

# HP 9000 Series 200, 300, 500 and Integral PC

## Technical Office Automation: A Software Summary



ACTIVITY	DESCRIPTION	1985			
		JUN	JUL	AUG	SEP
RECEIVE ASSIGNMENT		RECEIVE ASSIGNMENT			
FLOW INVESTIGATIONS		FLOW INVESTIGATIONS			
SITE SURVEYS		SITE SURVEYS			
AERIAL PHOTOS			AERIAL PHOTOS		
PRELIMINARY DESIGN			PRELIMINARY DESIGN		
PRELIM. DESIGN				PRELIM	
CLIENT REVIEW				CLIE	
DETAIL ENGRG				DI	



<p>LEGEND</p> <p>ACTIVITY DESCRIPTION <span style="border: 1px solid black; display: inline-block; width: 100px; height: 10px;"></span> FLOAT</p> <p>CLESTONE</p> <p>HIGHLIGHTED <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 100px; height: 10px;"></span></p>		<p>RUN DATE 26JUN85</p> <p>REVISION NO 0</p> <p>BASE DATE 05JUN85</p> <p>DATA DATE 05JUN85</p>	<p>Perfec</p> <p>Enginee</p> <p>Prettyv</p> <p>S</p> <p>INLAND P</p>
		PLOTTRAK	

# Table of Contents

## Introduction

<b>HP-UX Applications</b> .....	1
<b>BASIC Applications</b> .....	11
<b>Stand-alone Applications</b> .....	21
<b>Summary</b> .....	26

## Introduction

The HP 9000 computers are a versatile family of scientific and engineering workstations built on powerful 16/32- and 32-bit microprocessors. The Series 200 is a 16/32-bit group that includes models ranging from a small "personal" computer to an entry-level CAD workstation. Series 300, HP's new modular computer, has both 16/32- and 32-bit processors, with a wide choice of monitors and other options as well to build virtually any type of system. Both Series 200 and 300 are based on the MC 68000 line of microchips from Motorola, a leading family of microprocessors. Series 500 is a full 32-bit line based on HP's own proprietary 32-bit chip. It includes both a desktop model and a high-performance modular graphics workstation.

To complement the HP 9000s, HP offers a variety of technical and CAD software to increase your design productivity. But engineers do much more than design – they spend significant time in related activities such as documentation, analysis of data, team communications and audience presentations. Because of this, HP also provides a wide variety of "technical office automation"

products, from word processing to presentation graphics to integrated packages that cover a variety of capabilities. You'll find them described in this document. Much of this software runs on the HP-UX operating system, Hewlett-Packard's implementation of the UNIX™ operating system that has so dramatically increased the availability and productivity of software. With HP-UX you can purchase only those parts of the system you need to run your application, without having to learn the entire system. And there are many built-in aids to help simplify your operating environment and the execution of programs.

This publication is divided according to operating systems – HP-UX, BASIC and Stand-alone – allowing you to look up software based on the actual operating system or language your computer is running. In addition, there is a Summary chart at the end giving you a quick reference to each pack by ordering number, computer(s) it runs on, and peripherals designed to operate with the system.

**HP Computer Museum**  
**[www.hpmuseum.net](http://www.hpmuseum.net)**

**For research and education purposes only.**



# Picture Perfect™/HP-UX Business Graphics Software

Picture Perfect is a powerful, interactive graphics software package that transforms your data into high-quality presentation graphics. You can enhance any presentation with Picture Perfect, which allows you to clearly relay your data in graphical form. Any time you need to present numerical data as line, bar or pie charts, Picture Perfect is the solution.

## Easy to Learn - Easy to Use

Both Picture Perfect is simple to use - there are no commands to learn. The simple-to-follow manuals and menu-driven 'Help' facility cover every menu item and are always available. Once you have covered the basics, explore the new realms of Picture Perfect. Discover the many uses for dual Y-axes. Highlight important points with the extensive annotation capabilities. Use the interactive capability to place text and legends exactly where they look best on the chart.

## Features of Picture Perfect

Picture Perfect consists of five modules: Vertical Bar, Horizontal Bar, Pie, Line, and Bar/Line. Every module contains features to give you complete control over the appearance of your graph. A wide variety of formats, shading patterns, and line types provide just the right appearance. You can set the top, bottom, right and left margins so that the plot is exactly where you want it on the page. Specifying smallest and largest character sizes in inches allows precise text size. Data can be easily exchanged between the various chart formats. These features and many more help you to produce a chart that conveys your message - perfectly.

## Vertical/Horizontal Bar Charts

The vertical bar chart can be used to show variations in the value of an item distributed over equal time intervals. Horizontal bar charts are effective for comparing items at a specific point in time. Some of the many features include:

- Basic, stacked, clustered, and overlapped bar formats
- Two independent Y-axes with separate grids for each
- Fifty-four shading patterns available
- Twenty-four clusters with up to eight bars per cluster
- Nine blocks of text can be placed anywhere on the chart
- Numeric values may be placed at the base, on top of, or windowed in the bars
- Y-axis is automatically generated based on the data in the menu
- A bi-directional X-axis allows comparison of contrary items (horizontal bar only)

## Pie Charts

Best suited to expressing simple relationships, pie charts are used to compare relative proportions of parts that make up a whole. Features include:

- A pie of up to 16 sectors can be rotated to start at a given angle
- The size and location of the pie can be modified interactively
- Six blocks of text can be placed anywhere on the chart
- Any or all segments may be exploded
- Fifty-seven shading patterns available

## Line Charts

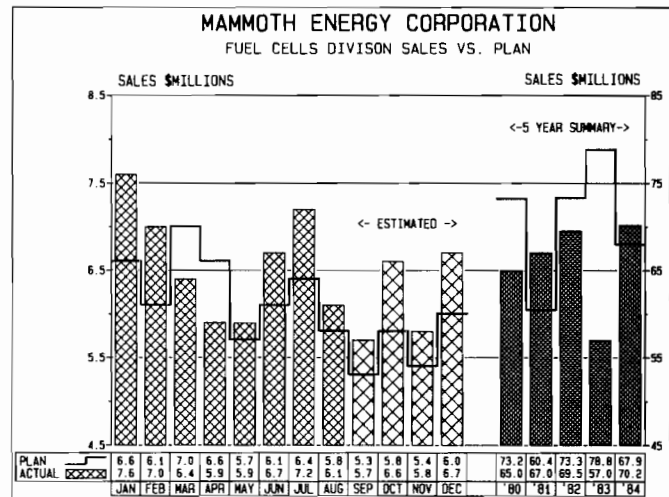
The line chart presents a large amount of data in a form that enables viewers to recognize trends and relationships quickly. Features include:

- Eight lines of 999 data points which can be plotted at one time
- Nine different line types available
- Two independent Y-axes
- Log-log and semi-log axes available
- Lines may be suppressed to produce a scattergram
- Any keyboard character can be plotted at any data point

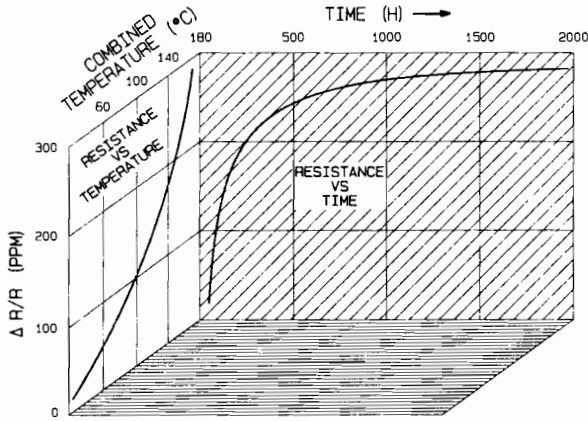
## Bar/Line Charts

The Bar/Line chart combines the capabilities of the Vertical Bar and Line Chart programs into a single product that is ideal for the analysis and presentation of financial data. There are additional features:

- Eight sets of data can be summarized in a single chart in either the top or bottom graph
- Data may be plotted in tabular form below X-axis
- Nine line patterns and 54 bar shading patterns are available
- Thirty-six lines of text can be placed anywhere on the chart
- Each data set can contain up to 24 points



# Diagraph™/HP-UX Business Graphics Software



Change in resistance after 2000 hours of operation

Diagraph is a powerful, interactive graphics software package for transforming data into high-quality presentation graphics. You can enhance any presentation with Diagraph, which allows you to clearly relay your data in graphical or pictorial form. Diagraph gives you the power to illustrate your ideas and concepts with a wide selection of clip-art drawings.

### Easy to Learn – Easy to Use

Diagraph is simple to use – there are no commands to learn. The simple-to-follow manuals and menu-driven 'Help' facilities get you started in minutes. The extensive 'Help' facilities cover every menu item and are always available.

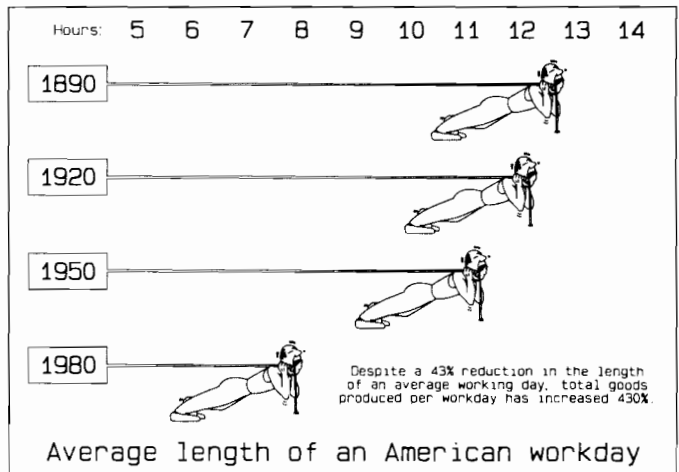
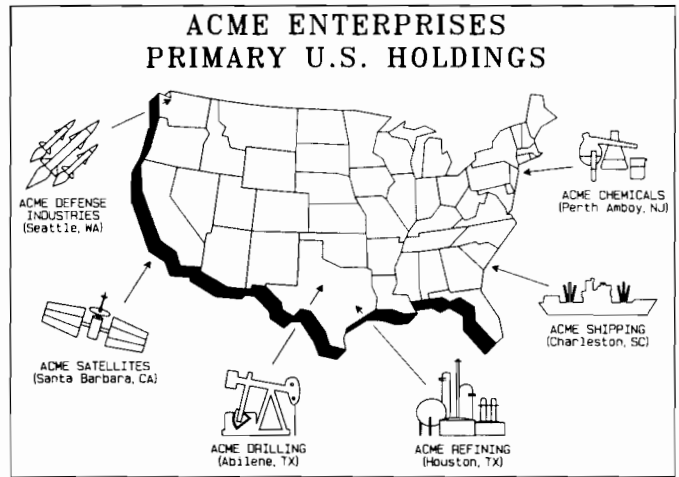
### Features of Diagraph

Diagraph contains a library of over 1600 symbols, including graphic aids, geometrics, signs, icons, and pictorials. Arrows, accents, stars, word balloons, borders, boxes, and banners are just a sample of the hundreds of symbols available to create a wide variety of professional-looking presentation aids, organizational charts, flow charts, diagrams, forms, signs, and word charts.

Symbols can be placed anywhere on the screen and then rotated, moved, stretched, compressed, copied, or flipped to create an unlimited number of variations. Predefined areas can be shaded in any of 54 shading patterns. Titles and blocks of text can be added anywhere on the chart in any one of 13 type fonts, in either fixed or proportional spacing.

Diagraph also has an extensive set of line drawing capabilities, including free-form line drawing and symbols connection. Once the symbols have been connected they may be moved and sized and will still remain connected. Symbols, such as arrows, may also be made part of a connector, to indicate direction of flow, for example.

Diagraph allows you to construct templates containing 30 pre-arranged symbols in the right and left margins of the screen outside the work area. They allow frequently used symbols to be displayed on the screen and copied onto the work area using a graphics cursor. This eliminates having to look for a symbol every time you want to use it.



## Alis™/HP-UX Integrates Text, Graphics, Spreadsheet, and Databases – All On One Workstation

Alis/HP-UX begins a new era in engineering technical office automation on the HP 9000 family of technical workstations. Alis includes word processing, spreadsheet analysis, business or data graphics, sketching graphics, personal database, calendar and time management, plus electronic mail over a network.

### Active Integration

Alis' Active Integration allows text, spreadsheets, drawing and business graphics, and database information to be combined in a single document. With Active Integration, these different types of information can be edited in their native way in the same document.

### Document Composer

Alis' Document Composer interactively formats your document as you create it. The formats for the documents are contained in reusable Style Guides.

### Key Features

Fully editable print-ready output – "What you see is what you get"\*

Multiple proportionally spaced fonts per line\*

Center, right, and/or left justification

Multi-column editable text with auto word wrap

Global search and replace

Character attributes:

- Underline, bold, italic all caps, no caps

- Superscript, subscript

- Four font sizes available (8 pt., 10 pt., 18 pt., 24 pt.)

Undo and redo

Automatic outline, list and section numbering and formatting

Context-sensitive Help

... and more!

### Graphics Editor

The Alis Graphics Editor provides a powerful *freestyle* drawing capability combined with the ability to create and edit standard business charts from the Alis Spreadsheet data.

### Key Features

All Alis graphics (creating and editing)

Context-sensitive Help

Drawing\*

- Draw from palette of elementary graphic components

- User-defined *parts* can be added to palette

- Drawings can be up to 32 inches square

- Move, scale, rotate, and delete objects and groups of objects

- Aids: grid paper, rulers, *stickiness*, auto-alignment, move to front/back

- Wide variety of line and text attributes

- Large selection of fill patterns

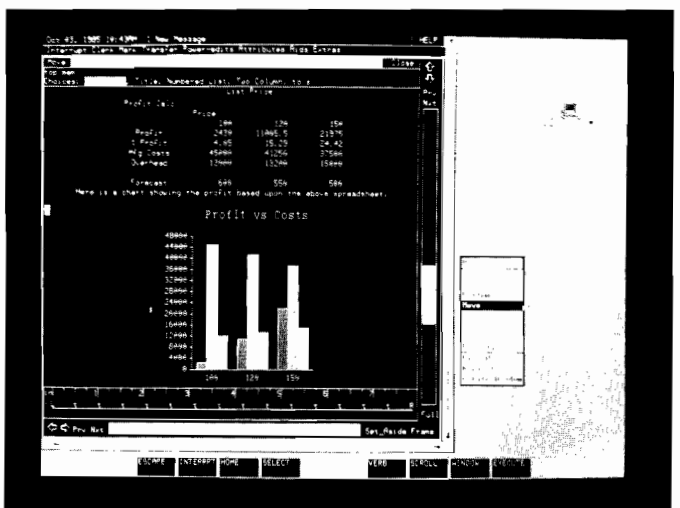
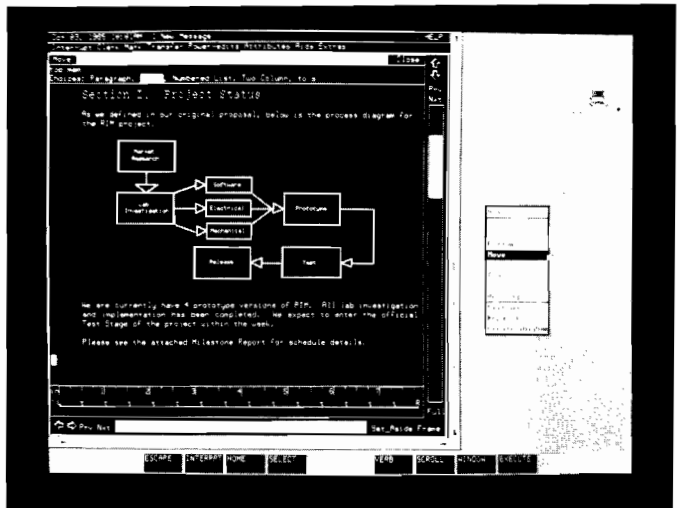
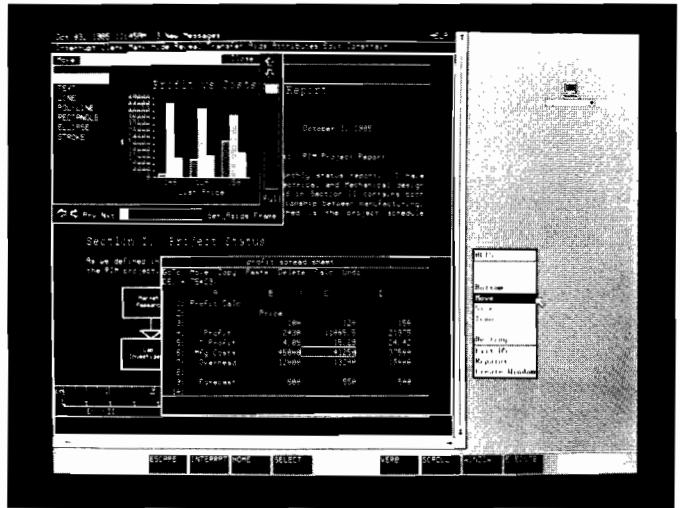
- Undo

### Business Graphics

- Automatically draws line, bar, stacked bar, pie and strata charts

- All charts immediately editable, with full drawing capability\*

- ... and more!



