✓	
FARM INVENTORY				✓	
GENERAL LEDGER				✓	
LIVESTOCK DECISION AIDS				✓	
PAYROLL				✓	
WISCONSIN MICROWAVE					
AG-PAC (DECISION AIDS)					✓

Finance

BRIGHTBILL-ROBERTS & CO., LTD.					
MATHEMAGIC		✓	✓		
COMSHARE TARGET SOFTWARE, INC.					
TARGET FINANCIAL MODELING	QA219-C3		✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
EAGLE SOFTWARE PUBLISHING CO.					
MONEY DECISIONS VOL I	QA301-C3		✓		
MONEY DECISIONS VOL II	QA302-C3		✓		
EXECUTEC CORPORATION					
ASSET/LIABILITY MGMT				✓	
FIXED ASSETS ACCOUNTING				✓	
IMPORT/EXPORT SYSTEM				✓	
IRA/CD ANALYSIS				✓	
SAFE DEPOSIT ACCOUNTING				✓	
SERIES ONE PLUS (INTEGR)				✓	
INTELLIGENCE, LTD.					
MICRO MODELLER (FINANCE)			✓	✓	
INTERNATIONAL MICROVIDEO					
CALCUSCRIPT (FIN MGMT)		✓			
MARTIN MARIETTA DATA SYSTEMS					
CALCIT				✓	
PRAIRE DATA SYSTEMS					
AMORTIZATION SYSTEM			✓		
CONCEPT I (INTG FIN SYS)			✓		
FINANCIAL ACCOUNTING SYS			✓		
RICHARD GAINER & CO.					
IRA SYSTEM (BANKING)		✓	✓		
LOAN LOSS CONTROL		✓	✓		
LOAN PRICING		✓	✓		
SOFTWARE ARTS, INC.					
FINANCIAL MGT TK!SOLVER PACK	QA469-C3		✓		
SOFTWARE LIBRARIES, INC.					
PROFIT PLANNING				✓	
THE WALTON GROUP					
PORTFOLIO MANAGER				✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Games and Entertainment					
BLUE CHIP SOFTWARE, INC.					
BARRON		✓	✓		
MILLIONAIRE	QA539-C3	✓			
SQUIRE		✓	✓		
TYCOON	QA581-C3	✓			
INFOCOM, INC.					
DEADLINE	QA544-C3		✓		
ENCHANTER			✓		
INFIDEL			✓		
PLANETFALL			✓		
STARCROSS	QA547-C3		✓		
SUSPENDED	QA546-C3		✓		
WITNESS	QA545-C3		✓		
ZORK I	QA541-C3		✓		
ZORK II	QA542-C3		✓		
ZORK III	QA543-C3		✓		
ZORK TRILOGY (ZORK1/2/3)	QA549-C3		✓		
MARK OF THE UNICORN					
SCRIBBLE		✓			
SUPERSOFT, INC.					
ANALIZA		✓			
THE SOFTWARE TOOLWORKS					
ADVENTURE		✓	✓		
AIR TRAFFIC CONTROLLER		✓			
AIRPORT		✓	✓		
COMPUTER CHEF		✓	✓		
MYCHESS		✓	✓		
SNAKE		✓	✓		
WORDWIGGLE		✓	✓		
YAHOO SOFTWARE, INC.					
CATCHUM		✓			
LADDER		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Government					
SUNBURST SOFTWARE, LTD.					
BUDGETARY ACCT FOR GOVERNMENT			✓	✓	
UTILITY BILLING			✓		
THE COMPUTER CENTER					
FINANCIAL MGMT SYSTEM		✓	✓	✓	
MUNIS ACCOUNTS PAYABLE		✓	✓	✓	
MUNIS BUDGET PREPARATION		✓	✓	✓	
MUNIS MULTI-FUND GENERAL LEDGER		✓	✓	✓	
MUNIS MISC.A/R		✓	✓	✓	
MUNIS PAYROLL SYSTEM		✓	✓	✓	
MUNIS PURCHASE ORDER ENCUMBRANCE		✓	✓	✓	
MUNIS TAX BILLING/ RECEIVABLE		✓	✓	✓	
MUNIS TOTAL FIN/BILL SYSTEM		✓	✓	✓	
MUNIS UTILITY BILL/ RECEIVABLE		✓	✓	✓	
MUNIS VOTERS LIST		✓	✓	✓	
Graphics					
BRIGHTBILL-ROBERTS & CO., LTD.					
COLORMAGIC				✓	
GRAPHMAGIC II				✓	
CABLESHARE, INC.					
PICTURE PAINTER		✓	✓		
CHANG LABORATORIES, INC.					
GRAPHPLAN-86	QA561-C3		✓		
DIGITAL EQUIPMENT CORPORATION					
REGIS	QA743-C3		✓	✓	
ESCAPE COMPUTER SOFTWARE, INC.					
DAISY AIDS	QA228-C3	✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
FOX & GELLER, INC.					
DGRAPH (INFO MGMT/GRAPH)		✓		✓	
GMS COMPUTER SYSTEMS					
INFOGRAPH 100			✓		
GRAPHIC COMMUNICATIONS, INC.					
GRAPHWRITER				✓	
INTERNATIONAL MICROCOMPUTER SW.					
FOUR-POINT GRAPHICS				✓	
MICRO-ART CORPORATION					
IMAGE WORD/ GRAPHICS PROCESSOR		✓			
REDDING GROUP, INC.					
GRAPHTALK		✓		✓	
STROBE, INC.					
ENHANCED BUSINESS GRAPHICS			✓	✓	
STROBE STARTER SYSTEM			✓	✓	
STROBEVIEW			✓	✓	
SUPERSOFT, INC.					
STATS GRAPH		✓			
XIPHIAS					
VIDEOGRAPH TOOLS				✓	
VGSKETCH				✓	
VGTYPE				✓	
VIDEOGRAPH				✓	

