

A CALCULATOR. A SYSTEM. A STANDARD FOR PROFESSIONALS.

The HP-41 is the most versatile, powerful, yet easy-to-use calculator Hewlett-Packard has ever designed. Simple to operate, the HP-41 offers the advanced problem-solving power your professional world demands. Choose from two models: the HP-41C and the HP-41CV.

To expand the capabilities of your HP-41, there is a NEW family of Extension Modules which gives you greater programming flexibility and even more memory.

And to complete your HP-41 computational system, HP brings you HP-IL, the Hewlett-Packard Inter-Loop for battery-operable devices. Now your HP-41 can tackle problems only a computer was able to handle.

A Calculator

By itself, the HP-41 could easily be all the calculator you'll ever need. While it is our most powerful personal calculator, it is remarkably uncomplicated. It communicates in words, as well as numbers, so operations are simple even for the novice. Status announcements keep operation error-free by reminding you of operating modes and battery life. You can name a program, then call it up by name for execution.

Both HP-41 calculators are fully programmable. The HP-41C resident memory holds 400 bytes, or 40 data registers. The HP-41CV resident memory contains 1,200 bytes, or 120 data registers. Extended Memory Modules can expand the HP-41 memory by an additional 4,200 program bytes or 600 data registers. This brings the total system capacity to 4,400 bytes of program memory or 620 data registers.

The HP-41 is straightforward and logical. It uses the time-proven RPN logic system and no-nonsense keyboard programming, guaranteed to help you easily solve your most difficult problems.

The HP-41 is versatile. Convert your predefined HP-41 calculator to a user-customized instrument, tailored to your personal needs, matched to your professional demands.

A System

Also, the HP-41 is an extraordinary calculating instrument. Yet, it also constitutes the heart of an exceptional personal calculating system which is adaptable to your computational needs. When combined with application software, modules, and peripherals, your HP-41 expands into a system matched to virtually any requirement.

HP-41 application software provides fast solutions to help you obtain maximum performance from your problem-solving system. You can choose from four sources of HP-41 solutions:

HP-41 Application Pack, for preprogrammed answers. **Solutions Books** for the best of programs submitted by users; the **Users' Library** for a subscription to a continuing source of user-written programs; and **HP-41/87 Program Cards** which your "extra-smart" HP-41 Card Reader automatically translates to HP-41 code.

Memory Modules expand the HP-41C's resident memory capacity up to five times. Using only one port, the Quad Memory Module expands your HP-41C to full HP-41CV resident memory capacity.

The **NEW Extension Module Family** gives you more programming capabilities and the ability to almost triple the amount of overall memory available.

The **Card Reader** enables you to build your own software library. Store long or repetitive programs on magnetic cards, so you don't have to key in programs.

The **Wired** lets you quickly load long programs by reading bar codes printed on paper.

The **Printer/Plotter** has a complete alphanumeric character set and can document your calculations and program listings in three operational modes. It also plots graphs and prints user-definable "special characters."

The **NEW Hewlett-Packard Interface Loop (HP-IL)** plugs into a single port of allowing you to connect up to five devices to your HP-41.

The **NEW HP-IL Digital Cassette Drive** provides battery-operable mass memory capability for the HP-41. In fact, each cassette gives you 50 times more memory than the HP-41CV.

The **NEW HP-IL Thermal Printer/Plotter** offers you the same capabilities as the current HP-41 Printer/Plotter, plus enhanced formatting, graphics capabilities, and compatibility with future HP-IL products.

A Standard For Professionals

The HP-41 is more than just another calculator. Its advanced problem-solving power puts answers right at your fingertips. Its easy-to-use features and HP-IL, interfacing, make information more accessible and easy to manage. Application software support provides a multitude of preprogrammed solutions. And, as always, Hewlett-Packard engineering delivers uncompromising quality and long-term reliability, establishing the HP-41 as a standard of excellence for professionals.

The HP-41 from Hewlett-Packard. A calculator. A system. A standard for professionals.



HP-41C

HP-41CV

HP-41: Powerful. Yet Easy to Use

- The HP-41 communicates with you in words, as well as numbers.
- You can customize the HP-41 to meet your own needs.
- Programming is fast and easy.
- Continuous memory stores everything.
- Optional peripherals and extension modules allow you to expand capabilities.
- HP-IL, interfacing, turns your HP-41 into a low-cost, portable computer system.

A CALCULATOR

The HP-41 features the latest advances in calculator technology to give you an easy-to-use, convenient, pocket-sized problem-solver. Continuous function features let you input to the calculator in "friendly" words as well as numbers. And the HP-41 uses three-proven RPN logic, acknowledged as the most natural and efficient system for solving problems on a professional calculator.

Customization features let you personalize the calculator for special applications. Continuous Memory saves your programs and data for later use. Programming features offer flexibility, power and ease-of-use.

The HP-41 Speaks Your Language

No matter what your profession, the HP-41 speaks your language. You communicate in words. Or with numbers. Or both. You can type in any combination of numbers and letters up to 24 characters in a row, with as many as 12 characters displayed at one time.



You are freely in control, helped along by a complete system of status annotations which appear in a special area of the display. You know what the next key you press will be executed as "unintended" as a program instruction; you see whether you're keying in numbers or alphabet characters. One glance reveals the condition of program flags, trigonometric modes or battery life.



The display even shows you whether the shift key has been pressed. And to help you operate the HP-41 more easily a wide variety of comprehensive messages pinpoint operating errors—in English! These messages appear in the display and aid you in tracking down calculation errors or program "bugs."