\* Requires bit-mapped display.

Alis™ is a trademark of APPLIX.

## Spreadsheet

Alis' Spreadsheet makes full use of the Graphics Editor, giving visual support for analysis and unsurpassed flexibility in preparation of presentation graphics.

### Key Features

- Built-in equation-solving
- Automatic inter-spreadsheet reference
- 702 x 9999 cell array
- Hide/reveal and named views
- Commentable formulas
- Specifiable cell formats
- Undo
- Named cells and ranges
- Context-sensitive *Help*
- ... and more!

## Personal Database

The Alis Personal Database allows you to create and manage information such as lists, records and reports. Alis databases can be easily defined, created and modified. Database data can be transferred into the spreadsheet for analysis.

### Key Features

- Database Structures
  - Quick and simple database definition
  - Easy *fill in the table* approach
  - Wide variety of data types with type checking
  - Undo
- Database Presentation
  - One record at a time (forms) and multiple records at a time (report)
  - Fully flexible, user-defined, presentation layout and labeling
  - Complete subtotals and totals, averages, minimums and maximums
- Query
  - Easy-to-use *by example* query, simply fill in the search criteria
  - Conjunctive, disjunctive, wild card criteria
- Integration
  - Reports can be included in documents with other information types (graphs, text, spreadsheets)
  - Databases are used for distribution lists for electronic mail, and for invitation lists for meeting scheduling
  - ... and more!

## Electronic Mail

Alis' Electronic Mail capabilities enhance your communications by allowing you to share information and documents with other Alis users. Alis makes electronic mail easy with its friendly interface and addressing of messages.

### Key Features

- Mails any Alis document or Alis file contents
- Uses logical, not physical, destination
- Provides urgent message notification
- Provides multiple direct, copy and blind copy addresses
- Uses Alis Personal Databases as mailing lists
- Offers certified and urgent delivery categories
- Contains envelope fields: subject, sender comment, reply request, forwarded, reply request, forwarded, reply, submission timestamp, to cc, bc
- Mails multiple documents on one envelope
- ... and more!

## Calendar Management

Alis' Calendar Management is designed to enhance group coordination and communication through the management of team members' time and resources. (Available on multi-user systems. Soon to be available for use in a distributed networking environment).

### Key Features

- Calendars
  - Three presentation alternatives
  - On-calendar reminder messages
  - Resources such as conference rooms can have calendars
- Meeting and Resource Scheduler<sup>†</sup>
  - Finds common open time for meetings and resources
  - Places an *invitation* notice on individual calendars
  - Automatically generates and distributes electronic mail invitations
  - Maintains list of confirmed attendees
- Reminders and Alarms
  - Reminders appear on individual calendars
  - Alarms have status line messages with optional bell, set for a specific day/time
  - ... and more!

## Personal Time Management

The Personal Time Management function gives you the ability to plan your activities. Alis allows you to prioritize your tasks and then automatically schedules time for them in your calendar, letting you plan your time more effectively.

### Key Features

- Integrated with Calendar Management and Electronic Mail
- With it you can:
  - List personal work tasks and arrange them in priority order
  - Have Alis automatically schedule calendar time for tasks based on priority and estimated duration
  - Allocate specific time in your calendar for a task
  - Schedule a meeting to handle a task
  - Place a reminder for a task on the calendar
  - Do long term planning
  - ... and more!

See the Alis/HP-UX Technical Data Sheet (Pub. No. 5953-9596) for other capabilities such as Shared and Personal Filing, Archiving and Back-up, Import/Export and Printing, as well as specifications.

*Note: When using Alis, facilities which require the use of a network are limited to contact within each series; i.e., Series 200/300 to Series 200/300, and Series 500 to Series 500.*

<sup>†</sup> Multi-user systems only.



# MicroTrak™/HP-UX Critical Path Method Scheduling System

## MicroTrak Project Management

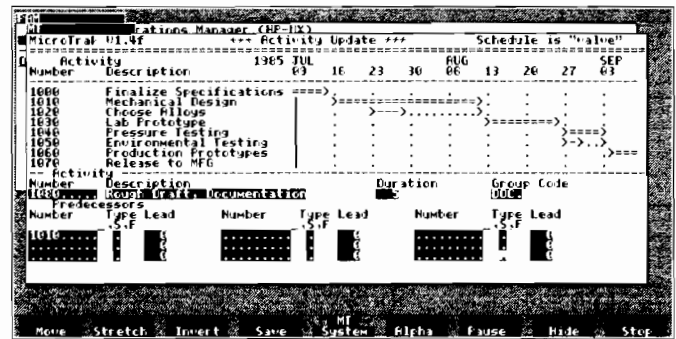
MicroTrak is a project management tool that can schedule projects from the simplest to the most complex: a move across town, the design and manufacture of a new product, or the construction of a high-rise office building. MicroTrak automates scheduling and facilitates updating the schedule based on actual progress. MicroTrak allows you to plan projects, coordinate resources, track accompanying costs, evaluate "what if" scenarios, quickly regenerate reports, and easily print time-scaled schedules. In addition, PlotTrak, a companion product, plots a colorful visual representation of data from MicroTrak files (see following page).

## How MicroTrak Works

In order to schedule with MicroTrak you must (1) decide when to start the project, (2) make a list of the individual tasks involved to complete the project, (3) determine how long each task will take, and (4) specify the links between the tasks. MicroTrak will do the rest of the work! MicroTrak will put these activities into a working calendar and calculate the critical activities (those activities that must be done on time) and the non-critical activities. With MicroTrak you can spend your time managing rather than scheduling.

Schedules are dynamic! After a project starts it is necessary to update the schedule as to what has actually taken place. Perhaps one task finished ahead of schedule but another was delayed. With MicroTrak this updating is simple: just report what has happened and MicroTrak will adjust the rest of the schedule accordingly. MicroTrak will even tell you which activities should be worked on during a predefined work period.

It is often necessary to track resources and their costs within a schedule. MicroTrak allows you to allocate resources to a schedule, with any combination of those resources assigned to an activity. A cash flow histogram and resource reports for cost estimating purposes are easily generated.



## Key Features

- **Updating** – MicroTrak presents an accurate picture of the progress of your project at any point in time.
- **Schedule Size** – MicroTrak is disc-based, so schedule size is not limited by the internal memory of a particular computer.
- **Ease of Use** – MicroTrak is menu-driven and prompts you throughout the entire system.
- **Standard Report Set** – Seven types of reports can be generated, including network, schedule, time scale, update, milestone, resource within activity, and activity within resource.

## MicroTrak Specifications

- Tasks per project . . . . . 5000
- Scheduling units . . . . . input: days  
output: days, weeks, months
- Max. resource \$ amount . . . . . \$9,999 per day
- Max. resource capacity . . . . . 999 per day
- Number of tasks displayed  
simultaneously . . . . . 18
- Critical Path Highlighted . . . . . Yes
- Display non-critical activities,  
float time, and completed  
activities . . . . . Yes
- Number of predecessors per  
activity . . . . . 9
- Relationship types allowed . . . . . Finish-to-start  
Finish-to-finish  
Start-to-start
- Maximum lead time between  
activities . . . . . 999 days
- Starting year for projects . . . . . 1980–2068
- Latest possible project date . . . . . December 31, 2068
- Length of a single project . . . . . Unlimited through 2068
- Duration of a single activity . . . . . 999 days
- Resource name . . . . . Up to 30 characters
- Activity name . . . . . Up to 26 characters
- Project Title . . . . . Up to 30 characters
- Activity number . . . . . Up to 9 characters
- Report width . . . . . 80 through 233 characters for  
Time Scale Report;  
otherwise 80 columns
- Schedule updated . . . . . With actual start dates, actual  
finish dates, and remaining  
duration





# PlotTrak™/HP-UX

## Network Plotting for MicroTrak Schedules

### PlotTrak Graphics

PlotTrak/HP-UX is a companion program to MicroTrak/HP-UX project management. While MicroTrak aids you in planning and creating your project schedules, PlotTrak takes the data generated by MicroTrak and enables you to produce colorful, graphical presentations of your schedule that visually communicate time frames and priorities of the project. PlotTrak requires MicroTrak to run.

PlotTrak allows you to plot MicroTrak data in color or in black and white, on paper or on transparencies, and in sizes ranging from letter size up to full engineering-drawing size. If you are already familiar with MicroTrak, learning to use PlotTrak is easy. PlotTrak uses the same screen design and selection choices as MicroTrak. You should be able to use PlotTrak comfortably right away.

PlotTrak produces both a time-scaled precedence network diagram and GANTT (bar) chart. The network diagram shows the interrelationships between activities so you can quickly assess what will happen if an activity is delayed. The bar chart shows each of the activities along with their relevant dates and float times. Using either the bar chart or network diagram, you may choose to highlight a particular feature so that your schedule communicates different things to different people. For instance, you may highlight the critical path so that it is the dominant feature. Or you may want to show only those activities that certain individuals are responsible for.

### How PlotTrak Works

With PlotTrak you can choose paper sizes from 8½ x 11 in. to 43 x 44 in., depending on your HP plotter. And you can use the time scale you want – daily, weekly or monthly. Further, PlotTrak allows you to select any portion of a project for your plot. All you do is enter in PlotTrak the choices that tell PlotTrak (1) how you want your network diagram formatted, and (2) which MicroTrak file data to select for your plot. Then sit back and watch your plotter draw the network diagram or bar chart – or go on to other business. PlotTrak will automatically spool up the plots to your plotter, allowing you to do other useful work with your computer.

Traditionally, a bar chart or network diagram is laboriously created by hand but is outdated even as the finishing touches are being done. With PlotTrak you can have a professional, easy-to-read bar chart or network diagram of your schedule that is as current as your most recent schedule update.

### Key Features

**Easy-to-Read Network Diagram** – The graphics that PlotTrak generates are clear and easy to understand. PlotTrak uses a different legend for each of the types of precedence relationships it supports, yet this is done in a way that does not clutter the finished plot.

**Easy-to-Use** – Like MicroTrak, PlotTrak is menu-driven. Activity selection, activity highlighting and network and bar chart formatting are performed by entering selection and formatting criteria onto screens that have on-line help menus.

**Plot Dimensions A through E** – PlotTrak lets you choose paper sizes from 8½ x 11 in. to 34 x 44 in.

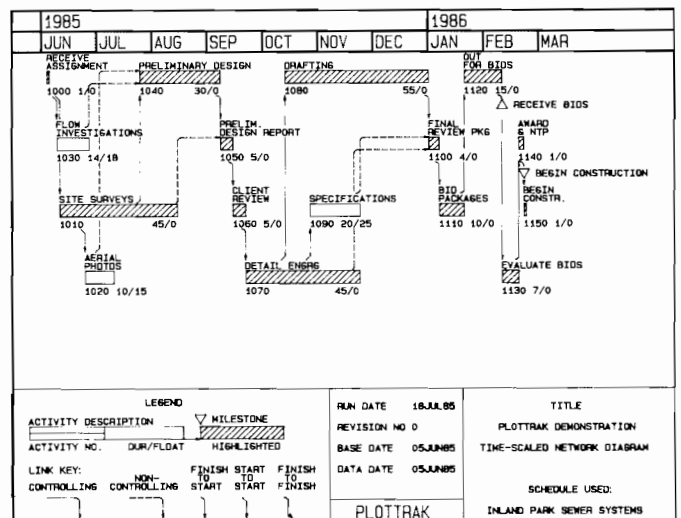
**Comprehensive Activity Selection** – Any subset of activities in the overall schedule can be selected for plotting.

**Activity Highlighting** – Any part of your schedule, from the critical path to particular groups or dates, can be highlighted.

**Plotter Spooling** – Allows you to continue to do other useful work with your computer, while the time-consuming plots are being generated by the plotter.

### PlotTrak Specifications

- Network diagram units . . . . . Days, week, months
- Bound and sight lines . . . . . Daily, weekly, monthly, quarterly, yearly, none
- Features that can be shown on network diagram . . . . . Activity number, activity duration, total float, activity progress, links (show all links, none of the links or just those links up to a maximum lag time), bound and sight lines, and milestones with their own unique descriptions.
- Paper sizes . . . . . Engineering sizes A thru E:
  - A – 8½ x 11 in.
  - B – 11 x 17 in.
  - C – 17 x 22 in.
  - D – 22 x 34 in.
  - E – 34 x 44 in.



# TK!Solver®/HP-UX Equation Processor

TK!Solver provides an equation-solving program for engineering, business, education and science. Simply enter equations, type in known values and press the exclamation key. TK!Solver finds the sought-after values.

Why should you spend your time sorting out formulas, manipulating equations and writing programs? With TK!Solver, you can just type in the equations, assign input values to selected variables, and let the computer do the rest. TK!Solver will take on your toughest problems, even sets of nonlinear simultaneous equations! Once the equations and input data are in, simply press the ! key and TK!Solver gives you the answer.

## How TK!Solver works.

The best way to understand what the TK!Solver program is, is to understand what it does. The following simple example is designed to do just that.

Begin by setting up your problem. The TK!Solver program lets you do it quickly, easily, and naturally. For example, if an object falls a distance of 300 feet, what are the final velocity and time for the fall?