Home, Personal

BETTER BUSINESS SOLUTIONS					
DBASE WRITES CHECKS			✓	✓	
INNOSYS, INC.					
MONEY MAESTRO			✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Insurance					
CONTINENTAL SOFTWARE, INC.					
APPLICATION TRACKING		✓	✓		
DATAWRITER (DBMS/WP/MAIL)			✓	✓	
DATAWRITER CUSTOMER TRACKING		✓	✓	✓	
LIFE-TRACK		✓	✓		
PROSPECT TRACKING		✓	✓		
D.J.R. ASSOCIATES, INC.					
FMS LIFE-PAK		✓	✓	✓	
INSURANCE SALES SYSTEMS					
AUTO RATING		✓		✓	
FINANCIAL GOALS/ PROGRAMS		✓		✓	
HOMEOWNERS SYSTEMS		✓		✓	
HR-10 (KEOGH PLAN)		✓		✓	
IRA PROPOSAL PACKAGE		✓		✓	
LOAN AMORTIZATION/ DEPREC		✓		✓	
MORTGAGE ACCELERATION		✓		✓	
POLICY FILES INFORMATION		✓		✓	
PROPOSAL SOFTWARE		✓		✓	
TOTAL NEEDS ANALYSIS		✓		✓	
MDS ASSOCIATES, INC.					
MYTE MYKE AUTO INSURANCE RATE		✓		✓	
UNIVAIR, INC.					
INSURANCE AGENCY MGMT		✓	✓		
Languages and Programmer Aids					
AMERICAN TRAINING INTERNATIONAL					
ATI POWER FOR MBASIC		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
AVOCET SYSTEMS, INC.					
XASM-01		✓			
XASM-03		✓			
XASM-05		✓			
XASM-09		✓			
XASM-18		✓			
XASM-400		✓			
XASM-48		✓			
XASM-51		✓			
XASM-65		✓			
XASM-68		✓			
XASM-70		✓			
XASM-75		✓			
XASM-F8		✓			
XASM-Z8		✓			
B.D. SOFTWARE					
C COMPILER		✓			
BYTEL CORPORATION					
COGEN: COBOL PROGRAM GENERATOR		✓	✓	✓	
MENUPRO: COBOL MENU PROCESSOR		✓	✓	✓	
COMPUTER CONTROL SYSTEMS, INC					
AUTOSORT-86	QA300-C3		✓		
FABS-86	QA299-C3		✓		
COMPUTER INNOVATIONS, INC.					
C			✓		
COMPUTING, INC.					
MENUPOWER		✓	✓		
POWER		✓	✓		
DIGITAL RESEARCH, INC.					
ACCESS MANAGER-80		✓			
ACCESS MANAGER-86			✓		
* ASSEMBLER PLUS TOOLS			✓		
* C		✓	✓		

*Not available directly from the software producer—retail outlets only.

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
C COMPILER				✓	
CBASIC COMPILER (CB-80)		✓			
CBASIC COMPILER (CB-86)			✓		
CBASIC-2		✓			
CBASIC-80		✓			
CBASIC-86	QA472-C3		✓		
DISPLAY MANAGER		✓			
DISPLAY MANAGER-86			✓		
PASCAL MT+86	QA475-C3		✓		
PASCAL/MT+		✓			
PERSONAL BASIC			✓		
PL/1-80		✓			
PL/1-86			✓		
PROGRAMMERS UTILITIES			✓		
SID-86			✓		
SPEED PROGRAMMING PACKAGE-86			✓		
XLT-86			✓		
ZSID-80		✓			
ELITE SOFTWARE DEVELOPMENT, INC.					
CB80 LANGUAGE UTILITY		✓			
FOX & GELLER, INC.					
QUICKSCREEN		✓		✓	
FUNK SOFTWARE, INC.					
SIDEWAYS	QA552-C3	✓			
SIDEWAYS	QA590-C3			✓	
KROWN COMPUTERS					
THE LAST ONE		✓			
MARK WILLIAMS CO.					
MWC-86	QA068-C3		✓		
MICROFOCUS, INC.					
CIS COBOL		✓			
FORMS 2 (COBOL)			✓		
LEVEL II COBOL					

