



HP 9815A:
A Four-Dimensional Machine.



9815

What is the 9815?

The HP 9815A features four dimensions of adaptability. It can be used for quick keystroke calculations, dedicated problem solving, programmable problem solving, and interfacing. Compact and lightweight, the 9815 sits anywhere on your desk to calculate problems from simple addition to complex math encountered in such fields as statistics, science, and engineering.

Quick keystroke calculation — the first dimension. Problem solving using the 9815 is reduced to a few simple keystrokes, just like those in Hewlett-Packard's pocket-sized computer-calculators. With Hewlett-Packard's proven calculator logic system and built-in scientific functions, the 9815 gives you a wide range of advanced problem solving right at your desk. Plus, the operational features such as buffered keyboard, large display, and permanent printout provide quick calculations and fast answers.

Dedicated problem solving — the second dimension. The 9815 combines sophistication and simplicity. Sophistication for the power you need, simplicity for the ease of operation you want. You don't even have to be able to program to use this calculator's potential. All you do is walk up to the calculator with a key overlay and a program cartridge in hand. You place the overlay over the user definable keys, slip in the cartridge, and turn on the power. The 9815 automatically loads and executes File 0 on the preprogrammed cartridge you have chosen from available Hewlett-Packard software. This is calculating power and ease of use you can appreciate.

Programmable problem solving — the third dimension. Programming the 9815 can be as easy as storing the keystrokes you used to figure your last expense report or those you used to solve your last algebraic equation. Yet the calculator has the programming power and memory to handle such complex problems as: electrical engineering design, advanced statistical analysis, and surveying computation.

Interfacing — the fourth dimension. The 9815 provides the capability of controlling the data flow to and from your instruments, gathering that data, and processing that data. For example, the

optional Hewlett-Packard Interface Bus is an industry standard and the 9815 with its advanced I/O can accept up to 14 HP-IB interconnected devices. The 9815 also has available general purpose I/O cards to help you make your connection to our calculator quickly and easily. Once you have set up your system, the 9815 is an exceptionally capable instrumentation computer and processor.



The Advanced Data Cartridge provides 64,000 bytes of program and data storage. Bidirectional search speeds of 1524mm per second and resident speeds of 284mm give you quick access to data and programs.

The Large Display provides you with the results of your calculations and tells you where in the execution of a program you are.

The Two Optional I/O Channels provide you with the capability to configure input and output peripherals into a computing system. Plus, you can interface to instrumentation to acquire, process or control data.

The Alphanumeric 16-Character Thermal Printer can provide hard copy results, easily understood error messages, special user instructions, and complete program listings at your command.

The AUTO START Switch begins calculator operation when the power is turned on, thus eliminating complicated set-up keystrokes and giving you power-on recovery for interfacing applications.

The Programming Keys allow you to write and edit programs, but they double as special function keys which can be defined to execute a program or a part of a program at the touch of a single key.

Keystroke Problem Solving Keys combine the 10-key numeric pad, 24 scientific functions, and the arithmetic keys. Simple problems are quickly and easily calculated from this keyboard.





Quick Keystroke Calculations.

Few things are nicer than meeting an old friend. Especially a friend that has helped you solve a tough problem. Hewlett-Packard pocket-sized computer-calculators have made friends with thousands of people. If you have used a HP pocket-sized computer-calculator to analyze your expense targets, figure the depreciation on capital equipment, or perform complex trigonometric functions, then you're already familiar with one dimension of the 9815 — quick keystroke calculations. You know that the 9815 is easy to use, it's fast, and it's accurate. The 9815 brings pocket-sized convenience to desk-top calculations.

The printer and the display interact to provide two kinds of immediately available information. The printer gives you labeled copy that identifies both what was done and how it was done. The display tells you where in the calculation procedure you are and the result of each intermediate calculation. The printer and display are the tools with which the 9815 closes the communication gap between man and machine.

Rapid calculations are yours because the 9815 combines buffered keyboard operation, the logic of an operational stack, and a rational key layout. The entire right half of the keyboard is designed especially for keystroke problem solving. The far right block of keys contains 24 preprogrammed scientific functions. The next group of keys lets you access the operational stack and perform four-function arithmetic. These keys are adjacent to the 15-key numeric pad. Thus, you can put together the "adding machine" portion and the scientific functions for complex problem solving. Your results are a matter of record because they can be printed for your permanent reference.