**Step 1** – Formulate the necessary equations to solve your problem and enter them on the "Rule Sheet" simply by typing them in (as in the screen photo). For example: "V = g\*t"

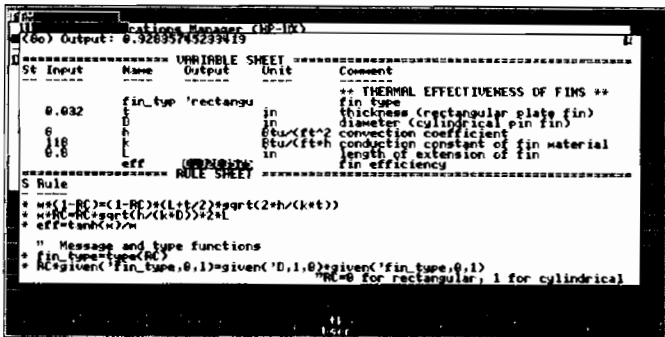
**Step 2** – Enter your known value the same way on the "Variable Sheet". In this example, enter "300" for distance(s). You may enter units and comments, if you want.

**Step 3** – Type the action command ("!" on your keyboard) to solve the problem.

**Step 4** – TK!Solver displays the answers: the final velocity is 138.94024 feet/second and the time for the fall is 4.3184033 seconds.

## Backsolving, the heart of TK!Solver.

Now that you've defined the problem and solved it, TK!Solver's unique backsolving ability also lets you think "backwards" to solve for any variable, regardless of its position in the equation.



## Other Features

Aside from its basic problem-solving abilities, the TK!Solver program performs a number of useful features.

**Iterative Solving** – performs successive approximations of an answer when confronted with equations that cannot be solved directly, like  $(\exp(x) = 2 - x * y$  and  $\sin(x * y) = 3 D x - y$ ).

**List Solving** – attacks complete lists of input values and solves them all, allowing you to examine numerous alternative solutions, and pick the one you like best.

**Tables and Graphs** – automatically produces tables and graphs of your data using the values you produced with the List Solver. You can look at your formatted output on the screen or send it to your printer with a single keystroke.

**Automatic Unit Conversion** – lets you formulate problems in one unit of measurement, and display answers in another. Very convenient for metric conversion.

The TK!Solver program also provides a wide variety of specialized business and mathematical functions like trig, log and net present value. TK!Solver's on-screen Help facility provides information on commands and features any time you want it. Just type "?" and a topic name, and the TK!Solver program combines all these features in one integrated program.

## TK!SolverPacks\*

Four templates are available separately for use with the TK!Solver program:

**Mechanical Engineering** – helps you analyze topics like elastic beam bending, springs, area moment of inertia, Mohr's circle, rotational systems, heat transfer, fluid flow and hydraulics.

**Financial Management** – topics include compound interest, net present value, debt service, cost of equity capital, financial statement analysis, stock option pricing, bond swaps, convertible debt, and bond refunding decisions.

**Building Design and Construction** – topics include beam and column design, mortgages, payment on energy-saving investments, heating costs and solar heat gain, construction cost estimation, and calculations for rafters and stairs.

**Introductory Science** – covers topics in chemistry, biology, physics, thermodynamics and population studies.

## TK!Solver Specifications

Solves any problem that can be expressed as a set of equations.

Works with non-linear equations with the same ease as it does linear equations.

Solves simultaneous equations.

34 built-in functions are included:

ABS	ATANH	ELEMENT	MIN	SINH
ACOS	ATAN2	EXP	MOD	SQRT
ACSOH	COS	GIVEN	NPV	STEP
APPLY	COSH	INT	PI	SUM
ASIN	COUNT	LN	POLY	TAN
ASINH	DOT	LOG	SGN	TANH
ATAN	E	MAX	SIN	

# Multiplan®/HP-UX

## A Powerful and Easy-to-Use Electronic Spreadsheet

Multiplan\* can help you with planning, budgeting, forecasting, and other analytical tasks. Information can be easily changed within the electronic worksheet to provide quick and accurate answers to the commonly asked "what if" type of questions. Multiplan not only has the power to handle a variety of complex analyses, but is also very easy to learn and use.

### Easy to Learn

Multiplan uses full-word commands which are always displayed on the screen so you don't have to remember cryptic commands or abbreviations. If you need help, a context-sensitive HELP facility is available at the touch of a key. An extensive reference manual and handy quick reference guide are also included to help with more sophisticated operations or just simply to refresh your memory.

### Ease of Use

Multiplan lets you design an electronic worksheet to fit your particular analysis. A worksheet can be as large as 63 columns and 255 rows. Each column can have varying width for text or for numbers. Multiplan will even let you type across columns for titles and notes.

Large worksheets can become cumbersome and complicated. Multiplan's windowing capability lets you look at eight different parts of your spreadsheet simultaneously. Multiplan also lets you use English names in formulas (such as "SALES" and "COSTS") which simplify your analysis procedures. Multiplan conveniently remembers your last command for repetitive operations like COPY, etc.

### Powerful Modeling Capabilities

Multiplan is known as a versatile analysis tool because of its powerful built-in functions. Trigonometric, statistical, logical, arithmetic, and financial functions allow you to use Multiplan for all of your analysis needs.

Multiplan lets you break large worksheets or a complicated analysis into as many as eight linked worksheets. In this way, you can consolidate your analysis into one easy-to-read worksheet. Multiplan also lets you sort results alphabetically or numerically for easier analysis.

### Flexibility in Presentation Formats

The presentation of the results of your analysis is sometimes just as important as the analysis itself. Using Multiplan's full-word capabilities, numbers or text can be the result of a calculation (such as "New Record Set", etc.) rather than just numbers. Specific areas of your worksheet can be selected and printed on any size of paper. Or let Multiplan automatically break your worksheet into different pages for you.

## Features

### Modeling Capabilities

#### Cell referencing methods:

Naming, Relative and Absolute Reference

#### Functions:

Arithmetic	Table
Trigonometric	Error
Conditional	Financial
Statistical	String

#### List of functions:

ABS	INT	NPV
AND	ISERROE	OR
ATAN	ISNA	PI
AVERAGE	LEN	REPT
COLUMN	LN	ROUND
COS	LOG10	ROW
COUNT	LOOKUP	SIGN
DOLLAR	MAX	SIN
EXP	MID	SQRT
FALSE	MIN	STDEV
FIXED	MOD	SUM
IF	NA	TAN
INDEX	NOT	TRUE

Text calculation

Alphabetical/Numerical sorting

### Print Options

Variable margins

Automatic pagination

Print formulas

Print formulas on worksheet

Print on variable paper sizes

### Formatting Options

#### Variable column width

All columns, individual columns

#### Alignment options

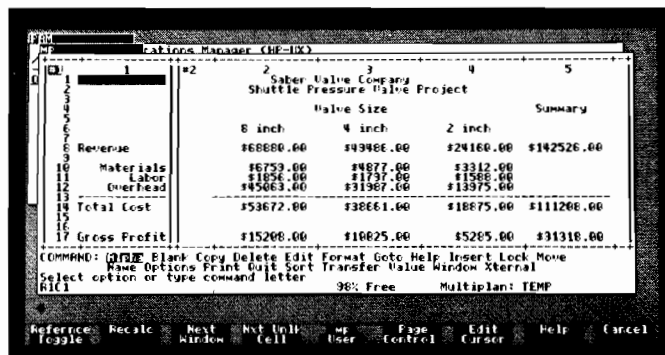
Center, Left, Right

#### Cell format options

Exponential	Continuous
Integer	Fixed
Dollar	Percentage
General	Minus
Asterisk	

#### Fixed decimal point option

Commas permitted in numbers



\* Microsoft's version 1.06.

Multiplan® is a registered trademark of Microsoft Corporation.

# MemoMaker/HP-UX

## An easy-to-use word processor

MemoMaker/HP-UX is the easy-to-use word processor for business and technical professionals. It's perfect for writing memos, business letters or reports. Even if you're a hunt-and-peck typist, you can easily produce professional documents.

MemoMaker/HP-UX works to make you more productive. Moving sentences or paragraphs is as simple as a few keystrokes or the click of a mouse. Now it's easy to organize your ideas into their most powerful form. And that not only increases productivity . . . it increases the quality of your work.

And while MemoMaker/HP-UX was designed with simplicity in mind, it provides many sophisticated features like bold and/or underline print enhancements.

## Features

- Single-screen editing so functions can be carried out without moving from one screen to another
- Copy, move, delete, align, justify, or enhance blocks of text or entire documents
- Move blocks of text into separate documents
- Unnamed work automatically saved as TEMPMEMO
- ASCII and Document file options

## Commands

### Editing Commands

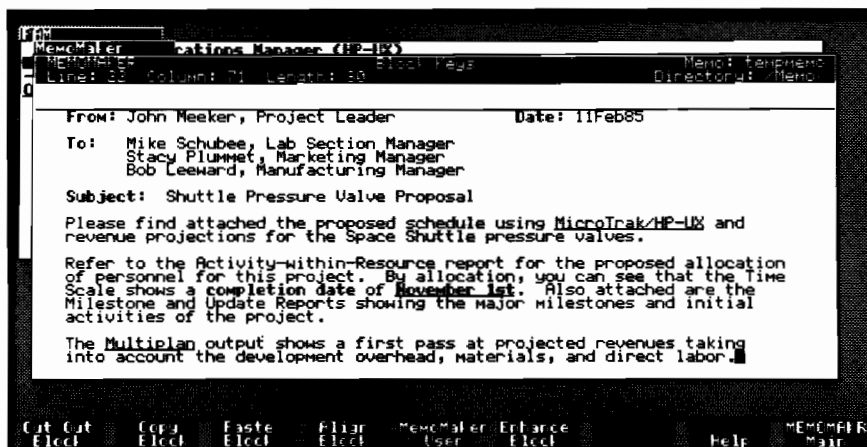
- Insert Characters
- Insert Line
- Delete Character
- Delete Line
- Clear to end of line
- Clear display
- Delete block of text and store into buffer
- Store block into buffer
- Copy contents of buffer

### Formatting and Printing Commands

- Center Line
- Reformat block
- Enhance block: underline and/or bold, remove enhancement
- Justification between margins
- Set tab
- Clear tab
- Set left and right margins
- Margin Release
- Save format information
- User defined or automatic page breaks
- Single- or double-spaced text

### Additional Commands

- Get Memo
- Save Memo
- Help
- Exit MemoMaker



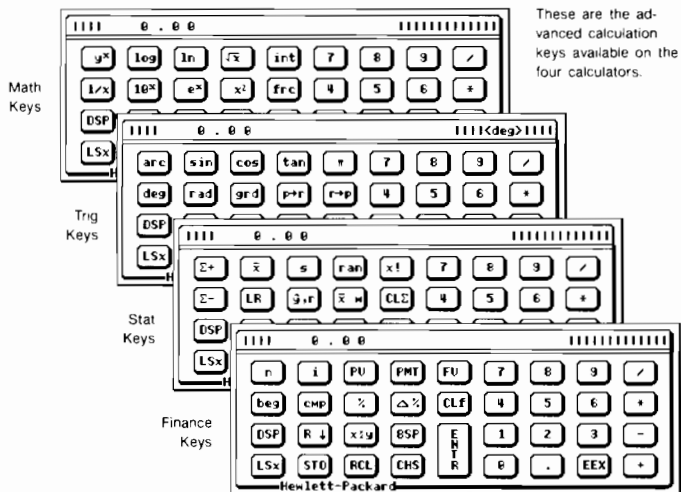
## Calculator/HP-UX

### An easy-to-use calculator

Now you can have the power of a hand calculator easily accessible from your multi-tasking HP-UX computer! Calculator/HP-UX is a set of calculators based upon the highly successful and popular HP Series 10 calculators. The most frequently-used features of this series of calculators have been incorporated in this unique product.

Calculator/HP-UX displays on your computer screen the shape of a calculator. Using a pointing device, such as an HP Mouse, or your cursor control keys, you can enter numbers and perform calculations in the same fashion as the Series 10 calculators. You simply "point" to a "key" and "press" it. Calculator/HP-UX also takes advantage of the 10-key pad, if it is available, so if you are accustomed to this method of keyboard entry you need not learn a new system.

Now you can do all those calculations without having to have a separate hand-held calculator! And at the same time take advantage of the sophisticated features of HP's family of Series 10 calculators.



## Features

### Mathematical and Scientific Calculations.

In addition to the familiar four functions available on all calculators (add, subtract, multiply, and divide), more complex math functions are available. These capabilities include logarithmic and exponential functions, powers, inversion, and the ability to find the fractional and integer values of numbers.

### Trigonometric Calculations and Coordinate Conversions.

Conversions from polar to rectangular coordinates, and calculations of degrees, radians, and gradians are provided. The trig functions available include sin, cos, tan, pi, arc sin, arc cos, and arc tan.

### Statistical Calculations and Trend Analysis.

You may accumulate statistical data and calculate the mean and standard deviation of one- and two-variable data points. You can calculate weighted sums and factorials and generate a pseudo-random number.

### Business and Financial Solutions.

The financial calculations allow you to determine one of the following: number of periods, present value, future value, interest rate, or payment. This allows calculation of annuities, loan payments, present values, etc. Percentages can be found in two ways: percent of a number, or the percent difference between two numbers.



# Statistics Library, Part I

## Basic Statistics and Data Manipulation

### Preparing Your Data for Analysis

When masses of data are to be analyzed, some kind of summarizing operation must be performed. To simplify this task, the Basic Statistics and Data Manipulation program was created.

The first part gives you two methods of entering data into your computer's memory – from the keyboard or from a file that already exists on a mass storage device.

### Formatting the Data

Statistical data usually consists of observations on one or more random variables. This program puts the data into a rectangular array in which the rows are the variables and the columns are the observations. The array can handle up to 50 variables, and the total size of the data set (variable times number of observations of each variable) is determined by the amount of available memory in the system (up to 32,000 elements).

Once the array is in memory, you have a wide choice of operations for modifying it:

**Edit** – corrects values, adds or deletes observations and adds or deletes variables.

**Transform** – creates new variables by algebraic transformations, standardization, uniform random numbers or user definition.

**Recode** – assigns codes to intervals of data in order to simplify larger data sets.

**Sort** – rearranges observations so that data values of a variable are in ascending order.

**Scan** – allows you to search through the data set and pick out data which satisfies a certain criterion.

**Select** – allows you to choose a portion of the data set based on a selection criterion and subject it to further analysis.

**Subfiles** – divides the data into smaller sets that may be analyzed separately.

**Name** – allows subfiles and variables to be named.

**Store** – stores the data set on a mass storage device.

**List** – outputs the data set on the CRT or to a printer.

**Join** – appends a previously stored data set to the one currently in use.

**Output Unit** – lets you select an output device other than the one currently in use.

**Missing Values** – allows you to specify empty data locations.

**Basic Statistics** – calculates Mean, Variance, Standard Deviation, Skewness, Kurtosis, Standard Error, Confidence Interval for Mean, Coefficient of Variation, and Correlation Coefficient for each pair of variables.