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
MICROSOFT CORPORATION					
BASIC COMPILER		✓		✓	
BASIC-80		✓			
*BUSINESS BASIC COMPILER				✓	
*C COMPILER				✓	
COBOL-80		✓			
*FORTRAN COMPILER				✓	
FORTRAN-80		✓			
M/SORT FOR COBOL-80		✓			
MACRO-80		✓			
MACRO-86			✓		
*MBASIC INTERPRETER				✓	
MBASIC-86	QA066-C3		✓		
MULISP/MUSTAR-80		✓			
MULISP/MUSTAR-86			✓		
MUMATH/MUSIMP-80		✓			
MUMATH/MUSIMP-86			✓		
OMTOOL CORPORATION					
SOFTBOL-1		✓			
SOFTBOL-2		✓			
REDDING GROUP, INC.					
LYNX (OVERLAY LINKER)		✓			
RYAN-MCFARLAND CORPORATION					
RM/COBOL	QA465-C3		✓		
RM/COBOL RUNTIME ONLY			✓		
SORCIM CORPORATION					
ACT 65		✓			
ACT 68		✓			
ACT 69		✓			
ACT 80		✓			
ACT 86			✓		

*Not available directly from the software producer—retail outlets only.

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
PASCAL/M		✓			
TRANS 86			✓		
SUPERSOFT, INC.					
ADA		✓			
BASIC COMPILER			✓	✓	
C COMPILER			✓	✓	
DISKEDIT		✓			
FORTH		✓			
FORTRAN		✓	✓	✓	
RATFOR		✓	✓	✓	
TINY PASCAL		✓			
UTILITIES I		✓			
UTILITIES II		✓			
TAURUS SOFTWARE					
CP+	QA419-C3		✓		
THE SOFTWARE TOOLWORKS					
AUTODIF		✓	✓		
C COMPILER		✓	✓		
LISP/80		✓			
PACK AND CRYPT (ENCRYPT)		✓	✓		
RATFOR		✓	✓		
SUPERZAP		✓	✓		
UVMAC		✓	✓		
TICOM SYSTEMS, INC.					
TICOM TOOLS VOL. I					✓
UNIPRESS SOFTWARE, INC.					
C COMPILER FOR 8086			✓		
Legal					
ADVANCED LEGAL SOFTWARE					
ADVANCED LEGAL SOFTWARE 1		✓	✓		
ADVANCED LEGAL SOFTWARE 2		✓	✓		
ADVANCED LEGAL SOFTWARE 3		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
AID DATA SYSTEMS, INC.					
LAW FIRM MANAGEMENT			✓	✓	
AMERICAN COMPUTER SOFTWARE					
LEGAL TENDER		✓	✓		
BEAR COMPUTERS, INC.					
ATTORNEY TIME & BILLING	QA495-C3		✓		
COMPAL, INC.					
PROLAW I		✓	✓		
PROLAW II		✓	✓		
LAWYERS WORD PROCESSING, LTD.					
AUTOMATED LEGAL FORMS		✓	✓	✓	
MICRO INFORMATION SYSTEMS, INC.					
ESQ-1 (BILLING SYSTEM)		✓	✓		
PROFESSIONAL DATA MANAGEMENT					
LEGAL PACKAGE			✓		
STAR SOFTWARE SYSTEMS					
LEGAL TIMEKEEPING/BILLING		✓	✓		
UNIVAIR, INC.					
LEGAL TIME ACCOUNTING		✓	✓		