Besides displaying status annotations and alphabetic strings, you can show numbers in fixed, scientific and engineering notation at your command. And you have the choice of automatic constants or decimal points to make large numbers more readable. To make all this communication easier on your eyes, the HP-41 utilizes a high-resolution liquid crystal display (LCD) that is easy to read in the office or in the field in bright sun light.

Simple, Logical, Effective RPN

HP's RPN logic system allows you to solve through even the most complex problems with ease. RPN works problems exactly the same way you're used to working them, in the same order you do them with pencil and paper. Because RPN shows you intermediate results, you never get lost in the middle of your problem. It is a simple, fundamental and powerful method of calculation.

Customize the HP-41 to Your Own Design

The HP-41 comes with 58 popular functions on the keyboard, ready to help you solve scientific and mathematics problems quickly. But, in fact, over 130 separate operations comprise the total function library of the HP-41. And you can assign any of these functions or any program you have written to any key—with a few keystrokes you can create a "personalized" custom calculator for your own special applications. In Normal mode, the calculator operates using its normal keyboard. But the press of a button to shift mode provides each key with a new function possible by—a function or program you assign.

To help with this customizing feature, each HP-41 comes with two keyboard overlays and a set of user labels. You simply mark on the overlay, above each key, the new assigned function.

To further aid your customizing requirements, the HP-41 offers maximum flexibility in memory allocation. You can divide its registers between data storage and program memory in any way you choose. You can even store alphanumeric strings of up to six characters in any storage register.

Continuous Memory Saves Everything

The HP-41 is equipped with Continuous Memory that preserves everything from stored data to user-defined keyboard assignments, even though the calculator is turned off. As a result, you can program frequently needed calculations once, then perform them as often as necessary without having to re-enter your program.

Programming is Quick and Easy

Programming the HP-41 is so simple you'll write programs immediately, just switch to Program mode, give the program a name—an easy-to-remember alpha label—then press keys on the calculator in the same order you'd use to solve the problem or perform the operation. That's all there is to it. The HP-41 remembers those keystrokes as a program.

Once back in the Normal mode, you simply call the program by name and the entire series of keystrokes is executed at your command. No complicated programming languages to remember. No elaborate "start-up" procedures to memorize.



You can maintain more and longer programs in the HP-41 than you ever thought possible. Each program is autonomous. You can call it by name, run it, edit it, even delete it completely—all without affecting other programs in the calculator.

As you begin to write a new program, the LCD

display shows you how much unused program memory remains. Then, as you write your program, it shows you program information in handy line form.

Local and Global Branching

Programs can be independent or interactive and, by using global labels, you can summon programs or call up to six levels of subroutines.

Editing is Fast and Easy

The HP-41 contains several editing features to help you correct and alter your programs. You can go to any program, any local label, or line number within a program. Single- or back-step through a program and examine each line without execution, or execute to any program markstep at a time. You can also insert or delete a program line at any point—or delete a specified number of program lines.

Powerful Conditional Instructions

The comparison keys give your HP-41 powerful decision-making capability. A program can automatically compare numerical data, constants or results, and alter execution based on the comparison outcome.

Flags Enhance Control

Flags also enhance the decision-making capability of the HP-41. A flag can be tested and program execution altered, based on the outcome of the test. The HP-41 contains 36 flags, giving you an unheard-of control over conditions in your programs and even the calculator itself.

Flexible Indirect Addressing

The HP-41 has 26 separate operations, which, in addition to their normal operation, can also be controlled indirectly. This feature allows conditional alternatives while running, just like sophisticated computers.

You can indirectly add new data to programs, subroutines or any register of the automatic memory stack and more. Any register may be used as the indirect control register.

The HP-41C or HP-41CV ... Which One For You?



The unique difference between the HP-41C and HP-41CV is that the HP-41CV has 5 times more memory built in. Specifically, it contains 320 storage registers versus 80 storage registers in the HP-41C. For those of you who have programming experience, the HP-41CV gives you the memory capacity to store a host of programs comfortably. And with all this memory built in, you have four bus ports to add the peripherals of your choice, making your system even more powerful and versatile.

If you are new to programming or your needs do not immediately require full memory capabilities, start with the HP-41C. As your need for memory increases, add a Quad Memory Module or up to 4 Memory Modules to meet your increasing computational needs.

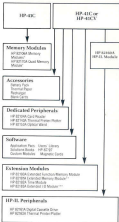
A SYSTEM

When you examine the HP-41, you'll see that it is more than just an extraordinary calculating instrument—it's the heart of a very capable system. By adding optional peripherals, modules and HP-IL Interfacing, you can expand the capabilities of the HP-41 to that of a low-cost portable computer system.

These options give you increased flexibility as well. You can plug in up to four devices in the calculator itself or plug in the HP-IL Module and link up

to I/O devices, using only one port. The HP-IL Module and each quick-connect peripheral is completely portable, designed to augment the utility and flexibility of your HP-41 system. HP continues to keep pace with your growing professional needs.

HP-41 System Configuration



- *For use with HP-41C only.
- **Extended Function Memory Module required.
- ***HP-IL Module required.

HP-41 Modules



MEMORY MODULES

These handy modules can actually quadruple the HP-41C's resident memory. You simply plug in up to four Memory Modules or one Quad Memory Module to increase data storage and program memory. One Memory Module contains 64 data storage registers. The Quad Memory Module contains 256 data registers. With four Memory Modules or one Quad Memory Module, you can expand your HP-41C resident memory up to a maximum of 256 data registers—the equivalent of the HP-41CV.

Note: Users should not plug Memory Modules or a Quad Memory Module into an HP-41CV, or more than one Quad Memory Module into the HP-41C.

When plugged into the HP-41C, the modules become an integral part of the calculator's own resident memory. They too, retain programs and data constantly even after the calculator is turned off.

