

DOCUMENTATION DU CALCULATEUR HEWLETT-PACKARD HP 9100A

FICHE N° 3901

PRÉSERVER
SAUVEGARDER
VALORISER

Période de fabrication : 1950-1974
Fabricant : Hewlett-Packard Company
Domaines : Informatique et Communication
Sous-domaines : Calculateurs
Organisme : Université de Rennes
Ville : Rennes
Modèle : HP 9100A
Matériaux : Papier

Description

Cette documentation sur le calculateur informatique HP 9100A de Hewlett-Packard est extraite à la fois des catalogues 1969, 1970 de la firme et de documents publics. Elle décrit l'appareil, les opérations que l'on peut effectuer, la mémoire, les caractéristiques techniques, la programmation et ses périphériques.

Utilisation

L'apparition de cet ordinateur constitue un événement historique en 1968 même si il y a eu des "emprunts" à la programma 101 d' Olivetti notamment la carte magnétique et l'architecture. Il a été utilisé dans les laboratoires de recherche en informatique et électronique car il était doté de nombreuses fonctions accessibles au clavier : arithmétique, log, trigonométrie, hyperboliqueIl possédait une mémoire magnétique à 19 registres et était programmable.

Une librairie de programmes de toutes disciplines scientifiques ou économiques était disponible en supplément. On l'associait très souvent à un traceur de courbe de type XY (modèle HP 9125A).

of the 9100B is 392 steps. No language or code conversions are required.

The self-contained magnetic cardreader/recorder can record programs from program memory onto wallet-size magnetic cards. The reader/recorder can also read the magnetic cards back into program memory for repetitive use. Two programs of 196 steps each may be recorded on each reusable card. Cards may be cascaded for longer programs.

Program Instructions

Conditional branching: "IF" statements make the comparisons —less-than, equal-to, greater-than—and can be programmed to branch to any of the program addresses.

Unconditional branching: GO-TO statement can be programmed to branch to any of the program addresses. (Also used for manual addressing and correction of individual program steps.)

Subroutine: a true subroutine capability permitting instant access to subroutines from any point in a program. By using GO-TO-SUB/RET instruction, subroutines may be nested up to 3 deep. (9100B only)

Flag: provides conditional branching dependent on manual or programmed setting of flag.

Stop: halts program for data entry or display.

Pause: brief display of interim results in computation.

Step program: operator may step through program for visual verification of instructions. A "dual display" feature on the 9100B greatly simplifies program editing and modification. It allows the program step and the succeeding one to be displayed simultaneously.

Memory

Magnetic core memory includes

3 display registers (keyboard, accumulator, temporary.)

9100A has 16 storage registers with capacity for 196 program steps plus 2 constants. Total of 2208 bits of core memory.

9100B has 32 storage registers with capacity for 392 program steps plus 4 constants. Total of 3840 bits of core memory.

Capacity: register accommodates floating point number with 12 significant digits (including 2 undisplayed guard digits) and 2 digit exponent. Alternately, register accommodates 14 program steps.

Read-only-memory: contains over 32,000 bits of fixed information for keyboard routines.

9100A and 9100B COMPARISON

Items	9100A	9100B ¹
Storage Registers	16	32
Program Steps	196	392
Price	\$4400	\$4900

¹The 9100B also includes:

An additional positioning instruction X←() for more convenient data recall.

A dual program display for more convenient program editing.

A greater subroutine capability.

General

Temperature: operating range, 0-45°C.

Weight: net 40 lbs (18.1 kg); shipping 65 lbs (29.5 kg).

Power: 115 or 230 V ±10% (slide switch), 50-60 Hz, 70 W.

For 9100A: 09100-90001	Operating and programming manual. Additional copies—\$2.50
For 9100B: 09100-90021	
For 9100A: 09100-90002	Program Library binder containing sample programs. Additional copies—\$30.
For 9100B: 09100-90022	
5060-5919	Box of 10 magnetic program cards. Additional box—\$10.
For 9100A: 09100-90003	Pad of 100 program sheets. Additional pads—\$2.50.
For 9100B: 09100-90023	
For 9100A: 09100-90004	Magnetic card with pre-recorded diagnostic program. Additional card—\$2.50.
For 9100B: 09100-90024	
For 9100A: 9320-1157	Pull out instruction card mounted in calculator. Additional card—\$5.
For 9100B: 9320-1183	
4040-0350	Plastic dust cover. Additional cover—\$2.50.