Medical, Dental

APPLIED INNOVATIONS, INC.					
16PF INTERPRETATION		✓	✓		
ALCOHOL TROUBLED PERSON		✓	✓		
ALCOHOL USE QUESTIONNAIRE		✓	✓		
ALCOHOL: AGENCY RPT FORM		✓	✓		
BASIC DSM III CLASSIFYING		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
CALIFORNIA PSYCHOLGIC INV		✓	✓		
CLIENT PROGRESS NOTES		✓	✓		
CLIENT SATISFACTION QUES		✓	✓		
COMPREHENSIVE CLIENT HIST		✓	✓		
EDWARDS PERSONAL PREF SCH		✓	✓		
INITIAL SCREENER: 3RD PTY		✓	✓		
INITIAL SCREENER: ADULTS		✓	✓		
INITIAL SCREENER: TEEN		✓	✓		
INITIAL SCREENER: PRE-SCHL		✓	✓		
INITIAL SCREENER: PRE-TEEN		✓	✓		
INTAKE NARRATIVE RPT WTR		✓	✓		
MENTAL HEALTH BILLING SYS		✓	✓		
MMPI INTERPRETATION		✓	✓		
MMPI SCORING		✓	✓		
PSYCHOLOGICAL DISTRESS INV		✓	✓		
RISK ANLYS: ALCOHOL ABUSE		✓	✓		
RISK ANLYS: DRUG ABUSE		✓	✓		
RORSCHACH INTERPRETATION		✓	✓		
SCHEDULES & APPOINTMENTS		✓	✓		
SCL-90-R		✓	✓		
SPECIAL EDUCATION MGR		✓	✓		
SYSTEM I TESTING		✓	✓		
SYSTEM II TESTING		✓	✓		
WECHSLER INTERPRETATION		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
ARTICULATE PUBLICATIONS, INC.					
APPTBOOK (APPOINTMENTS)		✓	✓		
MICRODENT		✓	✓		
MICROMED		✓	✓		
MICROMED ANESTHESIOLOGY		✓	✓		
MICROMED CHIROPRACTIC		✓	✓		
MICROMED MULTILOCATION		✓	✓		
MICROMED RADIOLOGY		✓	✓		
COMPUTERIZED HEALTH SERVICES					
CARDIO-PULMONARY EVALUATION		✓	✓	✓	
CONRAD AND MOUNT					
GENETIC DNA SEQUENCE ANALYSIS		✓			
CYMA CORPORATION					
CHIROPRACTIC PRACTICE MANAGEMENT		✓	✓	✓	
DENTAL PRACTICE MANAGEMENT		✓	✓	✓	
MEDICAL PRACTICE MANAGEMENT		✓	✓	✓	
ORTHODONTIC PRACTICE MGT.		✓	✓	✓	
INTERNATIONAL MICRO SYSTEMS					
IMS DENTAL MANAGEMENT	QA334-C3	✓			
INTERSOFT, INC.					
MEDICAL REP SYSTEM			✓		
PHARMACY AUTOMATION SYS., INC.					
RX2 PHARMACY SYSTEM				✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
PROFESSIONAL DATA MANAGEMENT					
EYE CARE			✓		
MEDICAL BILLING PACKAGE			✓		
SUNBURST SOFTWARE, LTD.					
MEDICAL BILLING			✓	✓	
SYSTEMS PLUS, INC.					
MEDICAL MANAGER			✓	✓	
MEDICAL MGR & OFFICE MGT OPTION			✓	✓	
TMQ SOFTWARE, INC.					
DENTAL OFFICE		✓	✓	✓	
UNIVAIR, INC.					
DENTAL MANAGEMENT		✓	✓		
MEDICAL MANAGEMENT		✓	✓		

Manufacturing

ADVANTAGE SYSTEMS, INC.					
MREP (MANUFACTURERS REP)		✓	✓	✓	
AUTODESK, INC.					
AUTOCAD				✓	
AUTOCAD GENERIC DRAFTING				✓	
INTERNATIONAL MICRO SYSTEMS					
IMS MANUFACTURING I/C	QA331-C3	✓			
IMS WHOLESALE/ RETAIL	QA332-C3	✓			
MCBA, INC.					
BILL OF MATERIAL (BOMP)			✓	✓	
MCBA BASE MRP (MFG)			✓	✓	
MCBA FULL MRP (MFG)			✓	✓	
MCBA LABOR PERFORMANCE			✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
MCBA P.O. & RECEIVING			✓	✓	
MCBA SHOP FLOOR CONTROL			✓	✓	
MCBA STD PRODUCT COSTING			✓	✓	
MCBA STD PRODUCT ROUTING			✓	✓	
MDS ASSOCIATES, INC.					
MYTE MYKE MANPOWER PLANNING		✓		✓	
MYTE MYKE MATERIAL REQUIREMENTS		✓		✓	
MYTE MYKE PRODUCTION FCST/SCHED		✓		✓	
MYTE MYKE STANDARD COST		✓		✓	
MICROCOMPUTER CONSULTANTS					
BILL OF MATERIALS		✓	✓		
INMASS-INTEGRATED MFG SYSTEM		✓	✓		
JOB COST/WORK-IN PROGRESS		✓	✓		
MRP-MATERIAL REQUIREMENT PLANS		✓	✓		