The Memory Modules and Quad Memory Module are a low cost way of expanding your HP-41C to meet your increasing computational needs.

EXTENSION MODULES

Make your HP-41 even more versatile with HP's NEW family of Extension Modules.

The HP 82180A Extended Function/Memory Module

The NEW Extended Function/Memory Module increases your current programming function set by adding such functions as programable division, programmable assign and string functions. This new module also provides memory management functions for accessing extended memory and an additional 694 bytes of extended memory.

The HP 82181A Extended Memory Module

The Extended Memory Module provides an additional 228 data registers or 1,824 bytes to the HP-41. These modules can be used in conjunction with the HP 82180A Memory Module or the HP 82182A Quad Memory Module. (The HP 82180A Extended Function/Memory Module is required when using the HP 82181A Extended Memory Module.)

Since the Extended Function/Memory Module itself contains 127 extended memory registers, plug in one Extended Memory Module and you have 255 extended memory registers or 2,040 bytes of program memory. Plug in two Extended Memory Modules and you have a total of 383 extended memory registers or 3,024 bytes. No more than two Extended Memory Modules can be used at any one time.

Note: The additional registers provided by the Extended Memory Module are accessed differently from registers in resident memory. In order for the calculator to use programs or data stored in extended memory, you must first transfer them into resident memory. The functions necessary for transferring programs and data between resident memory and extended memory are included in the Extended Function/Memory Module.

The HP 82182A Time Module

Introduce the dimension of time to HP-41 programming with the NEW interactive Time Module. The Time Module enables you to expand your calculating system with time information and time-related operations. Using the Time Module, your HP-41 can become the heart of a time-based system controller, an alarm clock, an appointment reminder, a calendar, a timer, even an advanced stopwatch.

The HP 82183A Extended IO Module*

Your HP-41 HP-41C capabilities can be further enhanced with the Extended IO Module.

Now you can generate HP-41 compatible bar codes on the new HP 82184A Thermal Printer/Plotter. You can convert your frequently used programs to bar code, an inexpensive means of storing programs and data.

*Requires HP 82184A HP-41C Module.

*Available only in U.S.A.

Cassette tapes can be duplicated quickly and easily by using multiple HP 82101A (Digital Cassette Drivers) and the Extended IO Module. This time-saving feature allows you to conveniently make multiple copies of tapes to meet your software distribution needs.

When plugged into the HP-41, the Extended IO Module gives you capability and flexibility for accessing files on mass memory devices. And you get more general purpose IO capabilities.

THE HP 82104A CARD READER

The Card Reader for the HP-41 scans your programs and data on small, magnetic cards. By passing the appropriate magnetic card through the Card Reader, you place all the information on the card in the HP-41. Instantly, "you write and store programs on the cards just as quickly too. And the Card Reader is "extra-smart": it verifies reads cards whether under your control or that of a program; it accepts cards as they are read; it prompts you for the next card; it even accepts program cards from the HP-67 and HP-67, automatically translating programs into HP-41 code.

If you frequently change long programs, develop or change software, or need quick storage of programs and data, the Card Reader will give you a highly portable, time-saving method.

THE HP 82153A OPTICAL WAND

With the Wand, Hewlett-Packard makes using the HP-41 even quicker and easier. The Wand reads bar code, a convenient and inexpensive means of inputting and storing HP-41 programs and data. Almost all HP-41 software is available in bar code, including Users' Library programs and Solutions Books.*

Bar Code is Easy, Efficient and Inexpensive

The Wand opens up a world of bar code benefits. For instance, bar code listings are convenient because most are printed on standard paper and usable in a three-ring binder. And bar code saves expenses by using paper, perhaps the least expensive storage medium available. Sharing programs is simple. You can duplicate your work and distribute through the mail.

In addition, bar code affords you creative programming flexibility. Pressure-sensitive bar code labels are included, allowing you to immediately create a bar code sequential of your own short programs or data file.

The Paper Keyboard Gives You Ease in Function Entry

All of the HP-41's functions are printed on a paper keyboard in bar code. By using this paper keyboard, more HP-41 functions can be entered quickly and without key errors. The Wand scans a short bar code sequence, executes the function, or loads your command. For example, a command normally requiring nine keystrokes can be accomplished in one quick pass of the Wand.

Some users may find the paper keyboard especially valuable for quickly loading programs from listings as an alternative to keying them in.

High-Quality Custom Bar Code

In order to ensure proper high-quality bar code production, Hewlett-Packard has arranged bar code production service with an independent printer. This HP service allows you to have your custom programs converted to bar code at a very low cost.



* Applications for materials within specific capabilities which are not reproducible in bar code form. They are the only HPs generated or maintained software not available in bar code.

THE HP 82143A PRINTER/PLOTTER



This whisper-quiet, thermal, 54-character Printer/Plotter neatly plugs into the calculator to give you numeric, upper- and lower-case alpha, double-wide character, plotting capability and intensity control for optimum contrast and readability. It even allows you to define your own "special" characters. The Printer/Plotter is a valuable aid in editing programs or checking long calculation. Your output is listed line by line for easy reference. Portable and lightweight, the HP-41 Printer/Plotter operates on battery or ordinary house current, switching when and where you need it.

THE HP 82120A RECHARGEABLE BATTERY PACK



The multipurpose Rechargeable Battery Pack* provides a reliable and renewable power source. Because frequent Card Reader or Titled use causes increased power consumption, the multipurpose Rechargeable Battery Pack, used in place of the standard battery case and disposable batteries, furnishes extended operating life. The pack recharges either in or out of the calculator, doubling its convenience and affording you both a reserve power pack and a multipurpose Rechargeable Battery Pack. You need never be without power.