Complex scientific problems and four-function calculations can be handled in much the same way. Because many of the scientific functions you may need are preprogrammed, it takes no more keystrokes to find the log or sin of a number than it does to perform any of the math operations with the same number. Intermediate calculations are automatically stored in the four-register operational stack, or you can assign them to any of the 16 permanent storage registers or any of the data registers in calculator memory. This immediately accessible data is yours to manipulate, thus eliminating the need for pencil and paper solutions. The 9815 always retains 12 significant digits of the result, and whatever scientific function format you choose, your answer is calculated to 12-digit accuracy.





Dedicated Problem Solving.

A cartridge, key overlay, and AUTO START let you dedicate the 9815 to solve your problems. The cartridge carries the pre-recorded program to the 9815. The overlay labels the 15 user-definable keys for single keystroke execution of program steps — that define a function special to your profession, unique iterations, or commands required for peripherals. When you turn the power on, the AUTO START feature automatically loads the program and executes the program.

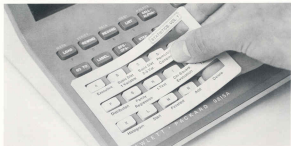
Hewlett-Packard's extensive library of programs for the 9815 emphasizes convenience. Convenience that establishes operation of various programs without extensive set-up procedures. Convenient pre-recorded programs are available for complex problem solving in electrical engineering, statistics, medicine, and surveying — to name a few.

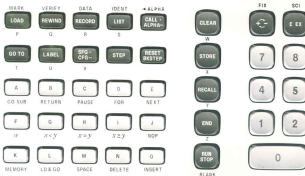
Changing applications is as easy as changing cartridges. The cartridge itself is small — smaller than the typical cassette, yet it can hold 96,384 bytes of data and programs. Or roughly 45 programs with 2,000 steps. So, anyone can have his own library of programs. Not only can the 9815 easily solve the problems of the engineer, it can also deal effectively with the problems of the statistician, the doctor, the analyst, and the businessman. Anyone who can insert a pre-recorded cartridge and turn on the power can solve a problem on this calculator. Secretaries, clerks, and part-time help can operate the 9815 to get you the solutions to your problems, leaving you free time to pursue the creative side of your profession.

Dedicate the 9815 as a stand-alone calculator or as a powerful system. You have taken command of a powerful stand-alone problem solver. This problem solver is one you can dedicate in seconds to solve your problems, not just as a stand-alone unit, but as a powerful system as well. Read-only memory built into each cable and into the calculator gives fast response to your needs. Operation and language features that are built in establish the rapport that only a dedicated system can have. A cartridge. Automatic operation. The second dimension.



RUN
AUTO
START
PRGM





Programmable Problem Solving.

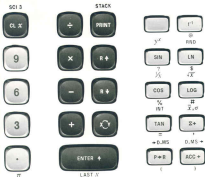
A series of keystrokes can be stored in the memory of the 9815 to solve the same problem many times. Then you just recall the program any time you wish. You store the steps only once; the 9815 does it from then on.

The 9815 provides you with a set of keys that lets you control your program. These keys are grouped on the left of the calculator keyboard. They provide you with appropriate instructions to organize and direct the execution of the program. The key-stroke reference easy-to-remember mnemonics like GO TO or STEP.

The programming language of the 9815 brings together decision making ability and efficient execution. For example, the IF instruction acts as a qualifier for making decisions. Similarly, FOR NEXT loops automatically control repetition of program segments. GO TO, GO TO X, GO SUB X all identify branching instructions that tell the calculator where to execute the next step in computation. SUBROUTINES in 9815 logic can be nested up to seven deep. And FLAGS can be set to identify special program conditions.

You may want to modify or correct your program. The special editing features of the 9815 help you change program steps, update your program addressing, recall any program step, and step through any program sequence with ease and convenience. Simple and direct keystrokes establish a rapid and natural editing technique that is represented in three easy steps. First, you list your program. Program steps and instructions are listed in language you understand. In most cases, error messages tell you precisely what went wrong in concise phrases. Second, you identify the lines of your program you would like to change; you key in that particular address, and make your change. If this step requires that branching addresses in the program be changed, the 9815 takes care of it automatically. The third step in the editing process is simply run your program to verify the changes.