Miscellaneous Applications

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
ACCESS TECHNOLOGY, INC.					
20-20 (WP/SS/DB)				✓	
ADS SOFTWARE, INC.					
CHURCHES		✓		✓	
PRIVATE CLUB MEMBERSHIPS		✓		✓	
RESIDENTIAL/COMMERCIAL SERVICES		✓		✓	
RETAIL FLORISTS		✓		✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
ADVANTAGE SYSTEMS, INC.					
OPERATIONS MGR (SERVICE)		✓	✓	✓	
AID DATA SYSTEMS, INC.					
AMBULANCE			✓	✓	
AUTO PARTS			✓	✓	
RETAIL MANAGEMENT			✓	✓	
TRUCKING ACCOUNTING SYSTEM			✓	✓	
AK MARKETING INTERNATIONAL					
SILICON OFFICE				✓	
AMERICAN COMPUTER SOFTWARE					
CONVOY (TRANSPORT BILLING)		✓	✓		
MEMBERS ONLY		✓	✓		
SERVICE BILLING		✓	✓		
CONTEXT MANAGEMENT SYSTEMS					
CONTEXT MBA	QA551-C3		✓	✓	✓
FLORIDA DATA SYSTEMS, INC.					
COUNTRY CLUB BILLING		✓	✓		
RESERVATION SCHEDULING		✓	✓		
INTERNATIONAL MICROVIDEO					
VIDEOCALC-INTEGRATED DSS		✓			
JEB SYSTEMS, INC.					
MARKETING MANAGEMENT SYSTEM			✓	✓	
MICRO DATABASE SYSTEMS, INC.					
KNOWLEDGEMAN			✓		
SUNBURST SOFTWARE, LTD.					
GASOLINE DISTRIBUTION			✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
TWENTY-TWENTY SOFTWARE, INC.					
CARRIER 20		✓			
WPL ASSOCIATES, INC.					
PUBLIPHILE (PUBLISHING)			✓	✓	

Project Management

AHA, INC.					
PMS II		✓			
RMS II		✓			
CLAREMONT CONTROLS, LTD.					
HORNET (PROJECT MANAGER)				✓	
COMSHARE TARGET SOFTWARE, INC.					
MASTER PLANNER		✓			
PLANNER CALC		✓	✓		
TARGET PLANNER		✓	✓		
TARGET TASK		✓	✓		
EARTH DATA SYSTEMS					
MICROGANTT		✓			
MICRO INFORMATION SYSTEMS, INC.					
PROMOT-PROJECT/TIME MGMT		✓	✓		
SCITOR CORPORATION					
PROJECT SCHEDULER				✓	
TIMBERLINE SYSTEMS, INC.					
ARCHITECT/ENGINEER PROJECT MGT.					✓
WESTMINSTER SOFTWARE, INC.					
PERTMASTER			✓	✓	

Real Estate

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
AID DATA SYSTEMS, INC.					
PROPERTY MANAGEMENT			✓	✓	
AMERICAN BUSINESS SYSTEMS, INC.					
REAL ESTATE LISTING SYSTEM		✓			
AMERICAN SOFTWARE CORP.					
PROPERTY MANAGEMENT		✓	✓		
BERGE SOFTWARE					
ACQUISITION & DISPOSITION ANALY.		✓	✓		
COMMERCIAL FINANCE		✓	✓		
INVESTMENT ANALYSIS		✓	✓		
LAND AND LEASE ANALYSIS		✓	✓		
RESIDENTIAL FINANCE		✓	✓		
COMPUTER PROGRAM ASSOCIATES					
FIXED ASSETS (REAL ESTATE)			✓	✓	
REALTY AUTOMATION, INC.					
COMMERCIAL CONDOMINIUM ASSOC.		✓	✓		
COMMERCIAL PROPERTY MANAGEMENT		✓	✓		
CONDOMINIUM ASSOCIATION MGT.		✓	✓		
OFFICE/AGENT PRODUCTIVITY		✓	✓		
PROPERTY MANAGEMENT SYSTEM (PMS)		✓	✓		
REAL ESTATE OFFICE MANAGEMENT		✓	✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
RESIDENTIAL PROPERTY MANAGEMENT		✓	✓		
STAR SOFTWARE SYSTEMS					
PROPERTY MANAGEMENT		✓	✓	✓	
SUNBURST SOFTWARE, LTD.					
PROPERTY MANAGEMENT			✓	✓	
REAL ESTATE ANALYSIS			✓	✓	
UNIVAIR, INC.					
PROPERTY MANAGEMENT		✓	✓		
REAL ESTATE MULTI LISTING		✓	✓		
Sales					
MDS ASSOCIATES, INC.					
MYTE MYKE SALES LEAD/TRACKING		✓		✓	
SYSTEMS PLUS, INC.					
LEAD MANAGER (SALES)			✓	✓	
TECHNOLOGY DEVELOPMENT, INC.					
SALEMAKER		✓	✓		
USER FRIENDLY SOFTWARE, INC.					
SAMSON		✓	✓		
Spreadsheets And Modeling					
AMERICAN TRAINING INERNATIONAL					
ATI POWER FOR MULTIPLAN		✓			
ASHTON-TATE					
BOTTOM LINE STRATEGIST		✓	✓		
THE FINANCIAL PLANNER		✓			