*Recharge must be purchased separately.

NOW THERE'S HP-41!

Turn your HP-41
into a Portable Computer System.

THE HP 82160A HP-IL MODULE

The NEW HP 82160A HP-IL Module transforms your HP-41 calculator into a general purpose system controller, capable of transmitting and receiving data, and performing a wide variety of control functions.



The HP-IL Module provides the electronics, functions, and connecting cables to turn your HP-41 into a low-cost HP-IL controller.

Printer Functions

The printer functions located within the HP-IL Module are consistent with the functions of the current HP 82143A Printer/Plotter. In addition to this complete set of functions, this module provides FOR MAT function, which permits centering, and left and right justification of copy.

If you already own an HP 82143A Printer/Plotter, you will be happy to know that it will work with the HP-IL system. A switch on the underside of the HP-IL Module selects either the HP-IL, Printer functions or the HP 82143A Printer/Plotter functions. When using the HP 82143A, simply switch to the HP-IL, disable position.

Mass Memory Functions

The mass memory functions within the HP-41, Module allow you to write and read programs, registers, key assignments, machine status, or the entire HP-41 memory contents to or from an HP-41 mass memory device. Files may be secured to prevent accidental over-write. Running programs may call in other programs automatically or store data. In fact, the entire contents of the HP-41's memory may be replaced under program control.

The mass memory directory capabilities make all operations easy and convenient. Simply give the HP-41 a file name and even if several mass memory devices are on the loop, the directory capabilities will automatically search out the file without your guidance. Once a file is accessed, the file name and location are saved in a buffer for quick future reference. If you should forget the names of your files, the directory function will list them in the HP-41's display, or on a printer if one is plugged into the system.

The general purpose input/output (GPI) functions found in the HP-41 Module allow you to more directly control devices in your HP-41 loop. Two modes of operation are available—automatic and manual. For most applications, automatic mode is used, and the functions in the module will automatically find the appropriate device and perform an operation. If you need direct control, switch to manual mode to override the automatic operation.

Other general purpose instructions allow information to be read into or written from the HP-41's ALPHA register. You can also turn peripherals on or off from the HP-41 or designate more than one device to be selected to read or information.

With the HP-41 Module installed in your HP-41, you're ready to connect devices from the growing HP-41 family.

THE HP 82161A DIGITAL CASSETTE DRIVE

The NEW HP 82161A Digital Cassette Drive is a battery-operable, mass memory device meeting the standards of quality and performance formerly reserved for peripherals to large installed computers.



The Digital Cassette Drive uses a high-quality, digitally-certified mini-cassette for storing data. Each cassette can hold up to 120,000 bytes of information. This translates to 50 times the total capacity of an HP-41CN or 16,000 registers. Imagine enough capacity on one cassette to store all 28 of the current HP-41 Solutions Book's programs—with room to spare. The Digital Cassette Drive even has a storage compartment for two spare cassettes—typical of HP's attention to detail.

The Digital Cassette Drive provides exceptional performance for a battery-operable device. Rewind time is under thirty seconds and read/write operations are done at nine inches per second. All tape movement is under microprocessor control and buffer space is provided in the drive for temporary storage of directory information to help minimize access time and tape motion.

Standby Mode is provided to allow HP-41 controllers to turn the drive on or off remotely. This feature, unique to the HP-41 interface, allows systems to be developed for remote applications. System battery life can be extended dramatically, because the HP-41 can turn devices on and off when necessary.

The Digital Cassette Drive uses a two-motor system to move the tape past a two-track, magnetic head. The motors have precision, ironless-core rotors for high performance and low tape tension and wear. The magnetic head is specially designed to resist data alteration due to externally generated magnetic fields. Precise control of tape speed allows reliable, high-density recording.

THE HP 82162A THERMAL PRINTER/ PLOTTER

The NEW HP 82162A Thermal Printer/Plotter is a compact, 14-character, battery-operable device. The HP-IL interface ensures that the HP 82162A will be compatible with future HP-IL devices. Thus, its utility will extend far into the future.



Like the Digital Cassette Drive, the Printer/Plotter supports Standby Mode so the HP-41 can manage its power consumption.

The chief enhancements of the HP 82162A over the HP 82143A dedicated Printer/Plotter include a 100-character buffer for greater speed and enhanced graphics capabilities, and a **FORMAT** function which automatically centers or justifies copy to the left and right margins.

WHAT IS HP-IL?

The Hewlett-Packard Interface Loop (HP-IL) is a new concept in interfacing. Designed for small, battery-operable systems, it is intended for use in field-portable and small desktop systems, which use highly-portable controllers, such as the HP-41.



How Does HP-IL Work?

In HP-IL systems, devices are connected by two-wire cables leading from the out port connector of one device to the input of the next, until all devices form a closed loop.



One character of information at a time is passed bit-serially, in one direction, from device to device, until it returns to its source. Once a character has traversed the loop and returned to its origin, another character of information is transmitted. This process can be repeated up to 5,000 times in one second.* Thus, the interface could transmit a single-speed, typed page of information every second.

*Current HP-IL devices cannot support this rate. Typical HP-41 HP-IL systems can transfer 100 characters per second.

The unique, loop geometry of HP-41 provides automatic error checking. Because each character must return to the device that originally sent it, the device can compare the returning character with a copy of the one that was sent. If the two do not match, an error message is generated.

This loop structure also provides a simple means of coordinating the transfer of data. Some devices can send and receive data at high rates while other devices work at a slower pace. In the HP-41 system, devices hold each piece of information until they are ready to receive another. When ready, they pass the information to the next device. By the time a piece of information makes a complete loop, all devices are ready to accept new information. This "hold until ready" protocol assures that fast and slow devices can operate in the same HP-41 system.