**Order Statistics** – calculates Range, Midrange, Median, Percentiles and Tukey's Middlemeans.

```
*****
*                               SUMMARY STATISTICS                               *
*                               ON DATA SET                                    *
*                               HYPOTHETICAL FACTORY DATA                    *
*****
Subfile: FY'76
```

BASIC STATISTICS

VARIABLE	# OF OBS	# OF MISS	SUM	MEAN	VARIANCE	STD. DEV
TEMP(C)	12	0	213.7000	17.8083	56.9572	7.5470
PRODUCTION	12	0	138993.0000	11582.7500	10478676.7500	3237.0784
DAYS	12	0	250.0000	20.8333	1.0606	1.0299
PAYROLL	12	0	2242.0000	186.8333	504.5152	22.4614
WATER USE	12	0	43996.0000	3666.3333	274270.7879	523.7087
GALLONS	12	0	11623.7432	968.6453	19144.5508	138.3638

VARIABLE	COEFFICIENT OF VARIATION	STD ERROR OF MEAN	95 % CONFIDENCE INTERVAL LOWER LIMIT	95 % CONFIDENCE INTERVAL UPPER LIMIT
TEMP(C)	42.37903	2.17863	13.01195	22.60471
PRODUCTION	27.94741	934.46405	9525.47409	13640.02591
DAYS	4.94332	29729	20.17882	21.48784
PAYROLL	12.02217	6.48405	172.55832	201.10834
WATER USE	14.28426	151.18168	3333.49825	3999.16841
GALLONS	14.28426	37.94220	880.71024	1056.58030

VARIABLE	SKEWNESS	KURTOSIS
TEMP(C)	-.53473	-.96332
PRODUCTION	-.42217	-.66250
DAYS	-.18352	-1.18041
PAYROLL	-1.22848	55306
WATER USE	1.34739	89749
GALLONS	1.34739	89749

## General Statistics

### Comprehensive Statistical Tests for Data Evaluation

This pack is divided into five sections. The first four contain a variety of tests: one-sample, paired-sample, two-independent-sample and multiple-sample. Each section usually contains several tests of the same hypothesis, both parametric and non-parametric. The fifth section consists of the most commonly used statistical distributions.

#### One-Sample Analysis

This section contains:

- Serial (auto) Correlations
- Serial (time) Plot
- Ranks
- Histogram
- Runs Test
- t Test
- Chi-Squared Goodness-of-Fit Test
- Kolmogorov-Smirnov Goodness-of-Fit Test
- Shapiro-Wilk Test

#### Paired-Sample Analysis

This section contains:

- Paired t Test
- Cross Correlations
- Family Regression (four models, solved by the least squares method)
- Sign Test
- Wilcoxon Signed Rank Test
- Higher Power Signed Rank Tests

## Two-Independent-Sample Analysis

This section contains:

- Two-Sample t Test
- Median Test
- Mann-Whitney Test
- Taha Squared Rank Test
- Cramer-von Mises Test
- Kolmogorov-Smirnov Test

## Multiple Sample Tests

This section contains:

- One-Way Analysis of Variance
- Kruskal-Wallis Test
- Multiple comparison procedures, such as:
  - Least Significant Difference
  - Tukey's HSD
  - Scheffe's Test
  - Student-Newman-Keuls Test
  - Duncan's Test

## Statistical Distributions

This section relieves you of the need for most statistical tables - given a statistic, the program will calculate its significance. You get both tabled values and right-tail probabilities for the continuous distributions. For discrete distributions, both the right-tail and single-term probabilities are available:

Continuous distributions:

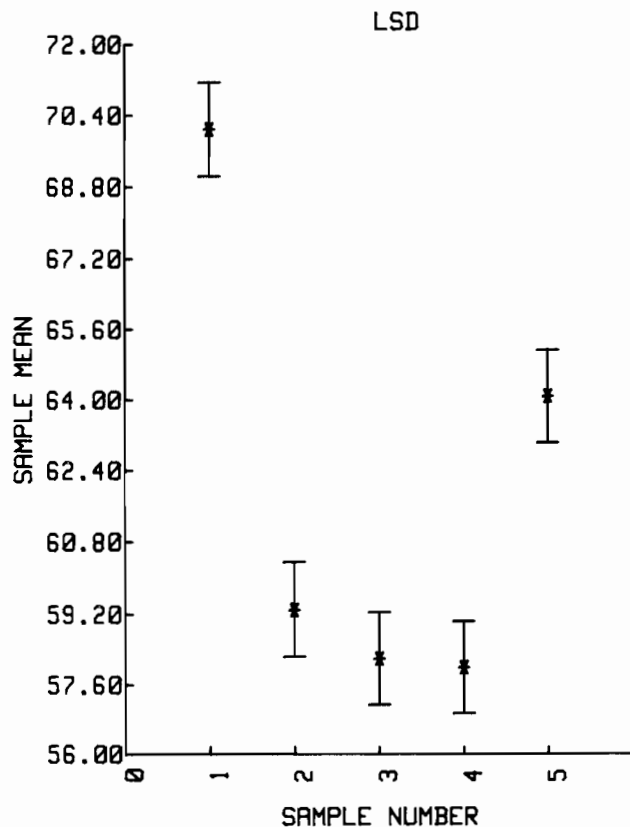
- Normal
- Gamma
- Beta
- Student's t
- Chi-Square
- Laplace
- Logistic
- Weibull

Discrete distributions:

- Binomial
- Negative Binomial
- Poisson
- Hypergeometric

Other statistical functions:

- Binomial Coefficients
- Gamma Function
- Beta Function
- N Factorial



## Statistical Graphics

### Discovering Data Relationships Quickly and Easily

A graphic plot is usually the easiest way to visualize large amounts of statistical data - it can quickly indicate information that would be difficult and time-consuming to extract from raw data listings.

### Plotting Techniques Available

The Statistical Graphics software gives you a choice of nine plotting routines to help you gain greater insight into your data:

- Time Series Plots
- Histograms
- Normal Probability Plots
- Weibull Probability Plots
- Scattergrams
- Semi-Log Plots
- Log-Log Plots
- XYZ Plots
- Andrews Plots

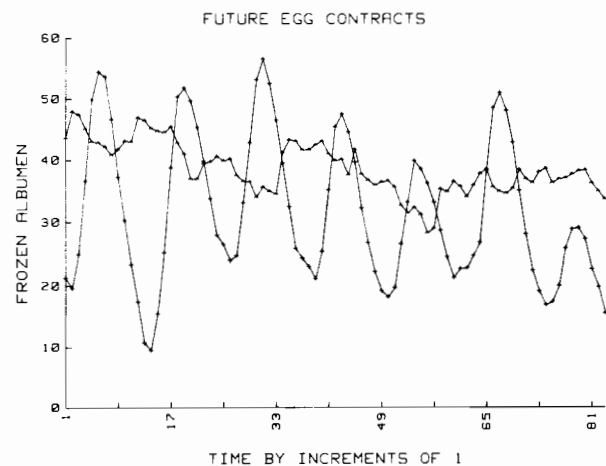
### Putting Statistical Graphics to Work

With the built-in CRT of an HP workstation, you can quickly scan your graph and then edit it, making sure it's right before you output it. When you do, you have a choice of either a graphics printer or plotter.

And you don't have to answer a lot of questions before making your plot. Algorithms in the program automatically select scale factors, labeling information and plotting symbols. If you need to make only minor changes in your plotting parameters, you don't have to start over - X-axis, Y-axis, labeling and other elements can be changed independently.

You can quickly inspect the data on the CRT display. If you need hardcopy, you don't have to have special graph paper, because the program generates all the right grid lines. After the axes and labels are made, you can even plot more than one data set on the same graph for comparison. You can also use multiple colors for identifying different elements in the graph via an HP color plotter and plot your data to a file for use by HP TechWriter.

Using the semi-log and log-log plots you can display a wide range of data, finding possible special relationships. Probability plots can be used to check the distribution of values in a data set.





## Regression Analysis

### Routines for Statistical Model Building

The Regression Analysis pack gives you a choice of three regression techniques plus a program for analyzing residuals from any of the regression programs.

The three regression techniques are polynomial regression (up to degree nine), multiple linear regression (up to 50 variables) and multiple linear regression with four variable selection procedures.

### Polynomial Regression

This program fits a polynomial of the form

$$y = a_0 + a_1x + a_2x^2 + \dots + a_nx^n$$

to your data, using the least squares method to determine the coefficients. You can also obtain a scatter plot of your data, together with plots of any of the polynomial regression curves.

### Multiple Linear Regression

This program fits a model of the form

$$y = a_0 + a_1x_1 + a_2x_2 + \dots + a_mx_m$$

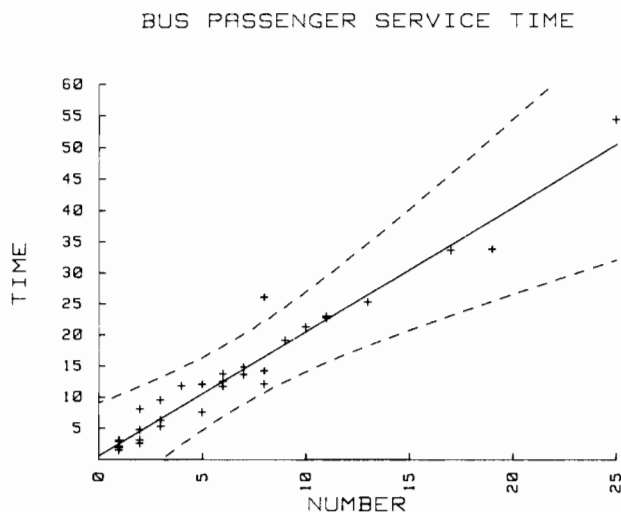
to your data, again using the least squares method.

### Multiple Linear Regression with Four Variable Selection Procedures

Sometimes a regression equation will contain independent variables which are of little value in predicting the dependent variable. The variable selection procedures give you four methods of determining which variables are significant and which are not – stepwise regression, forward selection, backward elimination and a manual variable entry mode.

### Residual Analysis

This program may be used after any regression program. It determines the differences between actual and predicted Y values. The residuals may be output in either tabular or graphic form.



## Non-Linear Regression Analysis

### Sophisticated Routines for Complex Model Building

#### Standard Non-Linear Regressions

This program performs a regression using any of the following nonlinear methods:

$$Y = AX^B + C$$

$$Y = A \text{ Exp } (BX) + C$$

$$Y = A \text{ Exp } (BX) + C \text{ Exp } (DX) + E$$

$$Y = A \text{ Sin } (BX) + C \text{ Cos } (DX) + E$$

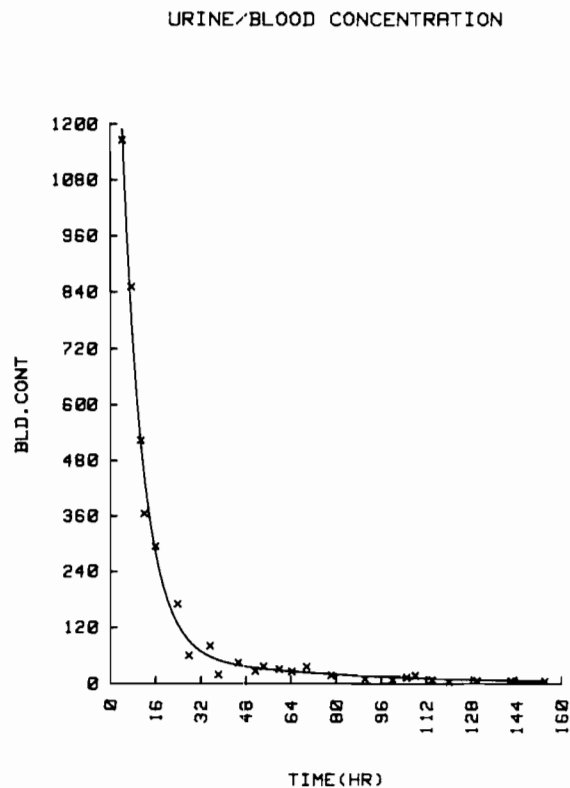
#### General Non-Linear Regression

This program uses Marquardt's method to estimate up to 20 parameters in a non-linear regression model. An iterative method, it represents a compromise between the Taylor Series and the Steepest Descent methods, and has been found to solve a wider variety of problems than either.

Each iteration's results are displayed to let you monitor convergence of the algorithm. You can specify your own confidence level in calculating both one-at-a-time and simultaneous confidence intervals on the parameters. Certain routines allow you to view your data in a scatter plot. The dependent variable can be plotted against any of the independent variables. And, if you only have one independent variable, you can obtain a plot of the regression curve through your data.

#### Residual Analysis

Residual analysis may be performed after any regression program, as described in Regression Analysis.



## Statistics Library, Part II

### Analysis of Variance

#### Sophisticated Methods of Determining Variance

Analysis of Variance analyzes data from statistically planned experiments. This pack can analyze the following types of designs:

- Factorial – up to four factors may be combined in a balanced experiment. There may be several observations per treatment combination, and the entire experiment may be replicated in blocks.
- Nested – up to four factors (five, if samples are included) can be combined in a nested or partially nested completely balanced design.
- Split Plot – up to three factors may be combined in either a split plot or split-split plot design. At least two blocks are required, and multiple observations may be included.
- One Factor – a one-way analysis of variance is performed for an experiment with equal or unequal numbers of observations per treatment.
- Two-Factor Unbalanced – an analysis may be performed on a two-factor design with unequal numbers of observations per treatment combination.
- One Factor With Covariate – A one-way analysis of covariance is performed for equal or unequal numbers of observations per treatment.

In addition, the following routines provide even greater flexibility in your analysis:

- Orthogonal Polynomials – helps you evaluate the effects of quantitative factors whose treatment levels are either equally or unequally spaced.
- Treatment Contrasts – given the contrast coefficients, this routine computes contrast, sum of squares and F-value associated with contrast, along with the significance of the F statistic.
- Interaction Plots – a graphic display of two- or three-way interactions may be obtained on the CRT or on a plotter.
- Multiple Comparisons – Contains five multiple comparison procedures – Least Significant Differences, Honestly Significant Differences, Scheffe's Test, Student-Newman-Keuls Test and Duncan's Test.

There are also methods for integrating functions expressed in tabular form with both equally and unequally spaced x values:

Ordinary Differential Equations – this section contains two methods for solving systems of first-order differential equations. Higher-order equations may be solved by reducing them to a system of first-order equations:

- Runge-Kutta method
- Adams-Bashford-Moulton method

Linear Algebraic Systems – contains a variety of routines dealing with matrices and simultaneous linear equations.

Eigen Analysis – this section contains several routines for computing the eigenvalues and eigenvectors of real matrices.

Interpolation – these routines compute a table of divided differences which is then used in the two Newton interpolation routines: forward differences and backward differences. Two additional programs use Spline Functions and Chebyshev polynomials.