Additional Accessories Available

All of above

5000-5884 Single magnetic card, \$2.

09100-90000 Box of 5 program pads, \$10.

09100-90007 200 magnetic cards without envelopes, \$80.

Purchase Plan

Purchase: HP 9100A, \$4400.

HP 9100B, \$4900.

Rent: HP 9100A, \$260 per month.

HP 9100B, \$285 per month.

Lease: HP 9100A, \$115 per month.

HP 9100B, \$128 per month.

Service contracts available.

Option 001 Pull-out instruction card in French

Option 002 Pull-out instruction card in German

Option 003 Pull-out instruction card in Italian

Option 004 Pull-out instruction card in Spanish

No additional charge for options.

Program Library

The Program Library furnished with the 9100's include programmed solutions to practical problems in a wide range of scientific and engineering fields. It serves both as an illustration of programming techniques and as a source of ready-to-use programs. Program Library holders also receive the Hewlett-Packard KEYBOARD, a periodic publication which provides updating information and a forum for the exchange of programs by 9100 users. Program categories include:

Business	Mechanics
Chemistry	Physics
Electronics	Statistics
Fluid Mechanics	Structures
Life Sciences	Surveying
Mathematics	Thermodynamics

CALCULATOR PRINTER

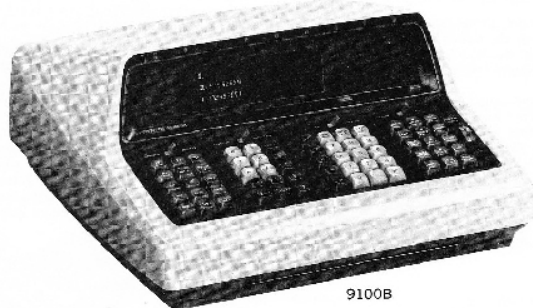
The HP 9120A provides fast, quiet printer capability for use with the 9100 Calculators. The Printer prints the contents of any combination of X, Y and Z Calculator display registers upon manual or programmed command. It also lists contents of the Calculator's program memory upon command. Quiet operation is obtained using a unique electrosensitive printing principle. The 9120A Printer mounts on top of the 9100 Calculators to ensure easy access and minimum space requirement. Operation of the Printer is initiated either manually by a single keystroke or in a program by one program step.

CALCULATOR



COMPUTING CALCULATOR

Scientific and engineering problem-solver
Model 9100A, 9100B



9100B

COMPUTING CALCULATOR

The HP 9100A and 9100B are programmable, electronic calculators which perform operations commonly encountered in scientific and engineering problems. Their log, trig and mathematical functions are each performed with a single key stroke, providing fast, convenient solutions to intricate equations. Computer-like memory enables the calculator to store instructions and constants for repetitive or iterative solutions. The easily-readable cathode ray tube instantly displays entries, answers and intermediate results.

Operations

Direct keyboard operations include

Arithmetic: addition, subtraction, multiplication, division and square-root.

Logarithmic: $\log x$, $\ln x$ and e^x .

Trigonometric: $\sin x$, $\cos x$, $\tan x$, $\sin^{-1}x$, $\cos^{-1}x$ and $\tan^{-1}x$. (x in degrees or radians.)

Hyperbolic: $\sinh x$, $\cosh x$, $\tanh x$, $\sinh^{-1}x$, $\cosh^{-1}x$, and $\tanh^{-1}x$.

Coordinate transformation: polar-to-rectangular, rectangular-to-polar, cumulative addition and subtraction of vectors.

Miscellaneous: other single-key operations include—taking the absolute value of a number, extracting the integer part of a number, and entering the value of π . Keys are also available for positioning and storage operations.

Speed

Times for total performance of functions, including worst-case decimal-point placement and carrying

Add, subtract: 2 milliseconds.

Multiply, divide: 35 milliseconds.

Square-root: 40 milliseconds.

Sin, cos, tan: 354 milliseconds.

Coordinate transformation: 332 milliseconds.

$\ln x$: 56 milliseconds.

e^x : 141 milliseconds.

Numerical Format

The operator can select either **FIXED** point (eg. 1234.567890) or **FLOATING** point (scientific notation; eg. 1.234567890 $\times 10^3$) for display of entries and answers. The calculator's dynamic range is 10^{-99} to 10^{99} with up to 10 significant digits.