Now the HP-41, with HP-41L, solves an even wider range of problems.

A STANDARD FOR PROFESSIONALS

The HP-41 is more than just a calculator and more than just a system. It combines problem-solving power with the flexibility and ease of use of HP-41L to produce a personal computational system for professionals.

The HP-41 results from a synthesis of state-of-the-art design and traditional Hewlett-Packard human engineering. Every facet of the HP-41 is designed to contribute to the calculator's overall ease of use. The alphanumeric interface is simple and straightforward, making program labeling flexible with easy-to-remember names.

In addition, the keyboard with 58 important functions is effortless to operate. And with alphanumeric execution, you have all 100 functions available for instant use in calculations, programs, or the creation of your own personalized keyboard.

Continuous Memory keeps the HP-41 ready for action, saving programs, data and key assignments. You never have to reenter program steps or data after you turn the machine off.

The quick-connect peripherals, modules and application software add to the flexibility of the HP-41 without compromising its portability. And with such complete flexibility of options, you can choose the solution that best fits your needs — now and in the future. The HP-41 calculator. The HP-41 system. The HP-41 standard for professionals. No matter what your profession, the HP-41 grows as your needs grow.

SOFTWARE PROVIDES SOLUTIONS

Custom Solutions

Do you have groups of employees, customers, clients, or fellow professionals who need on-the-spot answers to long, complex, or repetitive calculations? If so, Hewlett-Packard may have a solution for you — a **custom solution**. One which features the software you have developed to address your previous problems.

With HP's **Custom Services** program you can select from three software media, produced to your software or data specifications: Custom Application Modules (with capacity up to 12,000 bytes), Magnetic Cards or Bar Cards. And for calculator personalization, you can use a special blank keyboard and custom overlay.

You can tailor a solution for your organization that combines the speed and accuracy of a computer with the portability, low cost and push-button simplicity of a calculator.

If you combine **custom solutions** with the flexibility and capability of HP-41, you have a custom system... where and when you need it. The cost varies with the custom service selected and the number of calculators and peripherals desired.

Many companies are already using a customized HP-41 to solve their unique problems—from diamond sales to fuel saving, from banking to heavy equipment sales and service.

For more information, write or call for our special brochure about **Custom Services**.



Hewlett-Packard Software Solutions

The outstanding features of the HP-41 allow you the freedom to focus on solutions. And Hewlett-Packard helps provide these solutions with unparalleled software support. You may find the solutions in your field in the form of Application Pacs or Solutions Books. HP-41 software has been carefully designed to effectively increase your problem-solving potential by adding power and flexibility to your calculator. HP-87 and HP-87 magnetic card pacs are compatible too, although some programs require additional memory modules. Whatever your professional needs, HP software will increase the versatility of the HP-41 and improve your personal decision making.



APPLICATION MODULES

Hewlett-Packard offers you solutions to your specific professional problems with the pre-programmed application modules. Each application module transforms the HP-41 into an answer machine for a particular discipline: a special calculator for specific needs. Every application module comes in a pac, with a comprehensive manual. Many include keyboard overlays. Simply install the module and overlay to put the combined problem-solving power of the HP-41 and the module's functions and programs to work for you.



HP-41 Application Pacs

You have a choice of 17 HP-41 Application Pacs. All pacs include a 4-K module, except where noted.



Mathematics (00041-11001)

Matrix Operations
Solution to Equations on an Interval
Polynomial Solution Evaluation
Numerical Integration
Differential Equations
Fourier Series
Complex Operations
Hyperbolic
Triangle Solutions
Coordinate Transformations

Clinical Lab and Nuclear Medicine (00041-11004)

Clinical Chemistry
Bilirubin Level
Body Surface Area
Creatinine Clearance
Blood Acid-Base Status
Oxygen Saturation and Content
Red Cell Indices
Nuclear Medicine
Total Blood Volume
Thyroid Uptake
Radiation Dose Conversion
Radiation Dosimetry
Statistics
Basic Statistics
Chi-square Evaluation and Distribution
t Statistics
z Distribution

Circuit Analysis (00041-11005)

General Network Analysis
Ladder Network Analysis

Financial Decisions (00041-11006)

Compound Interest Solutions

Internal Rate of Return
Modified Internal Rate of Return (MIRR)
Net Present Value
Loan Amortization Schedules
Depreciation Schedules
Rental Price and Yield
Days between Dates

Securities (00041-15416)
Rental Rate Prices and Yield
Reasons for Option Writers Using the Black-Scholes
Evaluation Method
Warrant and Option Hedging
Yield on Call Option Sales
Butterfly Options
Roll Spread Option Strategy
Convertible-Bond Investment Analysis
Stock Portfolio Valuation
Bond Speculation Using Margin
Convertible Security Analysis

Statistics (00041-15083)
Basic Statistics for Two Variables
Means, Standard Deviations and Variances
Analysis of Variance (One-Way)
Curve Fitting (Linear, Exponential, Logarithmic and Power
Curves)
Multiple Linear Regression
Polynomial Regression
t-Statistic
Chi-square Evaluation
Contingency Table
Spearman's Rank Correlation Coefficient
Normal and Inverse Normal Distribution
Chi-square Distribution

Stress Analysis for Mechanical Engineers (00041-15027)
Section Properties
Beams
Simply-Supported Continuous Beams
Columns
Mohr Circle Analysis
Strain Gage Data Reduction
Soderberg's Equation for Fatigue
BPP Vector Calculator