Additional Functions – Built into HP workstations are many commonly used mathematical functions. This program section complements them by adding:

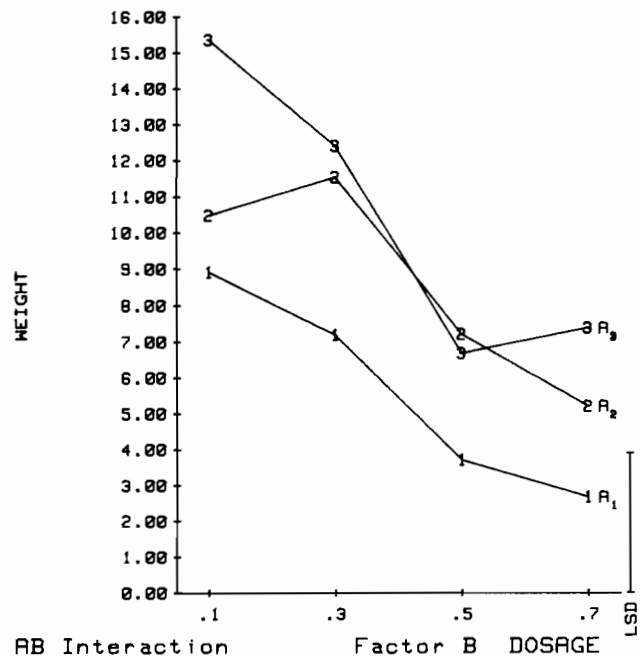
- hyperbolic cosine
- hyperbolic sine
- hyperbolic tangent
- gamma function
- log gamma function

In addition, there are seven functions for complex numbers:

- addition
- multiplication
- division
- square root
- exponential
- absolute value
- polynomial evaluation

Fourier Analysis – contains routines for computing Fourier series coefficients using equally or unequally spaced data. In addition, a Fast Fourier Transform routine is provided.

FOOD DEPRIVATION OF RATS



## Monte Carlo Simulation Utilities

### Random Number Generator with Tests for Randomness

This set of utilities is a must for serious statistical simulations. A uniform random number generator produces  $10^{12}$  pseudo-random numbers before repeating. There are also four new commands for generating random numbers. An improved generator produces random deviates from 22 available statistical distributions.

Tests are included to evaluate the "randomness" of your generator. These tests are written as utility subprograms, but have optional drivers which are set up so you can evaluate the performance of the random number generator.

The package also includes two elementary sampling utilities. The first lets you select a simple random sample without replacement; the second arranges an array of numbers in a random order.

Random number generators are included for the following distributions:

- Beta
- Binomial
- Bivariate Normal
- Chi-Square

- Exponential
- Extreme Value
- F
- Gamma
- Geometric
- Lognormal
- Negative Binomial
- Normal
- Pareto
- Poisson
- Random points on an M-dimensional sphere
- Uniform
- t
- Weibull

Tests of randomness include:

- Chi-square test
- Kolmogorov-Smirnov test
- Maximum of T test
- Modified poker test
- Runs test
- Serial test
- Spectral test

Sampling utilities available are:

- Random sample without replacement
- Shuffling

## Principal Components and Factor Analysis

### Multivariate Techniques for Advanced Statistical Analysis

Principal Components and Factor Analysis offers sophisticated multivariate techniques that help reduce the dimensionality of your data. Versatile input routines provided in Basic Statistics and Data Manipulation give you flexibility in data input. You may enter raw data, a covariance matrix, a correlation matrix or a factor matrix.

The Principal Components section provides routines for interpreting multivariate data. Program output includes:

- Coefficients of the principal components (eigenvectors of the correlation matrix)
- Eigenvalues
- Percent of the total variation accounted for by each component
- Cumulative proportion of the variance accounted for by each successive set of components

In the example shown, the first two components explain 88 percent of the total variance. Thus, you can reduce the dimensionality of the data from six to two without a substantial loss of information (see Figure 4).

Once the principal components are computed, you can plot the coefficients of any two components for each variable. If the original observations are input, component scores can be computed. The scores can then be output in tabular form or the coefficients of any two components can be plotted for all the scores. The component scores may suggest clusters which are useful for discrimination, or they may suggest outliers in the original data.

The Factor Analysis section offers two methods of factor extraction:

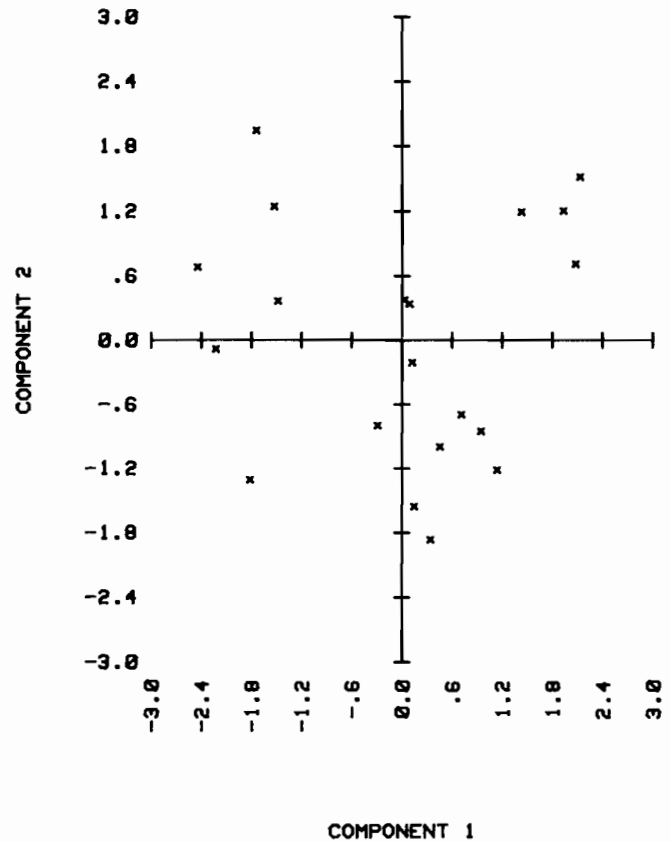
- Principal Axes
- Maximum Likelihood

The Principal Axes method automatically determines the number of factors to be extracted, or you can specify the number yourself. Three types of commonality estimates may be specified. The Maximum Likelihood method provides a statistical basis for determining the number of factors.

Once your factors have been extracted, the factor matrix is output along with the percent of the variance explained by each factor. Because the factors are generally difficult to interpret, a variety of rotations may be applied to the factor matrix. Two orthogonal rotations are available — quartimax and varimax. Oblique rotations satisfying the oblimin criterion can be used. Special cases of this include the bi-quartimin and covarimin rotations.

This program can graph the original variables in terms of their factor loadings. Using pairs of axes, you can obtain a point corresponding to each variable whose coordinates are the factor coefficients with respect to the common factors.

SAMPLE PROBLEM #1  
Component Scores Plot



## Numerical Analysis

### Transform Problems Into Answers Right On Your Desk

*Note: Numerical Analysis is not included in the statistics software, but may be purchased separately.*

The Numerical Analysis pack provides commonly used numerical analysis routines which can be quickly called up as you need them. There are 57 routines on the Models 216, 217, 226, 220, 236, 236C and 237.

Each routine can be thought of as a black box having one or more input and output parameters. You needn't be concerned with what is happening inside the box – only how to call it from your application program. While the routines were written primarily as subroutines to be called by a main program, simple drivers are also provided so the routines may be used independently.

The routines are as follows:

**Root Finders** – this section contains four methods for finding roots (or zeros) of a function:

- Bisection method
- Secant method
- Muller's method
- Siljak's method

**Integration** – this section contains:

- Simpson's Rule
- Filon's method
- Adaptive Romberg method

There are also methods for integrating functions expressed in tabular form with both equally and unequally spaced  $x$  values:

**Ordinary Differential Equations** – this section contains two methods for solving systems of first-order differential equations. Higher-order equations may be solved by reducing them to a system of first-order equations:

- Runge-Kutta method
- Adams-Bashford-Moulton method

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**Eigen Analysis** – this section contains several routines for computing the eigenvalues and eigenvectors of real matrices.

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**Additional Functions** – Built into HP workstations are many commonly used mathematical functions. This program section complements them by adding:

- hyperbolic cosine
- hyperbolic sine
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- addition
- multiplication
- division
- square root
- exponential
- absolute value
- polynomial evaluation

**Fourier Analysis** – contains routines for computing Fourier series coefficients using equally or unequally spaced data. In addition, a Fast Fourier Transform routine is provided.



## Text Editor

**Now – producing quality letters, reports and memos on a computer takes Text Editor, not a text expert!**

You can solve complex problems with clever designs, implement new programs with innovative ideas, and offer competitive solutions. But it takes more than that to be successful.

Studies show that technical professionals spend about six hours every workday communicating and documenting – not designing. That means you spend the majority of your time just getting your points across.

And if you're summarizing a proposal or preparing a report, you're not just explaining your ideas. You're selling them. What you need is a tool for quick, effortless communication.

### Simple Productivity on a Powerful System

Make your Series 200 or 300 computer work smarter for you – Text Editor is power you can afford to buy. There are no codes or commands to memorize. Just press a softkey for powerful functions like Find and Move Text. Or, print and store your work from on-screen menus. With Text Editor you are instantly productive.

Eliminate tedious pencil and paper drafts. By editing files as you create them, you build documents as your thoughts develop.

Electronically cut and paste text within a document or between files. It's easy to organize and rework your ideas. Text Editor's unique Key Redefinition function saves you time. Redefine nearly any key on the keyboard to input repetitive sequences so you don't have to. Set one key to mean Line Feed and Tab, and typing columns is a snap.

Recall up to 10 lines of deleted text from memory.

Insert it again in the document, or recover accidentally deleted lines.

Print multiple files with consecutive page numbering. Print a single page or many – and start with any page number you want. You can even automatically number pages for introductions and forewords with lower case Roman numerals.

### Make Your Powerful Computer More Versatile

You need to write memos, letters and reports, but you don't need to learn a complicated word processor or a new computer. Now you can have extensive text editing capabilities on the Series 200 or 300 computer you already use.

No more retyping. Take a segment from one file and put it where you want it in another. Or save just a portion of a file and start a new document with the kernel of an old idea.

Append files to the text in memory to combine different thoughts into one document.

Text Editor is convenient on your computer: turn Word Wrap on or off. Use Auto Find to search for phrases in the text. Auto Numbering produces a vertical line of numbers so that all you do is type text next to each number to create a list.

For systems with at least 768Kb of RAM, anything you can enclose in a rectangle can be moved with the Window Move and Window Copy functions. Change one column of text while leaving another one alongside the same. With less memory, standard Block Move lets you change full lines of text. By copying whole blocks, you can electronically cut and paste text within the document or between files.

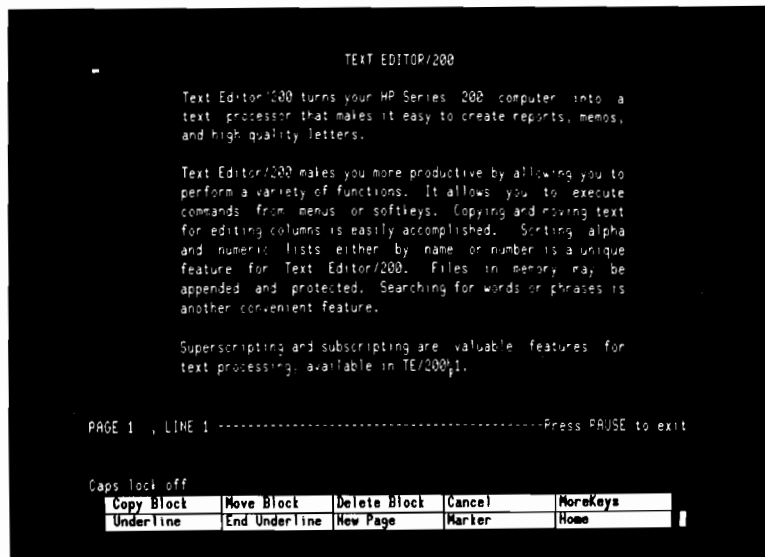
Arrange text to suit your needs: right and left justified or centered. When editing, use the Re-form Text function to fit text between the margins. Margins are easy to set because you set them with your text on the screen instead of on a separate menu.

To alphabetize a list of names, Text Editor will sort them even when the last name isn't first. You can also sort numerically or alphabetically by words or columns. Protect source files from being overwritten.

The text you see on the screen is what you get printed, so output is right the first time.

### Printing Made Easy

Text Editor eliminates the guesswork of printer configuration by assuming standard settings for each supported model. And for annotations, you get superscript and subscript on the HP 2601 and 2602 printers.



# HP Graphics Presentations

## Create Professional-looking Overhead Slide Presentations at Your Desk

You can create professional-quality overhead slides quickly and easily with HP's Graphics Presentations software and an HP engineering workstation and plotter. This pack allows you to create bar charts, pie charts and text material on acetate or paper.

With features like Roman and Gothic characters, different letter sizes, multiple colors and various shading techniques, your slides will look more like those created by a graphic artist than "computer" slides. Uses of this pack include customer presentations, management meetings and reports, and sales and motivational meetings.

### Simple to Use

HP computers, plotters and software are all designed for easy use. Even if you've never used a computer before, you'll be creating slides and charts in a minimum of time.

Working through the HP Graphics Presentation pack is simple. Conversation-like user prompts appear on the CRT to guide you through the program. Special function keys allow most operations to be executed with a single keystroke. For example, to underline a certain piece of text, just press the "LINE DRAWING" key and you'll be able to quickly specify a beginning and ending point.

### Bar, Pie and Line Charts

The charting module of the program lets you quickly create charts that previously took hours to do manually. With it, you can store numeric data and plot it out many different ways. For example, you may wish to store your monthly sales data by regions and totals, then print out a bar chart for sales by month and a pie chart for sales by region. Figure 8 shows one way this might be accomplished for a management presentation.

### Graphics – in Color

In addition to printing your data in bar, pie and line charts, you can also specify input as graphic by moving the cursor to the desired position or as numeric by keying in the values. Once this is done, the program automatically scales the axes and draws the graph.

Specifying colors for your chart will add even more clarity and professionalism to your presentation (exact colors are dependent on the type of plotter and computer). To help keep lines and surfaces clearly defined on your chart, eight different types of lines and surface textures are provided. Featured in the illustration are some of these line types.

You can also specify titles, subtitles and footnotes for each chart along with axis labels and legends.

### Change and Store Your Slide for Later Use

Once you have created a slide, you may wish to make changes – moving certain portions to another area of the slide, deleting or adding information, etc. With the routines provided in this pack, such editing is quick and easy. Once you've modified the slide to your satisfaction, you can store it on a mass storage device for later use – dozens of them, in fact.

### Creating Text and Charts

You can also easily combine text and charts by using the composing feature. You can merge text slides with bar, pie or line charts to create documents such as annual reports, management summaries, and other graphics presentations that require written explanation.

The following are the main features and functions of HP Graphics Presentations/200:

Nine Text Sizes – to stress certain features, "fill up" the page, or "squeeze" more text on a page.

Four Fonts – Normal, Smooth, Roman and Gothic.

Line Drawing – for boxing, underlining and other highlighting needs.

Centering – for quickly aligning text for a more professional slide.

Circle Drawing – for highlighting certain items or enhancing the form.

"Block" Moves – provides the ability to "move" – left/right or up/down – a segment of the text.