In **FIXED** point mode the operator selects the number of decimal places desired between 0-9 on the decimal wheel. Whenever more digits are placed left of the decimal point than the decimal wheel will allow, the Calculator automatically reverts to **FLOATING POINT** notation to allow completion of the calculation, with no loss of information.

Programming

The calculators are programmed either by use of the keyboard or by magnetic cards. The program mode allows entry of program instructions, via the keyboard, into program memory.



Speed

Maximum times for total performance of typical operations, including decimal-point placement:

Add, subtract: 2 milliseconds.

Multiply: 22 milliseconds.

Divide: 27 milliseconds.

Square-root: 30 milliseconds.

Sin, cos, tan: 330 milliseconds.

In x: 70 milliseconds.

e^x: 130 milliseconds.

Coordinate transformation: 280 milliseconds.

These times include core access of 1.6 microseconds.

Programming

The program mode allows entry of program instructions, via the keyboard, into program memory. Programming consists of pressing keys in the proper sequence, and any key on the keyboard, except step program, is available as a program step. Program capacity is 196 steps. No language or code-conversions are required.

A self-contained magnetic card reader/recorder records programs for program memory onto wallet-size magnetic cards for storage. It also reads programs from cards into program memory for repetitive use. Two programs of 196 steps each may be recorded on every reusable card. Cards may be cascaded for longer programs.

Program Instructions

Conditional branching: "If" statements make the comparisons—less-than, equal-to, greater-than—and can be programmed to branch to any of the 196 program addresses.

Unconditional branching: GO-TO statement can be programmed to branch to any of the 196 program addresses. (Also used for manual addressing and correction of individual program steps.)

Flag: provides conditional branching dependent on manual or programmed setting of flag.

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Program library

The program library furnished with the 9100A includes programmed solutions to practical problems in a wide range of scientific and engineering fields. It serves both as an illustration of programming techniques and as a source of ready-to-use programs. Program library holders also receive the *Hewlett-Packard Keyboard*, a periodic publication which provides updating information and a forum for the exchange of programs by 9100A users. Program categories include:

Business	Life Sciences	Statistics
Chemistry	Mathematics	Structures
Electronics	Mechanics	Surveying
Fluid Mechanics	Physics	Thermodynamics

General

Weight: net, 40 lbs (18.1 kg); shipping, 63 lbs (29.5 kg).

Power: 115 or 230 V $\pm 10\%$ (slide-switch), 50 to 60 Hz, 400 Hz, 70 watts.

Dimensions: 8 $\frac{1}{4}$ " high, 16" wide, 19" deep (210 x 406 x 483 mm).

Accessories furnished at no charge:

09100-90001 Operating and Programming manual, \$2.50.*

09100-90002 Program library binder containing sample programs, \$30.*

5060-5919 Box of 10 magnetic program cards, \$10.*

09100-90003 Pad of 100 program sheets, \$2.50.*

09100-90004 Magnetic card with pre-recorded diagnostic program, \$2.50.*

9320-1157 Pull-out instruction card mounted in calculator, \$5.*

4040-0350 Plastic dust cover, \$2.50.*

Additional accessories available:

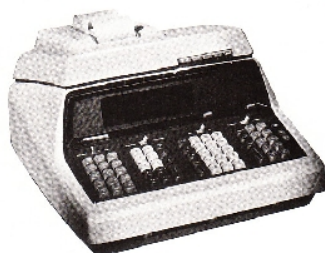
5000-5884 Single magnetic card, \$2.

09100-90000 Box of 5 program pads, \$10.

Price: HP 9100A, \$4900. Option 001: Pull-out instruction card in French. Option 002: Pull-out instruction card in German. Option 003: Pull-out instruction card in Italian.

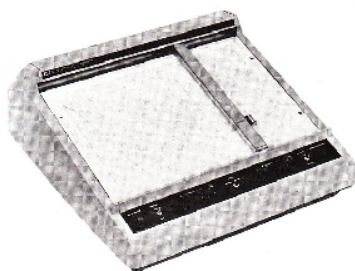
*If ordered separately.

Peripherals



9100A with 9120A

Model 9120A Printer: attaches to the top of the calculator and can be added at any time. Prints contents of display registers X, Y, Z, singly or in any combination, upon manual or programmed command. Also lists program upon command. Uses electrostatic principle for silent operation. Available, fall of 1969.