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
BUSINESS DECISION SYSTEMS					
THE LOAN SAFEGUARD SYSTEM:1				✓	
THE LOAN SAFEGUARD SYSTEM:2				✓	
THE LOAN SAFEGUARD SYSTEM:3				✓	
THE LOAN SAFEGUARD SYSTEM:4				✓	
BUSINESS SOFTWARE					
PLANFIN		✓			
PROFIN		✓			
CHANG LABORATORIES, INC.					
MICROPLAN ADD-ON MODULE			✓	✓	
MICROPLAN	QA282-C3		✓	✓ *	
PROFITPLAN			✓	✓	
FINANCIAL PLANNING ASSOCIATES					
MINIMODEL		✓	✓		
FINAR RESEARCH					
FINAR		✓		✓	
INTERNATIONAL MICROCOMPUTER SW.					
INVESTMENT MANAGER (STOCKS)			✓	✓	
LOTUS DEVELOPMENT CORPORATION					
LOTUS 1-2-3	QA528-C3			✓	
MICRO-AP					
MASTER SOLVER			✓	✓	
MICROPRO INTERNATIONAL CORP.					
CALCSTAR	QA463-C3		✓		
MICROSOFT CORPORATION					
MULTIPLAN	QA588-C3			✓	
MULTIPLAN-86	QA063-C3		✓		
PEACHTREE SOFTWARE, INC.					

* Not DCS

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
PEACHCALC		✓		✓	
PERFECT SOFTWARE, INC.					
PERFECT CALC		✓			
RICHARD GAINER & CO.					
ASSET/LIABILITY MANAGEMENT		✓	✓		
IBM 2780/3780 COMM. SYSTEM		✓	✓		
NOTE MGT. & COLLATERAL TRACKING		✓	✓		
ON-LINE CREDIT BUREAU & REPORT		✓	✓		
RAINBOW TO RAINBOW COMMUNICATION		✓	✓		
SAFE DEPOSIT ACCTG & BILLING		✓	✓		
STOCKHOLDER ACCOUNTING		✓	✓		
SOFTWARE ARTS, INC.					
TK!SOLVER-86	QA283-C3		✓		
SORCIM CORPORATION					
SUPERCALC	QA529-C3		✓		
SUPERCALC2	QA530-C3		✓		
STRUCTURED SYSTEMS GROUP					
MAGIC WORKSHEET		✓	✓	✓	
SUPERSOFT, INC.					
SCRATCH PAD		✓	✓	✓	
THE OPTIMIZER		✓			
TIMBERLINE SYSTEMS, INC.					
FINANCIAL SPREADSHEET					✓
TMQ SOFTWARE, INC.					
FIXED ASSETS		✓	✓	✓	
MULTIPLE BOND SWAP		✓	✓	✓	
SHAREHOLDERS ACCOUNTING		✓	✓	✓	
SINGLE BOND SWAP		✓	✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
Statistics					
DBI SOFTWARE PRODUCTS					
STATISTICAL PROCESSING SYSTEM		✓		✓	
DIGITAL RESEARCH, INC.					
MICROSTAT		✓			
ECOSOFT					
MICROSTAT		✓			
MARTIN MARIETTA DATA SYSTEMS					
STATIT				✓	
System Software					
ADVANCED MICRO TECHNIQUES					
DPATCH	QA362-C3		✓		
MICROLIB		✓			
AMERICAN TRAINING INERNATIONAL					
ATI POWER FOR CP/M		✓			
COMSHARE TARGET SOFTWARE, INC.					
TARGET INTERCHANGE		✓	✓		
DIGITAL EQUIPMENT CORPORATION					
CP/M-86/80 & MS-DOS	QV066-A3	✓	✓	✓	
CP/M-86/80 V2.0	QV061-A3	✓	✓		
GSX-86	QV060-A3		✓		
MS-DOS V2.05	QV062-A3			✓	
DIGITAL RESEARCH, INC.					
CONCURRENT CP/M					
DESPOOL-80		✓			
DYNAMIC MICROPROCESSOR ASSOC.					
8086 O.S. CONVERTER			✓	✓	
FORMULA II (DMA)			✓	✓	
FORMULA II RUNTIME (DMA)			✓	✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
ELITE SOFTWARE DEVELOPMENT, INC.					
P-FILE		✓			
P-SPOOL		✓			
QUARTERDECK OFFICE SYSTEMS					
DESQ	QA691-C3			✓	
SILICON VALLEY CORPORATION					
RAINBOW AUTORUN SERVICE		✓	✓		
RAINBOW FORMATTER (DISK)		✓	✓		
RAINBOW FUNCTION KEY FORM		✓	✓		
RAINBOW SERVICE SOFTWARE VOLUME		✓	✓		
SUPERSOFT, INC.					
DIAGNOSTICS II		✓	✓		
DISK DOCTOR		✓	✓		
THE INFORMATION PEOPLE					
ORGANIZER DISK FILE MGR			✓		
ORGANIZER II (SINGLE USER)		✓	✓		
SOFTECH MICROSYSTEMS, INC.					
P-SYSTEM					✓