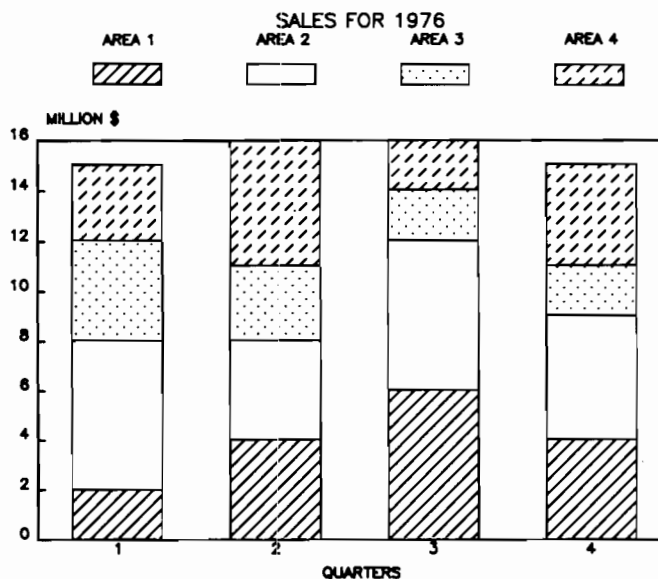
Interactive Graphics – lets you instantly see the text chart or lines you've created for instant feedback or corrections.

Slant – most character fonts can be slanted for special effects.

Vertical or Horizontal Slides – added flexibility of format.

European Character Set – special French, German and Swedish/Finnish characters are included.

Charts – one to four pie charts per page. Single and multiple line charts. Single, clustered and stacked bar charts.





# HP Project Management

## Keep Projects On Time, On Cost With Network Analysis

One of the most important phases of any project is planning, whether building a bridge, going on a vacation or sending a man to the moon. A great deal of information must be gathered, sorted and analyzed; proper alternatives must be considered.

Network analysis (CPM, PERT, MPM) is the method used most often today for project management. In addition to helping you formulate the basic plan, network analysis lets you follow the project closely, anticipate problem areas and generate alternative plans. In other words, it helps you achieve the objectives of a project, both economic and time-related.

### Computer-Aided Network Analysis

For projects involving many steps, network analysis can be a complex and time-consuming job. This easy-to-use software has the power and speed to handle complex networks quickly and easily. Not only can you formulate a plan quickly – you can also modify and update it during the project.

Hewlett-Packard's Project Management software pack incorporates the following four methods:

- PERT – Project Evaluation and Review Technique
- CPM – Critical Path Method
- MPM – Metra Potential Method
- GANTT Chart – Graphic presentation of the results of network calculations

### The Many Features of Project Management

HP Project Management offers many features which make the management of a project easier. It identifies, for example, which activities are critical to completing a project on time and thus allows you to control them – the critical path. "Float" shows slack time available for each non-critical activity. Also shown are the dates when manpower and materials needs will be most critical.

A re-analysis feature predicts the effects of delays and allows you to examine alternative actions to shorten overall completion time. There are convenient ways for reporting progress and keeping up-to-date on the effects of schedule changes. Arbitrary job numbering means jobs can be inserted or deleted as the project progresses and requirements change. Another feature allows you to define the duration of activities in any time units of your choice.

### A Choice of Tabular or Graphical Reports

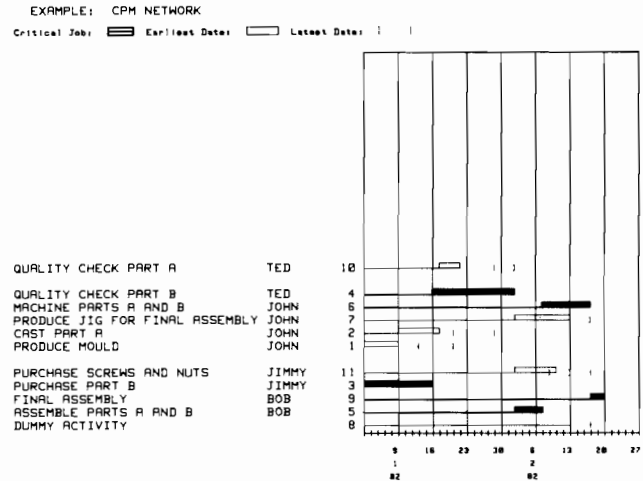
You have several choices for results of network calculations. Not only can they be presented as a tabular report which provides exact dates and times, but also as a GANTT chart which gives a clear, graphic picture of the critical results. Either format can utilize time units or specific calendar dates ...whichever you prefer. All this plus the ability to sort the information in 15 different ways. You can sort and re-sort, requesting only the data you need.

The program also allows unattended operation. Once the data is entered and verified, you simply select what you need. You are free to handle other management problems while the program executes the network calculations.

### Program Organization

The program is divided into five operational modules:

- Input/Update – allows entry of method, job data, connections, holidays, start and end dates and data updates. Lists are provided to verify project data.
- Calc – performs network calculations and calculates probabilities if required. Calculations are based on one or three time estimates for the network.
- Sort – provides sorts of project data according to 15 available sort sequences.
- Joblist – produces reports of the calculation results in GANTT chart format (time units or calendar dates).



## Data Grapher

Data Grapher is the basic graphics toolkit for technical professionals.

Like other data-driven graphics packages, it turns numbers into graphs and charts that help you see the big picture.

Unlike the others, Data Grapher automates those common graphing tasks you've been "hand holding" up to now. Plus it provides a wide range of graph styles – from curve approximations to pie charts. And plotting capabilities you won't find anywhere else.

All of which makes Data Grapher a convenient one-package solution to satisfy your day-to-day graphing needs.

### Chart Styles and Features

- Bar Charts
  - choice of clustered or stacked
  - negative and positive
- Pie charts
  - user-definable slice placement
- Optional area fill
- Optional titling and labeling
- User-definable output dimensions up to E size
- File compatibility for use with HP TechWriter document processor or HP Engineering Graphics System (HP EGS)

### Graph Styles and Features

- Histograms
  - choice of y-axis scaling parameter: count, percent, or probability
  - stacked, for multiple distributions
  - optional area fill
- Scattergrams
  - four-quadrant graphing
  - 2300 points or 1150 ordered pairs per graph
- Smooth curve drawing between data points using second-order interpolation

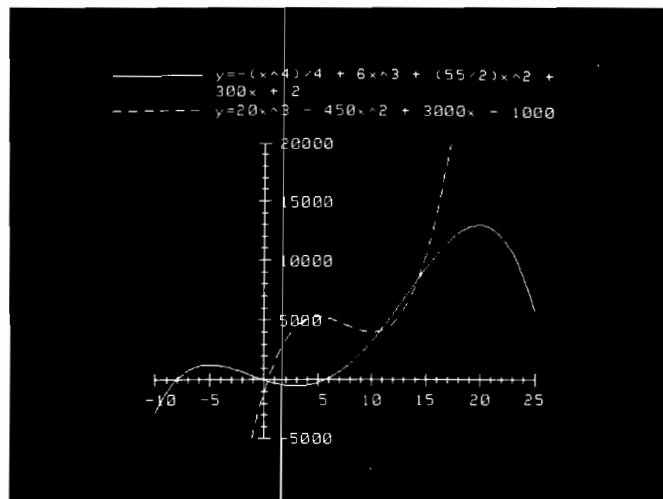
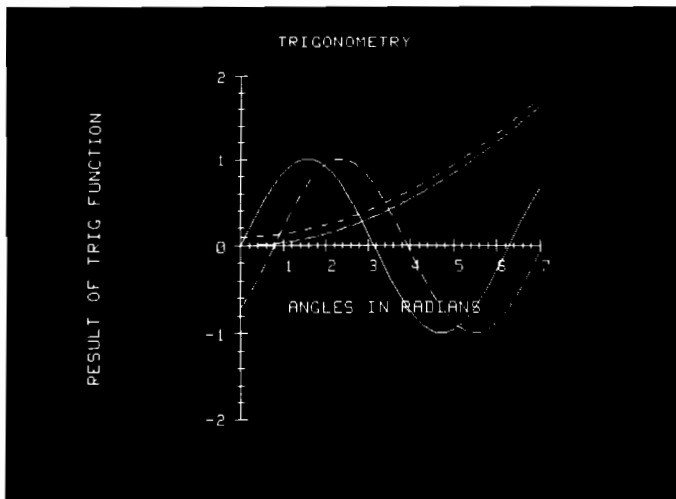
- User-definable positioning of origin
- Automatic or user-definable scaling and tick increments
- Choice of linear, log-log, or semi-log graphs
- Up to five curves per graph
- Optional titling and labeling for graph and axes
- Optional grid
- User-definable output dimensions up to E size
- File compatibility for use with HP TechWriter document processor or HP Engineering Graphics System (HP EGS)

### Let Data Grapher plot $y = f(x)$ for you.

With Data Grapher, function plotting is no longer a multi-step process by hand. You specify the function – not the points – and Data Grapher does the calculations and plotting for you. So it's fast and simple to see the function on screen or on paper.

#### Features

- Function operations:
  - arithmetic (+, -, ×, /)
  - exponentiation ( $x^n$ )
  - absolute value
  - square root
  - exponential ( $e^x$ )
  - natural logarithm
  - common logarithm
  - trigonometric
- Four-quadrant graphing
- User-definable positioning of origin
- Choice of linear, log-log, or semi-log graphs
- Automatic or user-definable scaling and tick increments
- Up to five curves per graph
- Optional titling and labeling for graph and axes
- User-definable output dimensions up to E size
- File compatibility for use with HP TechWriter document processor or HP Engineering Graphics System



## Graphics Editor

Graphics Editor is a general-purpose drawing program for creating presentation graphics on your Series 200 or 300 workstation.

Graphics Editor can help you create the perfect visual aid that best illustrates your idea. Which means it's ideal for drawing anything from a flowchart to a four-color drawing of a "new and better mousetrap."

### Draw attention to your ideas. Without drawing on your patience.

If you've always wanted to create high-quality drawings, but it had to be simple to do, Graphics Editor is the tool you've been waiting for.

Its leading-edge user interface will open your eyes to easy and efficient operation. Without opening a manual.

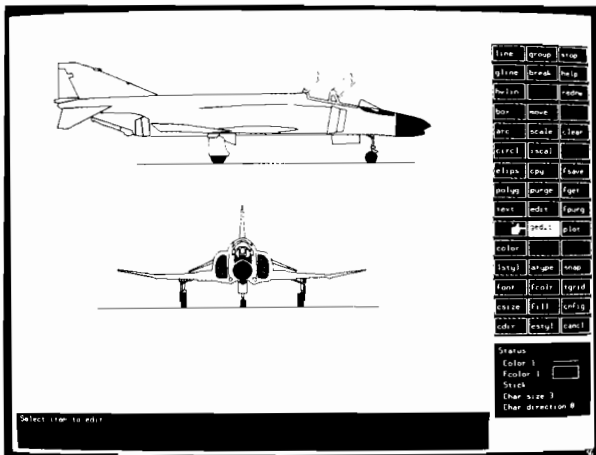
But don't let its sophisticated appearance fool you. Technical professionals, managers, and administrative personnel can use Graphics Editor with equal ease.

Features include:

- Easy-to-use command structure. No commands to memorize – simply choose the command from the menu. Same goes for command options: a "pop-up" window presents the list of options for your selection.
- A well-organized "drawing board." The screen is organized into windows. A big one to draw in. One for the command menu. And two more for status and prompts. "Pop-up" windows come and go as needed, so the information you want is there, when you want it.
- On-line HELP documentation provides quick assistance through "pop-up" windows.

### Picture this: Perfect diagrams in minutes. Not hours.

With Graphics Editor, you can quickly create presentation-quality charts and diagrams, such as flowcharts, process-flow diagrams, organization charts, block diagrams, and text charts.



It's easy to make them look just the way you want them to. And it's faster – and better – than drawing by hand.

Because Graphics Editor commands give you the power of electronic drawing tools that work not only faster, but smarter, too.

Which means you can draw a perfect ellipse, scaled to the exact proportions you desire. Then fill it with visual texture, color, or words. And rearrange or realign it in your diagram. All in seconds.

The bottom line is this: your diagrams will look as good on paper as they do in your mind.

### Go into graphic detail with digitized input.

Not all of your ideas can be visually stated through diagrams. That's why Graphics Editor lets you create pictures with digitized input.

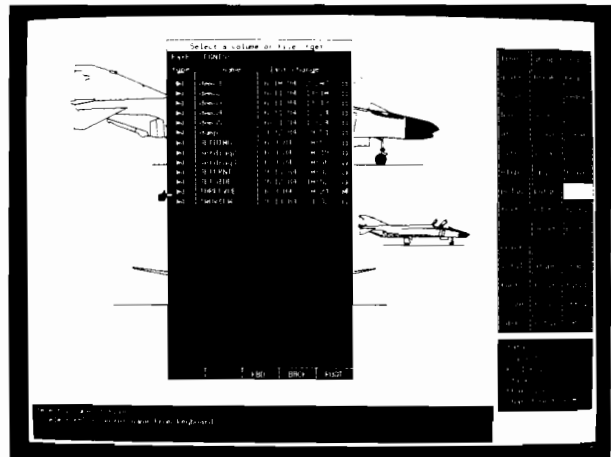
It helps you draw with exacting precision for symmetry and alignment unmatched by hand drawing. Team that with editing, texturing, and coloring features, and you won't want to draw anything by hand again.

For a more natural drawing motion, add the HP 9111A Graphics Tablet as your input device. Its pen-like stylus also makes it easier to "trace" an illustration into your work area from a hard-copy original.

### Graphics Editor helps you make an artful presentation.

Once you've drawn your picture, Graphics Editor lets you choose the medium that best suits the presentation:

- print it on paper when impromptu, informal meetings demand immediate hard copy
- plot it on paper for formal presentations
- plot it on a transparency for overhead
- electronically merge it into a report with HP TechWriter document-processing software.



# Context MBA™

## Transform time saved into productive time for engineering.

MBA gives you six useful functions combined in one software package: spreadsheet modeling, graphics, word processing, database management, forms, and telecommunications.

### MBA saves time for the real work of engineering.

MBA's six functions all work on the same information; they're integrated. Once information is entered, all parts of the program have access to it. There is no need to retype data. If you make a change in the spreadsheet, for example, that change is immediately made for you in a displayed graph.

The integrated functions of MBA also make it easy for you to pull all the elements of a problem together from different programs. You don't have to keep switching discs between programs or manually pass files back and forth.

### Let Context MBA make you a more informed decision-maker.

Context MBA allows you to investigate problems and look at information from many different sides. As one example, your figures for a project's cost can be sorted in ascending or descending order, graphed in any of nine different ways, copied into a text cell, and then printed – as graphs and as numbers – in a letter, memo, or report.

And it's easy to use. You don't have to learn and remember separate commands for the different programs.

## Spreadsheet

Offers sophisticated modeling aids for engineers. These include: a full set of trigonometric functions, statistics functions, If...Then, True/False branching, logic operations, look-up tables, and high-powered formulas such as: net present value, internal rate of return, and modified internal rate of return.

## Graphics

Create concise, high-impact images you can use to quickly analyze or effectively communicate information. Create the graph with just one simple command. Then, when you modify your spreadsheet, the graphs are redrawn automatically so you see immediately the effects of "what-if" from your spreadsheet.

## Telecommunications

Gives you access to the most current information from your company's larger computer, other MBA users, or timesharing systems. Use the data you retrieve for your own reports, models, and graphs. You can also send (and share) your MBA models to other remote computers.

## Word Processing

Lets you compose and edit memos very quickly. You can easily copy a table of numbers from your model into a report or memo without retyping or having to use intermediate files.