Structural Analysis for Civil Engineering (00041-15421) — 66
Section Properties
Beams
Simply-Supported Continuous Beams
Settling of Continuous Beams
Continuous Frame Analysis
Steel Column Formula
BPP Vector Calculator
Reinforced-Concrete Beams
Concrete Columns
Effective Moment of Inertia for Concrete Sections

Surveying (00040-15405)
Traverse, Interior and Sidelength
Compass Rule Adjustment
Transit Rule Adjustment
Intersections
Curve Solutions
Horizontal Curve Layout
Vertical Curves and Grades
Resection
Predetermined Area
Midpoint, Average End Area
Volume of a Prismoid
Coordinate Transformation

Home Management (00041-15402)
Financial Records
Expense Budgeting
Travel Expense Record
Stock Portfolio Evaluation
Checking Account Reconciliation
Financial Calculations
Year Financial Calculator
Accumulated Interest and Remaining Balance
Home Ownership
Home Owner's Equity Analysis
The Rent or Buy Decision
Personal Investments
The Free-Individual Retirement Account (IRA)
or Keogh Plan
The True-Cost of an Insurance Policy

Games (00040-15412)
Submarine Hunt Pinball
Space War Craps
Super Bagels Blackjack
Hangman Random Number Generator

Machine Design (00040-15418)
Crank-Cams
Generation of a Four-Bar Linkage
Progression of Four-Bar System
Progression of Slider-Crank
Gear Forces



Structural Material Inelastic Stress States
Helical Spring Design
Forced Oscillator with Arbitrary Function
Coordinate Transformation
Points-on-a-Circle
Circle by Three Points
Unit Conversions

Thermal and Transport Science (00040-15070)

Equations of State
Polytropic Processes for an Ideal Gas
Isentropic Flow for Ideal Gases
Conduct Flow
Energy Equation for Steady Flow
Heat Exchangers
Black Body Thermal Radiation

Aeriation (00041-15088)

Flight Management
General Aircraft Weight and Balance
Flight Plan
Determining In-Flight Winds
Position by One or Two TOPO
Mach Number and True Airspeed

Navigation (00040-15077)—EE

Great-Circle Course and Distance
Great-Circle Position
Rhumb-Line Course and Distance
Rhumb-Line Position
Great-Circle Plotting and Voyage Planning
Dead Reckoning
Sight Reduction
Perpetual Almanac—Stars, Sun, Planets, Moon
Almanac Interpolator
Sight Reduction Table
Celestial Functions
Greenwich Sidereal Time
Star Almanac
Fundamental Arguments
Astronomical Coordinate Conversion
Longitude to Latitude
Input/Output Functions

Real Estate (00040-15016)—EE

Compound Interest and Loan Amortization
Modified Internal Rate of Return
Depreciation Schedules
Income Property Analysis
Guaranteed Payment Mortgage
Wrap-Around Mortgage
Home Owner's Equity Analysis
The Rent or Buy Decision

Petroleum Fluids (00041-15070)—EE

Z Factor
Gas Isothermal Compressibility
Gas Formation Volume Factor
Gas Viscosity
Pseudocritical Temperature and Pressure from Gas Gravity
Gas Properties from Gas Composition
Oil Isothermal Compressibility
Oil Formation Volume Factor
Oil Viscosity
Gas-Oil Ratio
Bubble Point Pressure
Two-Phase Formation Volume Factor
Water Isothermal Compressibility
Water Formation Volume Factor
Water Viscosity
Gas-Water Ratio
Rock Compressibility
Total Isothermal Compressibility



HP-41 Solutions Books: A Library of 28 Books

HP-41 Solutions Books provide complete step-by-step keystroke listings, to help provide you with programs to solve your general or specialized problems.

BUSINESS

Business Statistics/Marketing/Sales (90041-90094)

Forecasting Using Exponential Smoothing
Seasonal Variation Factor (SEAF)
Multiple Linear Regression
Normal, t and F Distributions
Rank Statistics for Two Variables
Moving Average
Break-even Analysis
Gompertz Curve and Trend Analysis
Experience (Learning) Curve for Manufacturing Cost
Price Elasticity of Demand

Home Construction Estimating (90041-90094)

Concrete Volume
Linear to Round Feet Conversions and Coring
Forming Board Foot
Lumber Estimate
Shingle Estimate
Wall and Ceiling Areas Estimate
Plaster Estimate
Drywall and Insulation Estimate
Siding and Subfloor Estimate
Painting Estimate
Wood Floor Estimate

Small Business (90041-90097)

Ready Payroll
Invoicing
Account Posting
Taxider
Retail Inventory Monitor
Estimating Inventory
Inventory Ordering
Order Point Calculations
Working Capital Needs—Barfield Formula
Depreciation Schedules
Break-even Analysis

Lending, Savings and Leasing (90041-90094)

Constant Payment to Principal Loan
Rule of 78's
Amortization Schedule
Add-on to APR with Odd Days
Savings Plan

Interest Conventions

Loan with Additional Payments in Advance
Skipped Payments
Compounding Periods Different from Payment Periods
Compounded Interest Solutions

Real Estate (90041-90104)

Income Property Analysis
Wrap-Around Mortgage
Amount of Equity at Any Time
Mortgage Yield
Mortgage Pricing
Investment Analysis for Property and Land
Residential Analysis (Rent or Buy)
Variable Analysis of Real Estate Investment
Internal Rate of Return (IRR)
Ellwood Income Valuation for Income Property Appraisal

COMPUTATION

Geometry (90041-90044)