The 8115 reacts to your special requirements — you allocate memory into either program steps and/or data registers. If you want 50 registers instead of the 10 permanent registers, you simply tell the calculator 50 SHIFT STORE. Thus, you can partition the basic memory of the 8115, which is 472 program steps, any way you choose. Optionally you can expand to 2,000 program steps, which increase the basic memory four times — all of which can be partitioned by you.

The 8115 extends its memory with the data cartridge. Bidirectional search, coupled with interchangeable data and program storage, gives you power, flexibility, and speed. The tape drive can search at 1524mm per second (60 inches per second). It can read or write 5886 data programs at 254mm per second (10 inches per second). This means that, in the time it takes you to check your watch, the 8115 has loaded, checked, and is running a program 1,500 steps long.

Write Program



Edit Program



Run Program



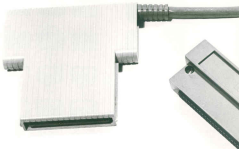
```

0000 4
0001 ENTER↑
0002 2
0003 3
0004 FIX      2
0005 *
0007 PRINT
0008 SORT
0009 PRINT
0010 END
  
```

```

0000 4
0001 ENTER↑
0002 2
0003 3
0004 FIX      3
0005 *
0007 PRINT
0008 SORT
0009 PRINT
0010 END
  
```

9.592



Interfacing.

An optional I/O structure adds the fourth dimension to the 9815. You can choose whether or not you want the 9815 to be equipped with general interfacing capabilities. The 2-channel configuration in the back of the calculator gives you plug-to-plug compatibility with many HP 9800 Series peripherals. These peripherals allow you to extend the input and output capabilities of the 9815. Another advantage of choosing the I/O configuration is the calculator's easy connection to a wide range of digital voltmeters, counters, or other instruments.

Each peripheral for the 9815 is equipped with an individual interface. Simply plug one to another. Each dedicated peripheral cable contains read-only memory which, when the cable is connected, provides all the special language and unique programming instructions necessary. The HP 9814 Printer is a prime example. The 9815 extends the output capabilities of the 9815 by providing a full-character impact writer with a feed advance and a 98-character interchangeable disc. The 9811 file forms, creates reports, and draws charts and graphs rapidly and easily under program control of the 9815.

The 9815 can control instruments, gather data, and process that data. For this purpose, three general types of interface cards are available: general 8-bit I/O, BCD input, and HP-4B.

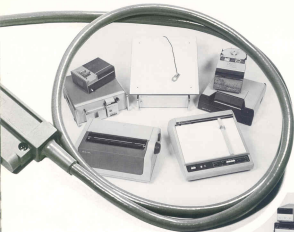
General 8-bit I/O provides compatibility with tape punches, tape readers, instruments... The general 8-bit I/O has built-in I/O buffers, recognizes programmable logic levels, and is capable of handling input speeds up to 3,000 bytes per second.

The BCD input card operates with digital voltmeters, electronic counters, and BCD measurement systems. It can handle both 9-digit input and 8-bit control output.

The 9815 is plug-to-plug compatible with HP-4B instruments. Up to 14 HP-4B instruments can be interconnected to a single HP-4B interface card. With two I/O channels, the 9815



DIMENSION



can have up to 15 different instruments distributed between its channels. And, of course, the 9815 is fully compatible with all Hewlett-Packard HP-41C instruments.

It takes a special calculator to accept 15 different instruments. The 9815 has some important features that simplify the task even further. Programmable data logic levels give you the ability to tell the 9815 what to look for in n - or m -logic levels. The tape cartridge complements your system with 56,384 bytes of data storage. The cartridge and the AUTO START provide you with the capability for power-fail reset in remote locations when your 9815 is a part of an interfacing system. So no matter where you are, immediate data acquisition and instrumentation control become possible where they were unobtainable before.

Sales and service from more than 170 locations around the world bring the 9815 close to you with solutions to your problems. The four dimensions of this calculator provide you with the convenience of desk-top calculation and the adaptability to change from one problem to the next quickly and easily, plus the power to solve three problems. These dimensions — quick keystroke calculations, dedicated problem solving, programmable problem solving, and interfacing — may give you a new perspective on computation. Contact your local sales and service office for more information.





Sales and service from HP offices in 40 countries.
(Canada, Germany, Italy)

Scan Copyright ©
The Museum of HP Calculators
www.hpmuseum.org

Original content used with permission.

Thank you for supporting the Museum of HP
Calculators by purchasing this Scan!

Please to not make copies of this scan or
make it available on file sharing services.