## Database Management

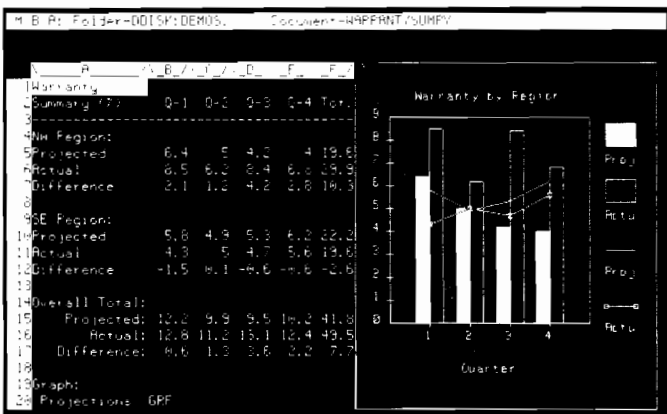
Helps organize pertinent information and makes it easy for you to retrieve information when you need it.

## Forms

Create the electronic equivalent of material requisition forms, parts lists, change orders, and other forms that simplify the process of entering and retrieving data. All this information can be printed out in any other form you may want to design.

## Windowing

Display up to four MBA functions on the screen at a time. This lets you analyze data easily in several different ways. Windowing also lets you change, sort, and graph results so that you can spot trends and readjust information until you are satisfied.



## HP TechWriter


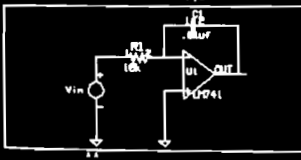
HP TechWriter is a low-cost document editor that eliminates the need for technical professionals to manually "cut and paste" pictures into memos and documents.

The key feature of HP TechWriter is its ability to accept pictures from almost any graphics program capable of producing plot files. With HP TechWriter you can reference plot files from a document, view both text and pictures on a screen as they should appear in the document, and produce a printed copy of the document.

```

>TMedit: Adjust Copy Delete Find Insert Jump Replace Quit Xchange ?
HP TechWriter is an engineering documentation product that
provides Series 200 customers with a version of the familiar Pascal
text editor that has been enhanced to allow customers to create and
print illustrated documents. The illustrations are contained in plot
files produced by graphics editors such as EGS or by customer programs.

**D F=03:hubb,L=12,R=80

SAMPLE EGS drawing:

**d F=03:circuit r=38l=0,B

Side by side text and graphics
allows you to produce annotated
pictures on any printer which can
support this feature. Local margin
commands allow you to use special
margins for quotation text or the
text describing your picture.
    
```

### System Components

The five discs with HP TechWriter include: a document editor (to create and modify documents), picture processor, lister and Pascal environment.

### System Features

- Includes graphics with text
- Creates and modifies text
- Inserts/deletes/finds/replaces text
- Copies text blocks
- Copies from other files (entire or parts)
- Allows arbitrary movement through file with markers
- Automatically wraps words
- Justifies margins (both left and right)
- Adjusts lines (center, left, right, and in between)
- Provides selectable graphics print resolution
- Generates full-page pictures
- Adds footers/headers
- Allows paging (conditional and unconditional)

- Underlines and prints in **BOLD**
- Provides variable line spacing (single, double, etc.)
- Saves and restores document files
- Archives files
- Selects areas not to be printed
- Allows user-specifiable configuration defaults
- Provides help screens
- Generates table of contents
- Provides character replacement at print time
- Sets tabs

### Supported Graphics Programs

#### Using a BASIC Operating System

- HP Statistics Library/200
- HP Project Management/200
- HP Graphics Presentations/200
- FARB Computer-Aided Design System
- BASIC 4.0 User Programs (that write supported HPGL\* commands to an ASCII file)

#### Using a Pascal Operating System

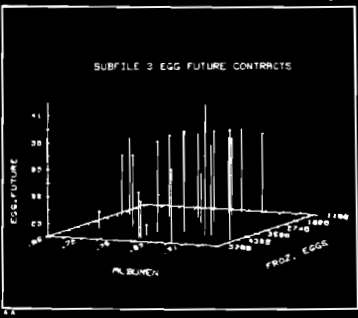
- HP Engineering Graphics System (HP EGS)
- Pascal User Programs (that write supported HPGL commands to an ASCII file)

#### User Programs:

#### Plot-to-File Commands Supported

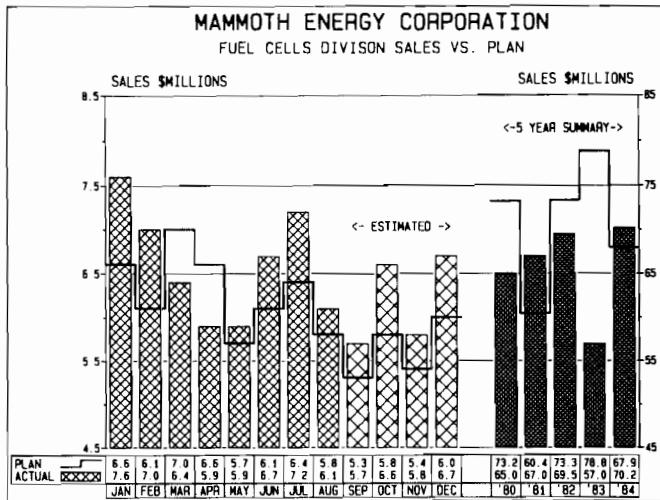
If you are writing a program to be supported by HP TechWriter, the picture processor knows how to translate the following HPGL plot file commands (from BASIC and Pascal): LT (Line Type), PA (Plot Absolute), PD (Pen Down), PU (Pen Up)

```

>TMedit: Adjust Copy Delete Find Insert Jump Replace Quit Xchange ?
**d f=03:PG145_TM,B,L=0 R=50
Here is the information you requested for your meeting. I used HP's Statistics Library to generate the various plot you see and HP TechWriter to combine the text with the graphics. If you have any questions regarding the plots please contact me before 10a.m. Tuesday. I hope this information proves itself to be useful.

Here is the XYZ plot you asked about. As you can see we are getting better results with the new experiment procedure. Errors in testing that
    
```

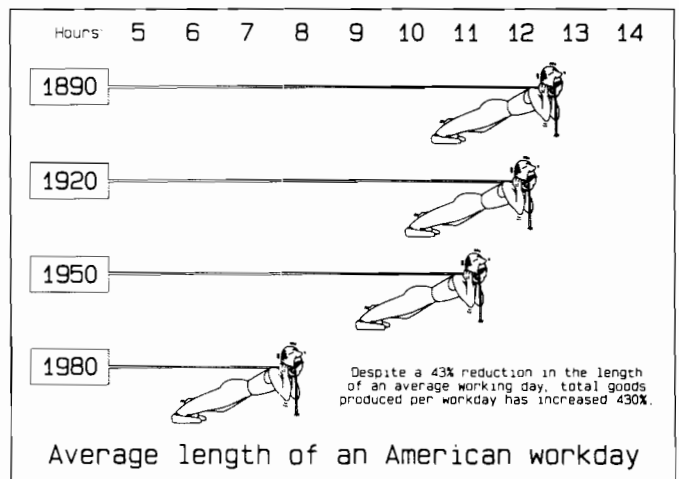
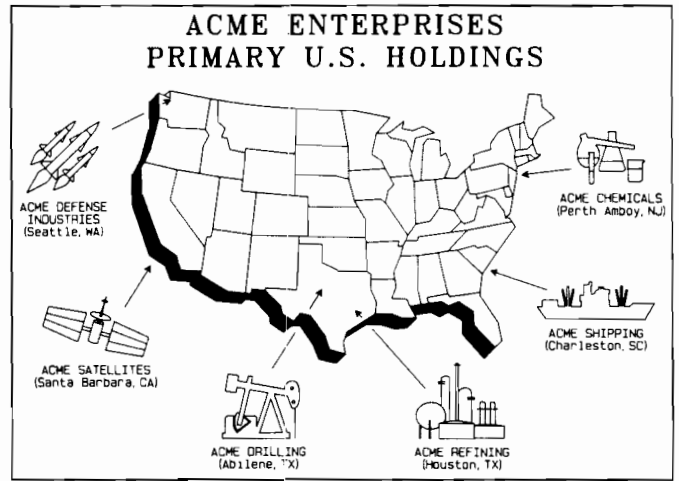
\* Hewlett-Packard Graphics Language

# Picture Perfect™



Both Picture Perfect and Diagraph operate as stand-alone products as well as with HP-UX, with essentially the same features. See the "HP-UX Applications" section for details.

# Diagraph™



# HP-UX Applications

## Series 200 HP-UX 2.1 or 2.2 and Integral PC HP-UX 2.1 or 5.0

Product Name/Description	Product Number <sup>1</sup>	Computer/System Requirements	Peripheral Support				
			Peripheral	Integral	HP-UX 2.1	HP-UX 2.2	
<b>Picture Perfect/HP-UX<sup>2</sup></b> Business graphics software for creating pie, bar, line and combined bar/line charts	45462J	Models 217 running HP-UX 2.2L, 220U/T running HP-UX 2.1, 236U/T/CU/CT running HP-UX 2.1 or the Integral PC running HP-UX 2.1 or 5.0.	<b>Printers</b> 2602A Daisy Wheel <sup>5</sup> Opt. 046 HP-IB 2225A-AY ThinkJet 2686A LaserJet 2932A Dot Matrix Opt. 046 HP-IB 2933A Dot Matrix Opt. 046 HP-IB 2934A Dot Matrix Opt. 046 HP-IB 82906A Dot Matrix	Y Y N Y Y N N Y Y N	N N Y N Y N N Y Y Y	N N Y Y N N N Y Y N	
<b>Diagraph/HP-UX<sup>2</sup></b> Clip-art software for organization charts, flow charts, diagrams, forms, signs and word charts	45463J			<b>Terminals</b> 2382A Display Terminal 2392A Display 2622A Display 2623A Graphics 46510A HP 150 Terminal Emulator	N N N N N	Y Y Y Y Y	N N N N N
<b>MicroTrak/HP-UX</b> Project management software that provides a critical path method scheduling system for managing complex projects	45524G/H			<b>Plotters</b> Picture Perfect, Diagraph, and PlotTrak are supported on the following plotters: 7470A Opt. 002 HP-IB Interface 7475A Opt. 002 HP-IB Interface 7550A 7580B 7585B 7586B 9872C/T/B/S			
<b>PlotTrak/HP-UX<sup>3</sup></b> Plots MicroTrak/HP-UX schedules in a network diagram or GANNT chart format	98800J			<b>Disc Drives</b> To install the application software, you will need a supported 3½-inch double-sided disc or a DC-600 cartridge tape drive. After installation, the software operates on any disc drive supported on your HP-UX system.			
<b>TK!Solver</b> Equation-solving software solves complex math models using either your own design or these specialized templates:	45515G/H			<b>For More Peripheral Information</b> Refer to the <i>HP 9000 Series 200 Configuration Information and Ordering Guide</i> (Part No. 09800-90020), or the <i>Integral PC Data Sheet/Configuration Guide</i> (Pub. No. 5954-1228).			
<b>TK!Solver Pack/HP-UX<sup>4</sup> Financial Management</b>	45516G						
<b>TK!Solver Pack/HP-UX Mechanical Engineering</b>	45517G						
<b>TK!Solver Pack/HP-UX Building Design and Construction</b>	45518G						
<b>TK!Solver Pack/HP-UX Introductory Science</b>	45519G						
<b>Multiplan/HP-UX</b> Electronic spreadsheet with financial modeling, forecasting and the calculation of engineering and scientific formulas	45473G/H						
<b>MemoMaker/HP-UX</b> Word processing for writing memos, business letters or reports	45420G/H						
<b>Calculator/HP-UX</b> Provides the functionality of HP Series 10 calculator with math, statistics, trigonometric and financial functions	45413G/H						
<b>The Management Solution/HP-UX</b> Includes MemoMaker/HP-UX, MultiPlan/HP-UX, and MicroTrak/HP-UX at a 15% savings over the combined list prices of the individual products	45438G/H						

1) 'G' denotes single-user version for Series 200/Integral PC and is distributed either on 3½-in., double-sided media (Opt. 045) or ¼-in. tape (Opt. 022).

'H' denotes multi-user version for Series 200 and is distributed either on 3½-in., double-sided media (Opt. 045) or ¼-in. tape (Opt. 022).

'I' denotes Integral PC only and is distributed on 3½-in., double-sided media (Opt. 045).

2) Picture Perfect and Diagraph are available for the Integral PC only with HP-UX 5.0. Picture Perfect and Diagraph require a minimum of 750 Kbytes RAM.

3) MicroTrak is required to operate PlotTrak.

4) TK!Solver is required to operate a TK!SolverPack template program. TK!SolverPacks are not single- or multi-user specific since they are data files only.

5) Picture Perfect and Diagraph do not support the 2602A or HP terminals.



**Series 200 HP-UX 5.1 or Series 300 HP-UX 5.0 or 5.1**

Product Name/Description	Product Number <sup>1</sup>	Computer/System Requirements	Peripheral Support
<b>Alis/HP-UX<sup>2</sup></b> Integrates text, spreadsheets, drawing and business graphics, data base information, and electronic mail in a single screen and document	98801V 98801W (one to four user Alis/HP-UX license)	Models 217, 220U/T, 236T/CU/CT, 237 running HP-UX 5.1.  Models 310, 320 running HP-UX 5.0 or 5.1.	<p><b>Printers</b> 2225A-AY ThinkJet<sup>6</sup>, 2686A LaserJet<sup>6</sup>, 2686A Opt. 200 LaserJet Plus<sup>6</sup>, 2932A Opt. 046 HP-IB, 2933A Opt. 046 HP-IB, 2934A Opt. 046 HP-IB<sup>6</sup>, 82906A Opt. 001 - 004 HP-IB, 2563A Opt. 200 HP-IB non-CIPER<sup>6</sup>, 2563A Opt. 850 HP-IB CIPER<sup>6</sup>, 2565A Opt. 200 HP-IB non-CIPER, 2565A Opt. 850 HP-IB CIPER</p> <p><b>Terminals<sup>7</sup></b> 2382A, 2392A<sup>6</sup>, 2622A<sup>6</sup>, 2623A<sup>6</sup>, 2627<sup>6</sup>, 46510A/B HP 150 terminal<sup>6</sup>, 2393A<sup>6</sup>, 2397A<sup>6</sup></p> <p><b>Plotters</b> Picture Perfect, Diagraph and PlotTrak are supported on the following plotters:  <ul style="list-style-type: none"> <li>· 7470A Opt. 002 HP-IB Interface</li> <li>· 7475A Opt. 002 HP-IB Interface</li> <li>· 7550A</li> <li>· 7580B</li> <li>· 7585B</li> <li>* 7586B</li> <li>* 9872C/T/B/S</li> </ul>                     Alis is supported on the following plotter:  <ul style="list-style-type: none"> <li>· 7550A<sup>6</sup></li> </ul> </p> <p><b>Disc Drives</b> To install the application software, you will need a supported 3½-in., double-sided disc or a DC-600 cartridge tape drive. After installation, the software operates on any disc drive supported on your HP-UX system.</p> <p><b>For More Peripheral Information:</b> Refer to the <i>HP 9000 Series 300 Configuration Reference Manual</i> (Part No. 98561-90020).</p> <p>At the time of purchase, additional manual kits can be ordered for multi-user products (Opt. 099). After purchase, additional manual kits can be ordered by calling toll-free <b>800-538-8787</b> in the U.S.A. In California, Alaska, or Hawaii, call collect <b>408-738-4133</b>.</p>
<b>MicroTrak/HP-UX</b> Project management software that provides a critical path method scheduling system for managing complex projects	45524V/W		
<b>PlotTrak/HP-UX<sup>3</sup></b> Plots MicroTrak/HP-UX schedules in a network diagram and GANNT chart format	98800V/W		
<b>TK!Solver/HP-UX</b> Equation-solving software solves complex math models using either your own design or these specialized templates:	45515V/W		
<b>TK!SolverPack/HP-UX<sup>4</sup></b> Financial Management	45516V		
<b>TK!SolverPack/HP-UX</b> Mechanical Engineering	45517V		
<b>TK!SolverPack/HP-UX</b> Building Design and Construction	45518V		
<b>TK!SolverPack/HP-UX</b> Introductory Science	45519V		
<b>Multiplan/HP-UX</b> Electronic spreadsheet with financial modeling, forecasting and the calculation of engineering and scientific formulas	45473V/W		
<b>MemoMaker/HP-UX</b> Word processing for writing memos, business letters or reports	43420V/W		
<b>Picture Perfect/HP-UX<sup>5</sup></b> Business graphics software for creating pie, bar, line and combined bar/line charts	45462V		
<b>Diagraph/HP-UX<sup>5</sup></b> Clip-art software for organization charts, flow charts, diagrams, forms, signs and word charts	45463V		
<b>The Management Solution/HP-UX</b> Includes MemoMaker/HP-UX, MultiPlan/HP-UX, and MicroTrak/HP-UX at a 15% savings over the combined list prices of the individual products	45438V/W		

1) 'V' denotes single-user version and is distributed either on 3½-in., double-sided media (Opt. 045) or ¼-in. tape (Opt. 022).  
 'W' denotes multi-user version and is distributed either on 3½-in., double-sided media (Opt. 045) or ¼-in. tape (Opt. 022).  
 2) Series 200 console models not supported. Use a terminal on this system to access Alis/HP-UX. See the *Alis/HP-UX Technical Data Sheet* (Pub. No. 5953-9596) for other peripheral and system support requirements.