Sine Plane Solutions
V Mathews and Long Math
Internal and External Tangents
Points of Tangency with Circles and Arcs
Line-Line Intersection
Point-on-a-Straight Line
Grid of Points Calculates All Points
Grid of Points Calculates Discrete Points
Tangent Circle to Two Straight Lines with a Given Radius
Distance Between Lines in Space

High-Level Math (90045-90048)

Sine, Cosine, Exponential Integrals
Eigenvalues/eigenvectors of 1st Order Systems
Eigenvalues for 2nd Order Systems
Chebyshev, Legendre, Hermite, and Laguerre Polynomials
Stokes-Point Gaussian Quadrature
Gamma Functions
Bessel Functions, Error Function
Characteristic Equation of a 4 x 4 Matrix
4 x 4 Matrix Operations

Test Statistics (90041-90092)

One Sample Test Statistics for the Mean
Test Statistics for the Correlation Coefficient
Differences Among Proportions
Behrens-Fisher Statistics
Kruskal-Wallis Statistics
Mean-Square Successive
The Run Test for Randomness
Intraclass Correlation Coefficient
Fisher's Power Test for a 2 x 2 Contingency Table
Kendall's Chi-Square Statistics
Mann-Whitney Statistics
Kendall's Coefficient of Concordance

ENGINEERING

Antennas (00041-00010)

Loaded Vertical Antennas
Loaded Dipole Antennas
Gain of a Horizontal Electric Antenna at Zero Antenna
Asymmetry Pattern of Cylindrical Array of Antennas
Collinear Antenna Gain and Pattern
Beam Pattern for Uniform Array
Backer Antenna Beamwidth and Gain
Antennas
Parabolic Antenna Calculations
RF Path Loss, dB
Antenna Gain in Power of a Retracted Transmitter
Planar Phased Array Radar Beam Positions
Short Wave Transmission Path Calculations

Chemical Engineering (00041-00030)

Straight Pin Efficiency
Concentration of Energy
Hydrocarbon Combustion
Heat Transfer through Composite Cylinders and Walls
Non-Karman Analogy for Heat and Mass Transfer
Equations of State
Reversible Polytropic Process for an Ideal Gas
Conduit Flow
Fluid Transport Numbers
Single Stage Equilibrium Flash Calculations
Weak Acid Base Titration Curve

Civil Engineering (00041-00050)

Steel Columns Formula
Reinforced Concrete Beams
Stress in Thick Holed Cylinders
Properties of Special Sections
Compressive Buckling
Vectors
Beams Fixed at Both Ends
Simply Supported Beams
Cantilever Beams
Bolt Torque

Control Systems (00041-00070)

Frequency Response of a Transfer Function
Bode of Transfer Functions that has Each Pole and Zero Given

Bode of Third-Order Over Fourth-Order Transfer Function
Bode of Third-Order Over Third-Order Transfer Function

Roots Test for Continuous and Discrete Time Systems
Stability

Control Frequency Response—Open Loop, Closed Loop
Aid to Root Locus Plot I—Real Poles
Aid to Root Locus Plot II—Complex Poles
Classical Control/Gains
First Order Regulator
Second Order Regulator

Electrical Engineering (00041-00080)

RC Timing
Frequency Response of a Transfer Function
Transistor Amplifier Performance
Class-A Transistor Amplifier Bias Optimization
Active Filter Design
Butterworth Filter Design
Chebyshev Filter Design
Bode Plot of Butterworth and Chebyshev Filters
Transmission Line Calculations
Transmission Line Impedance

Fluid Dynamics and Hydraulics (00041-00110)

Conduit Flow
Flow with a Free Surface
Pipe/Slope Scale
Forces at Joints and Fittings
Valve Sizing
Pipe Network Analysis
Restriction Metering Orifice Calculations
Energy Equation for Steady Flow
Compressible Flow in Ducts
Fluid Routing and Hydrographs

Heating, Ventilating, and Air Conditioning (00041-00140)

Overall Heat Transfer Coefficient
Insulation Break Even Analysis
Air Flow in Circular Ducts
Air-Gas Convection
Equations of State
Black Body Thermal Radiation
Psychrometric Properties
Heat Exchangers
Decibel Addition and Subtraction
Temperature Conversions

Mechanical Engineering (00041-00160)

Gate Flows
Stress on an Element
Equations of State
Rohsenberg's Equation for Nucleate
Spring Constant

Progression of a Slider Crank
Free Vibrations
Interference Fit
Linear or Angular Deformation
Constant Acceleration

Solar Engineering (00041-00130)

Solar-Heating Radiation
Sun Altitude, Azimuth, Solar Panel Absorption
Energy Requirements—Fuels and Prices
Heat Exchangers
View Factor
Heat Transfer Through Composite Cylinders and Walls
Black Body Thermal Radiation
Economic Breakdown for Solar Equipment
Solar Panel Array
Conduct Flow

OTHER

Calendars (00040-00140)

Calendar Date/Julian Date Conversion
Day of Year—(Day of Week)
Number of Weekdays Between Two Dates
In What Year is a given Date an M-Day
Number of M-Days Between Two Dates and
With M-Day of Month
Holidays
Religious Holidays
Chinese Years/Julian Gregorian Dates
New Moon and Full Moon Day of Month
Calendar Printer

Cardiac/Pulmonary (00041-00050)

Pulmonary Functions/Vital Capacity
Body Surface Area
Blood Chemo I
Blood Chemo II
Cardiac Outputs
Cardiac Sounds
Contractility and Stroke Work
Lung Diffusion
Valve Area
Ventilator Setup and Corrections (Puffer)

Chemistry (00040-00100)

pH of Weak Acid/Basic Solutions
Acid-Base Equilibrium (Diprotic)
Weak Acid/Base Titration Curve
Equations of State
Van Der Waals Gas Law