TAXES AND TAX PLANNING					
CPAIDS, INC.					
MASTER TAX PROGRAM		✓			
STANDARD TAX PROGRAMS		✓			
TAX PLANNER		✓			
EAGLE SOFTWARE PUBLISHING CO.					
TAX DECISIONS	QA321-C3		✓		
FINANCIER, INC.					
FINANCIER TAX	QA517-C3		✓		

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
MICRO INFORMATION SYSTEMS, INC.					
TAXEXEC		✓	✓		
MICROCOMPUTER TAX SYSTEMS, INC.					
ANNUAL STATE TAX UPDATE		✓		✓	
ARIZONA STATE TAX		✓		✓	
CALIFORNIA STATE TAX		✓		✓	
CT/NY NON-RESIDENT TAX		✓		✓	
GEORGIA STATE TAX		✓		✓	
ILLINOIS STATE TAX		✓		✓	
INDIANA STATE TAX		✓		✓	
IOWA STATE TAX		✓		✓	
KANSAS STATE TAX		✓		✓	
KANSAS/MISSOURI STATE TAX		✓		✓	
LEVEL I INDIVIDUAL PACKAGE		✓		✓	
LEVEL II PROFESSIONAL PACKAGE		✓		✓	
LEVEL III PARTNERSHIP/CORPORATE		✓		✓	
LOUISIANA STATE TAX		✓		✓	
MASSACHUSETTS STATE TAX		✓		✓	
MICHIGAN STATE TAX		✓		✓	
MINNESOTA STATE TAX		✓		✓	
MISSOURI STATE TAX		✓		✓	
MONTANA STATE TAX		✓		✓	
NEW YORK STATE TAX		✓		✓	
NORTH CAROLINA STATE TAX		✓		✓	
OHIO STATE TAX		✓		✓	
OKLAHOMA STATE TAX		✓		✓	
OREGON STATE TAX		✓		✓	
OVERSEAS TAX PACKAGE		✓		✓	
PENNSYLVANIA STATE TAX		✓		✓	

Producer	**DCS**	**CP/M-86/80 8-bit**	**CP/M-86/80 16-bit**	**MS-DOS**	**p-System**
SOUTH CAROLINA STATE TAX		✓		✓	
TAX ORGANIZER		✓		✓	
UTAH STATE TAX		✓		✓	
VERMONT STATE TAX		✓		✓	
WISCONSIN STATE TAX		✓		✓	
STENHOLM & QUINT					
MASS STATE TAX PACKAGE		✓	✓		
SQ1: PERSONAL INCOME TAX		✓	✓		
WORD AND TEXT PROCESSING					
AMANEUNSIS, INC.					
METATYPE		✓			
AMERICAN BUSINESS SYSTEMS, INC.					
CORRESPONDENCE MGNT. SYSTEMS		✓			
BENCHMARK/METASOFT CORPORATION					
BENCHMARK MAILING LIST	QA427-C3		✓		
BENCHMARK SPELLING CHECKER	QA428-C3		✓		
THE WORD PROCESSOR	QA426-C3		✓		
CHANG LABORATORIES, INC.					
DOCU-PLAN			✓	✓	
MEMOPLAN			✓	✓	
COMPAL, INC.					
MAILING LIST DATA MANAGER		✓			
WORDPAL		✓			
DATATEX, INC.					
DATATEXT			✓		
DELTA POINT CORPORATION					
THE BUSINESS LETTER LIBRARY				✓	

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
EEC SYSTEMS					
LEX-11			✓		
EXCEPTIONAL BUSINESS SOLUTIONS					
WPS-80 WORD PROCESSOR		✓			
INFORMATION UNLIMITED SOFTWARE					
EASYWRITER	QA559-C3		✓		
INTERNATIONAL MICRO SYSTEMS					
IMS MAILING LIST	QA346-C3	✓			
INTERNATIONAL MICROVIDEO					
VIDEOSCRIPT (WORD PROC)		✓			
LEXISOFT, INC.					
SPELLBINDER		✓			
MARK OF THE UNICORN					
FINALWORD		✓	✓	✓	
MINCE		✓			
MARTIN MARIETTA DATA SYSTEMS					
EDITIT				✓	
WRITIT				✓	
MICROPRO INTERNATIONAL CORP.					
MAILMERGE	QA461-C3		✓		
SPELLSTAR	QA462-C3		✓		
STARINDEX	QA570-C3		✓		
WORDMASTER		✓		✓	
WORDSTAR	QA460-C3		✓		
*WORDSTAR/MAILMERGE				✓	
*WORDSTAR/SPELLSTAR				✓	
*WORDSTAR/STARINDEX				✓	
MICROSOFT CORPORATION					
EDIT-80		✓			

*Not available directly from the software producer—retail outlets only.