3) MicroTrak is required to run PlotTrak.  
 4) TK!Solver is required to operate a TK!SolverPack template program. TK!SolverPacks are not single-user or multi-user specific since they are data files only.  
 5) Picture Perfect and Diagraph are only available for Models 310 and 320.  
 6) These peripherals run with Alis; the others do not.  
 7) Picture Perfect and Diagraph do not support HP terminals. They require a bit-mapped graphics device.

**Series 500 HP-UX 5.0**

Product Name/Description	Product Number <sup>1</sup>	Computer/System Requirements	Peripheral Support
<p><b>Alis/HP-UX<sup>2</sup></b> Integrates text, spreadsheets, drawing and business graphics, data base information combined in a single screen and document</p>	<p>98801U (one to four user Alis/HP-UX license) 98802U (one to eight user Alis/HP-UX license) 98802U Opt. U04 (upgrade from four to eight user Alis/HP-UX license)</p>	<p>Models 520, 530, 540 and 550 running HP-UX 5.0.</p>	<p><b>Printers:</b> 2225A-AY ThinkJet<sup>5</sup>, 2686A LaserJet<sup>5</sup>, 2686A Opt. 200 LaserJet Plus<sup>5</sup>, 2932A Opt. 046 HP-IB, 2933A Opt. 046 HP-IB, 2934A Opt. 046 HP-IB<sup>5</sup>, 2563A Opt. 200 HP-IB non-CIPER<sup>5</sup>, 2563A Opt. 290 HP-IB CIPER<sup>5</sup>, 2565A Opt. 200 HP-IB non-CIPER, 2565A Opt. 290 HP-IB CIPER</p> <p><b>Terminals:</b> 2392A<sup>5</sup>, 2622A<sup>5</sup>, 2623A<sup>5</sup>, 2627<sup>5</sup>, 46510A/B HP 150 terminal<sup>5</sup>, 2393A<sup>5</sup>, 2397A<sup>5</sup></p> <p><b>Plotters:</b> PlotTrak is supported on the following plotters: 7470A Opt. 002 HP-IB Interface 7475A Opt. 002 HP-IB Interface 7550A 7580B 7585B 7586B 9872C/T/B/S</p> <p>Alis is supported on the following plotter: 7550A<sup>5</sup></p> <p><b>Disc Drives:</b> To install the application software, you will need a supported DC-600 cartridge tape drive. After installation, the software operates on any disc drive supported on the HP-UX system.</p> <p><b>For More Peripheral Information:</b> Refer to the <i>HP 9000 Series 500 Configuration Information and Order Guide</i> (Part No. 09050-90050).</p> <p>At the time of purchase, additional manual kits can be ordered for multi-user products (Opt. 099). After purchase, additional manual kits can be ordered by calling toll-free <b>800-538-8787</b> in the U.S.A. In California, Alaska or Hawaii, call collect <b>408-738-4133</b>.</p>
<p><b>MicroTrak/HP-UX</b> Project management software that provides a critical path method scheduling system for managing complex projects</p>	<p>45524U</p>		
<p><b>PlotTrak/HP-UX<sup>3</sup></b> Plots MicroTrak/HP-UX schedules in a network diagram or GANTT chart format</p>	<p>98800U</p>		
<p><b>TK!Solver/HP-UX</b> Equation-solving software solves complex math models using either your own design or these specialized templates:</p>	<p>45515U</p>		
<p><b>TK!SolverPack/HP-UX<sup>4</sup></b> Financial Management</p>	<p>45516V</p>		
<p><b>TK!SolverPack/HP-UX</b> Mechanical Engineering</p>	<p>45517V</p>		
<p><b>TK!SolverPack/HP-UX</b> Building Design and Construction</p>	<p>45518V</p>		
<p><b>TK!SolverPack/HP-UX</b> Introductory Science</p>	<p>45519V</p>		

1) 'U' denotes multi-user version and is distributed on 1/4-in. tape (Opt. 022).  
 2) Model 520 console not supported. Use a terminal on this system to access Alis/HP-UX. See the *Alis/HP-UX Technical Data Sheet* (Pub. No. 5953-9596) for other peripheral and systems support requirements.

3) MicroTrak is required to run PlotTrak.  
 4) TK!Solver is required to operate a TK!SolverPack template program.  
 5) These peripherals run with Alis/HP-UX; the others do not.

## BASIC Applications

Product Name/Description	Product Number <sup>1</sup>	Computer/System Requirements <sup>2</sup>	Peripheral Support
<b>Statistics Library</b> An economical set of routines for data exploration, analysis and graphics display. Includes Parts I and II.	98820A		
<b>Statistics Library Part I</b> Basic Statistics and Data Manipulation, General Statistics, Statistical Graphics, Regression Analysis, Non-linear Regression Analysis.	98820B	Models 216, 217, 220, 226, 236, 236C and 237 with BASIC 3.0 and 260K RAM  Models 310 and 320 with BASIC 4.0, 260K RAM, 98546A Compatibility Mode Interface and 12- or 14-inch monitor	<b>Printers:</b> 2225A/ThinkJet, 2602A, 2631G, 2671G, 2673G, 2932A, 2933A, 2934A, 9876A, 82905B, 82906A <b>Plotters:</b> 9872B/C/T, 7470, 7475, 7580, 7550, 7586 <b>Disc Drives:</b> (see "Disc Drives" note below) <sup>3</sup> <b>Graphics Tablet:</b> 9111A
<b>Statistics Library Part II</b> Analysis of Variance, Monte Carlo Simulation Utilities, Principal Components and Factor Analysis. Part I is required to run Part II.	98820C		
<b>Numerical Analysis</b> Math software which provides seven commonly used analysis routines which may be added to applications programs.	98821A	Models 216, 217, 220, 226, 236, 236C and 237 with BASIC 3.0 and 260K RAM  Models 310 and 320 with BASIC 4.0 and 260K RAM with 98546A Compatibility Mode Interface	
<b>Text Editor</b> Word processor for creating reports, memos, and high-quality letters.	45538B	Models 216, 217, 220, 226, 236, 237 with BASIC 2.0 or 3.0 and 270K RAM  Models 310 and 320 with BASIC 4.0, 512K RAM and 98546A Compatibility Mode Interface	<b>Printers:</b> 2225A, 2601A, 2602A, 2631A/B, 2671G, 2673A, 2932A, 2933A, 2934A, 9876A, 82905B, 82906A <b>Disc Drives:</b> (see "Disc Drives" note below) <sup>3</sup>
<b>HP Graphics Presentations</b> Business graphics software for creating bar, line and pie charts.	98815A	Models 216, 217, 220, 226, 236, 236C and 237 with BASIC 3.0 and 230K RAM  Models 310 and 320 with BASIC 4.0 and 230K RAM and 98546A Compatibility Mode Interface	<b>Printers:</b> 2225A, 2602A, 2631G, 2671G, 2673G, 2932A, 2933A, 2934A, 9876A, 82405B, 82906A <b>Plotters:</b> 9872B/C/T, 7470, 7475A, 7550, 7580, 7585, 7586
<b>HP Project Management</b> Software that analyzes PERT, CPM and MPM network analysis and produces GANNT chart output.	98817A	Models 216, 217, 220, 226, 236, 236C and 237 with BASIC 3.0 and 130K RAM  Models 310 and 320 with BASIC 4.0 and 130K RAM with 98546A Compatibility Mode Interface	<b>Disc Drives:</b> (see "Disc Drives" note below) <sup>3</sup> <b>Color Output Interface:</b> (98627A) for HP Graphics Presentations

1) **Media Options:** For all products, you must order one of the following media options:

- Opt. 630 for 3½-in. media
- Opt. 650 for 5¼-in. media (Internal disc drive)
- Opt. 655 for 5¼-in. media (External disc drive)

2) All RAM is user read/write memory and does not include requirements of the language or operating system.

3) **Disc Drives:** All applications are shipped on 3½-inch and 5¼-inch flexible discs, interleaved for internal or external mass storage devices. Applications may be executed from any 3½-inch or 5¼-inch flexible disc drive supported by the BASIC operating system which is running. They may also be copied to and executed from any supported hard disc drive.

# Stand-alone Applications

Product Name/Description	Product Number <sup>1</sup>	Computer/System Requirements	Peripheral Support
<b>Picture Perfect</b> Business graphics software for creating pie, bar, line and combined bar/line charts	45462B	Models 216, 217, 220 (220 requires 98204B Video Interface Card), 236, 236C and 512K RAM	<b>Printers:</b> 2225A/ThinkJet, 2631G, 2671G, 2673A, 2686A/LaserJet, 2932A, 2934A, 9876A, 82906A <b>Plotters:</b> 7470A, 7475A, 7550A, 7580B, 7585B, 7586B, 9872C/T/B/S
<b>Diagraph</b> Clip-art software for organization charts, flow charts, diagrams, forms, signs and word charts	45463B	Models 310 with 512K RAM and 98546A Compatibility Mode Interface.	<b>Disc Drives:</b> 9121D, 9122D, 9125S, 9130K, 9133D, 9133XV, 82901M, 82902M, SRM (220, 236) <b>Input Devices:</b> 46060A HP-HIL Mouse, 46083A HP-HIL Knob on systems with HP-HIL
<b>Data Grapher</b> Turns numbers into charts and graphs, with files that can be merged with HP TechWriter	45480B	Models 216, 217, 220, 236, 236C and 512K RAM Models 310 with 260K RAM and 98546A Compatibility Mode Interface	<b>Printers:</b> 2225A/ThinkJet, 2631G, 2671G, 2673A, 2932A, 2933A, 2934A, 9876A, 82905B, 82906A <b>Plotters:</b> 7470A, 7475A, 7580B, 7585B, 9872B/C/S/T <b>Disc Drives:</b> 9121S, 9121D, 9133D, 9133V, 9133XV, 7908, 7911, 7912, 7914, 82901M, SRM <sup>2</sup>
<b>Graphics Editor</b> General-purpose graphics software for charts and diagrams, with files that can be merged with HP TechWriter	45537B	Models 216, 217, 220, 226, 236 and 237 with 512K RAM or Model 236C with 768K RAM Model 310 with 512K RAM and 98546A Compatibility Mode Interface	<b>Printers:</b> 2225A/ThinkJet, 2631G, 2671G, 2673A, 2932A, 2933A, 2934A, 9876A, 82905B, 82906A <b>Plotters:</b> 7470A, 7475A, 7550A, 7580B, 7585B, 9872B/C/S/T <b>Disc Drives:</b> 9121D, 9121S, 9122D, 9133D, 9133V, 9133XV, 7908, 7911, 7912, 7914, 82901M, SRM <sup>2</sup> <b>Input Devices:</b> 9111A Graphics Tablet, 46060A HP-HIL Mouse on systems with HP-HIL
<b>Context MBA</b> Integrated software for spreadsheet modeling, word processing, business graphics, data base management, forms, and telecommunications	45481B	Models 216, 217, 220, 236 and 237 with 512K RAM Model 310 with 512K RAM and 98546A Compatibility Mode Interface	<b>Printers:</b> 2225A/ThinkJet, 2602A, 2631G, 2671G, 2686A/LaserJet, 2932A, 2934A, 9876A, 82905B, 82906A <b>Plotters:</b> 7470A, 7475A, 7550A, 7580B, 7585B, 7586B, 9872C/T <b>Disc Drives:</b> 9121D, 9122D, 9133A, 9133B, 9133D, 82901M <b>Modems:</b> 13265A, 92205A
<b>HP TechWriter</b> Technical document editor that combines pictures and text	98819A	Models 216, 217, 220, 226, 236, 236C and 237 with 512K RAM, ID Prom or 46084A ID Module Models 310 and 320 with 512K RAM and 46084A ID Module	<b>Printers:</b> 2225A/ThinkJet, 2563A, 2671G, 2675A, 2686A/LaserJet, 2932A, 2933A, 2934A, 9876A, 82906A <b>Disc Drives:</b> 9122D, 9122S, 9125S, 9133H, 9134H, 9153A, 9154A, SRM <sup>2</sup>

1) **Media Options:** For all products except HP TechWriter, you must order one of the following media options:

- Opt. 630 for 3½-in. media
- Opt. 650 for 5¼-in. media (Internal disc drive)
- Opt. 650 not available for Picture Perfect and Diagraph
- Opt. 655 for 5¼-in. media (External disc drive)

For HP TechWriter, order one of the following options:

- Opt. 044 for 3½-in. media
- Opt. 043 for 5¼-in. media (Internal disc drive)
- Opt. 042 for 5¼-in. media (External disc drive)

2) Peripherals that operate on the Shared Resource Management System, a peripheral-sharing network. Consult your HP sales representative for details, or see the Shared Resource Management Planning Guide, Pub. No. 5953-9550.

## Ordering Information

In the U.S., call toll-free (800) 538-8787; in California, Hawaii or Alaska, call (408) 738-4133. Or contact your local Hewlett-Packard sales office or dealer.

## Software Support Services

For information on support services available for the software in this summary, see the *HP 9000 Software Pricing Guide* (Pub. No. 5953-9599D), available from your HP sales office.