Beer's Law and Absorptivity Calculations
Activity Coefficients from Potentiometric Data
Crystallographic to Cartesian Coordinate Transformations
Kinetics using Linear/Non-Linear or Hidden Plot
Mixture Theories

Games (00040-00090)

Hexagons	Orbital Launch
Wari	Flip-Flop
Wuzup	Robot Trap
3-D Tic Tac Toe	Snatch
Planet Launch	Sifters

Optometry I (General) (00040-00140)

Amblyopia
Corrected Vision Resultant
Oblique Cylinder Sum
Acuity Demand from Letter Size and Working Distance
Contact Lens, Telescope Calculations
Calculation of Needed Magnification, Add,
and Peeking Distance
Effective, Equivalent and Neutralizing Power
Radial and Effective Power
Peak, Mean, Primal Methods of Near Rx
Point Accommodative Rx's and their Average

Optometry II (Contact Lens) (00041-00044)

Back Vertex Power of PSM & Contact Lens
Effective Power of Spectacle Lenses at Contact Plane
Retinal Cylinder Induced at True Contact Interface
by Contact Lens
Cylinder Induced by Toric Contact Lens
Contact Lens Power Necessary to Correct Anisotropic
Toric Contact Lens Parameters
Table Contact Lens of 1st Approximation
May-Grant Contact Lens of 1st Approximation
Refractometer Specifications for Prism
Ballast Prism Toric or Prism Ballast Contact Lens
Binocular I
Binocular II

Surveying (00041-00141)

Spiral Curve Layout
Two-Instrument Radial Survey
EDM Slope Reduction
Road Reduction
Three Wire Leveling
Automatic of the Sight
Taping Reductions
Triangle Reductions
Turnover for Azimuth Adjust Readings
Azimuth Adjust for Compass Rule
Azimuth Adjust for Crosshair Rule

Physics (00041-00142)

Black Body Thermal Radiation
Black Hole Characteristics
Special Relativity Conventions
Three-Dimensional Special Relativity
Random's Twin Paradox
Delta-V Delta Simulation
Equations of Motion
Isoscape Overlay Conventions
Semi-Empirical Nuclear Mass Formula
Chaboyer-Gordon Coefficients and 23 Symbols Evaluation
32-F Remaining on Day of Year

Taxes (00041-00138)

1980-4 Alternative Minimum Tax — Joint Returns
1980 Maximum Tax — Joint Returns
1980 Single Taxpayers Income Averaging, Tax Table A and Schedule Z
1980 Married Individuals Income Averaging, Tax Tables B and C, Tax Rate Schedule Y
1980 Head of Household Income Averaging Tax Table D and Tax Rate Schedule Z
1980 New Job Credit
1980 Estates and Trusts Tax Rate Schedules, State Death Taxes Credit Table, Estate and Gift Tax Table
1980 Corporate Tax Schedule

(Calculators, Book Titles and program listings subject to change without notice)

HP-6707 Application Passes

An Added Bonus

Because the HP-41C is compatible with the HP-67 and HP-67*, you may also choose from 30 application pass routines for the HP-67/67*. These application pass routines preprogrammed, pre-recorded program cards to help save you programming time.

THE USERS' LIBRARY

Available from the Users' Library is a vast collection of individual programs, each written by an HP user. By subscribing to the Users' Library you'll have at your fingertips thousands of different programs. For a minimal one-year subscription fee, you receive a catalog of contributed programs, periodic updates and a coupon for 4 free programs of your choice.

HP-41C and HP-11C Accessories

As an added support feature, HP offers a complete line of hardware accessories for the HP-41C and HP-11C devices. Keep your calculator or system at peak operating efficiency with:

HP-41C Accessories

HP-62110A Vinyl Case
HP-62152A Overlay Kit
HP-62175A Blank Overlays
HP-62115A Module Holder
HP-00041-14000 Standard Applications Module
HP-62120A Multipurpose Rechargeable Battery Pack
HP-62163-0000's Loading Your Own Bar Code Manual

HP-62141A and HP-62182A Printer/Platter Accessories

HP-62045A Thermal Paper (Black)
HP-62010A Battery Pack
HP-6205000 Recharger
HP-620600 Recharger (Rams 220V)
HP-62044A Security Cable
HP-62017A Screen Protector
HP-62171A Thermal Paper (Black)

Card Reader/Accessories

HP-00007-11142 40 Blank Cards (with Holder)
HP-00007-11143 120 Blank Cards (with Holder)
HP-00007-11200 1000 Blank Cards
HP-00007-11142 1-Card Holders

HP-11C Digital Cassette Drive Accessories

HP-62176A Mini-data Cassette (10)
HP-62001A Battery Pack
HP-620500 Recharger
HP-620600 Recharger (Rams 220V)
HP-62044A Security Cable
HP-62017A Screen Protector

HP-11C Accessories

HP-62182A Cables	Type
04PS 001	1m
04PS 002	2m
04PS 003	3m

* Requires HP-62100A Card Reader; some programs, when using the HP-41C, require additional memory modules to accommodate all programs.

EXCELLENCE BY DESIGN

Hewlett-Packard's human engineering begins with "excellence by design"—and results in products of uncompromising quality fitted to the rigors of daily use. Hewlett-Packard designed the HP-41—calculators, systems and software—for you, the professional and future professional who need solutions. With the HP-41,

you have at your fingertips a calculating system capable of handling your professional problems. And, with HP-41 and peripherals you can solve an even wider range of information management problems. The HP-41—A PROFESSIONAL SOLUTION FROM HEWLETT-PACKARD.



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HP-41C/CV



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