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
MICROSYSTEMS ENGINEERING CORP.					
MASS-11				✓	
OASIS SYSTEMS					
PUNCTUATION AND STYLE		✓	✓	✓	
WORD PLUS		✓	✓	✓	
ORGANIC SOFTWARE, INC.					
TEXWRITER II		✓			
PALANTIR SOFTWARE					
PALANTIR WORD PROCESSING		✓			
PEACHTREE SOFTWARE, INC.					
BLACKS LAW DICTIONARY		✓		✓	
PEACHTEXT WORD PROCESSOR		✓		✓	
RANDOM HOUSE THESAURUS		✓		✓	
SPELLING PROOFREADER		✓		✓	
STEADMANS MEDICAL DICTIONARY		✓		✓	
PERFECT SOFTWARE, INC.					
PERFECT LIBRARY			✓		
PERFECT SPELLER		✓			
PERFECT WRITER		✓			
PROFESSIONAL SOFTWARE, INC.					
WORDPLUS—FEATURING “THE BOSS”				✓	
SAMNA CORPORATION					
SAMNA WORD II	QA589-C3		✓		
SANTA CRUZ SOFTWARE					
ELECTRIC BLACKBOARD	QA298-C3	✓			
SELECT INFORMATION SYSTEMS, INC.					
SELECT WORD PROCESSING	QA061-C3		✓	✓	
SORCIM CORPORATION					

Producer	DCS	CP/M-86/80 8-bit	CP/M-86/80 16-bit	MS-DOS	p-System
SUPERSPELLGUARD		✓	✓		
SUPERWRITER		✓	✓		
STRUCTURED SYSTEMS GROUP					
NAD NAME AND ADDRESS		✓	✓	✓	
WORDRIGHT		✓	✓	✓	
SUPERSOFT, INC.					
STAREDIT			✓		
TCS SOFTWARE, INC.					
TCS Q LABEL		✓		✓	
TERRA-TEX					
POSTMASTER		✓			
THE SOFTWARE TOOLWORKS					
SPELL		✓	✓		
TEXT		✓	✓		
TICOM SYSTEMS					
FINAL COPY					✓
WB SYSTEMS					
WES WORD PROCESSOR		✓	✓	✓	

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Producers of Referral Software

Here are the addresses of many of the software producers whose packages are listed on the preceding pages. This is by no means a comprehensive list of all third-party vendors who produce software for the Rainbow personal computer.

PRODUCERS

ABACUS DATA, INC.
1920 SAN MARCO BLVD.
JACKSONVILLE, FL 32207
800-874-8555

ACCESS TECHNOLOGY, INC.
6 PLEASANT STREET
NATICK, MA
617-655-9191

ADS SOFTWARE, INC.
707 FIFTH STREET N.E.
ROANOKE, VA 24016
703-344-6818

ADVANCED LEGAL SOFTWARE
524 COOKE STREET
HONOLULU, HI
USA 96813
808-367-5062

ADVANCED MICRO TECHNIQUES
1291 EAST HILLSDALE BLVD.
FOSTER CITY, CA 94404
415-349-9366

ADVANTAGE SYSTEMS, INC.
395 TOTTEN POND ROAD
WALTHAM, MA 02154
617-890-2400

AGRADATA, INC.
P.O. BOX 202
CHARLOTTE, MI 48813
517-543-8170

AGRI-MANAGEMENT
SERVICES, INC.
22 EAST CENTER
LOGAN, UT 84107
801-753-7209

AHA, INC.
1475 RODRIGUEZ STREET
SANTA CRUZ, CA 95062
408-475-8705

AID DATA SYSTEMS, INC.
P.O. BOX 750, ROUTE 3 CENTER
MILLERSVILLE, MD 21108
301-987-6822

AK MARKETING
INTERNATIONAL, INC.
26 SPRINGDALE ROAD
CHERRY HILL, NJ 08003
609-424-5055

AMERICAN BUSINESS SYSTEMS, INC.
3 LITTLETON ROAD
WESTFORD, MA 01886
617-692-2600

AMERICAN COMPUTER SOFTWARE
(formerly The Software Establishment)
2313 PLAZA POINTE DRIVE
LAGUNA HILLS, CA 92653
714-472-8186

AMERICAN COMPUTERS &
ENGINEERS
2001 SOUTH BARRINGTON AVENUE
LOS ANGELES, CA 90025
213-477-6751

AMERICAN INTEGRITY
SYSTEMS, INC.
1415 EAST MCFADDEN AVENUE
SANTA ANA, CA 92705
714-973-4756

APPLIED BUSINESS SOFTWARE
2847 GUNDRY AVENUE
LONG BEACH, CA 90806
213-426-2188

APPLIED EDUCATION SYSTEMS
RFD 2
DUNBARTON, NH 03301
603-774-6151

APPLIED INNOVATIONS, INC.
SOUTH KINGSTON OFFICE PARK
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