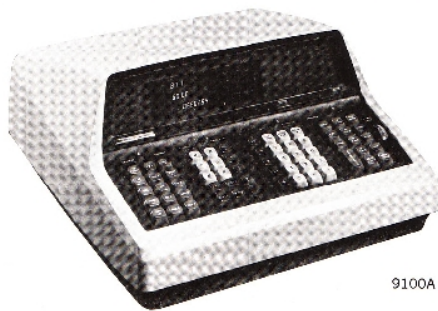
9125A

Model 9125A Plotter: plugs into rear connector on calculator and can be added at any time. Plots upon manual or programmed command, employing calculator's FMT (format) key, 11" x 17" page size. Available mid-1969.



COMPUTING CALCULATOR

Scientific and engineering problem-solver
Model 9100A



9100A

Uses

Statistical and economic analysis
Coordinate geometry calculations
Solution of transcendental equations
Numerical integration
Vector and complex arithmetic
Network analysis
Solution of differential equations

Description

The 9100A is a programmable, electronic calculator which performs operations commonly encountered in scientific and engineering problems. Its log and trig functions are each performed with a single key stroke, providing fast, convenient solutions to intricate equations. Computer-like memory enables the calculator to store instructions and constants for iterative solutions. The easily-readable cathode ray tube instantly displays entries, answers and, when desired, intermediate results.

Operations

Direct keyboard operations include

Arithmetic: addition, subtraction, multiplication, division and square-root.

Logarithmic: $\log x$, $\ln x$ and e^x .

Trigonometric: $\sin x$, $\cos x$, $\tan x$, $\sin^{-1}x$, $\cos^{-1}x$ and $\tan^{-1}x$ (covers all quadrants and any size angle in degrees or radians).

Hyperbolic: $\sinh x$, $\cosh x$, $\tanh x$, $\sinh^{-1}x$, $\cosh^{-1}x$, and $\tanh^{-1}x$.

Coordinate transformation: polar to rectangular, rectangular to polar, cumulative addition and subtraction of vectors.

Miscellaneous: other single-key operations include taking the absolute value of a number, extracting the integer part of a number, and entering the value of π . Keys are also provided for positioning and storage operations.

Decimal point

Selectable fixed-point or floating-point notation for display of entries and answers.

Fixed-point display: typical display 1234.567890

Up to 10 significant digits with automatic decimal placement and alignment.

Decimal wheel selects 0-9 decimal places, with automatic rounding to the number of places selected.

Left overflow automatically forces display to floating-point notation to allow completion of calculation with no loss of information.

Floating-point display: typical display

1.234 567 890 03

(interpreted as 1.234567890×10^0 or as 1234.567890 .)

Dynamic range: accommodates numbers over the range, 10^{-99} to 10^{99} .

Up to 10 significant digits with automatic decimal placement and alignment.

Numerical entry

Fixed-point: digits of number are entered from left to right; keying decimal point in its proper position.

Floating-point: significant digits are entered from left to right; exponent of 10 is entered separately.

Memory

Magnetic core memory contains 19 registers:

3 display registers (keyboard, accumulator, temporary).

16 storage registers, with store/retrieve controls.

Total of 2,208 bits in core memory.

Registers: may be used to store 16 constants, or 196 program steps plus 2 constants, or a combination of constants and program steps.

Capacity: register accommodates floating-point number with 12 significant digits (including 2 nondisplayed guard digits) plus 2-digit exponent. Alternately, register accommodates 14 program steps.

Read-only memory: contains over 32,000 bits of fixed information for keyboard routines.





Powerful Computing Genie: \$4900

READY, WILLING AND ABLE.

Ready—to relieve you of waiting to get on the big computer.
Constantly available. At your fingertips whenever you need it.
Ready to abolish tedium from scientific and engineering computation.
Ready to slash through long routines
and come up with answers in milliseconds.
The new Hewlett-Packard 9100A personal computer.

Willing—to perform log and trig functions,
even hyperbolics and coordinate transformations,
at the touch of a key. Willing to work
with extremely large and small numbers simultaneously.
Willing to take your programming commands
in mathematical language.
No computer language or programming specialist required.
Willing to communicate with you on *your* terms.
The new Hewlett-Packard 9100A computing marvel.

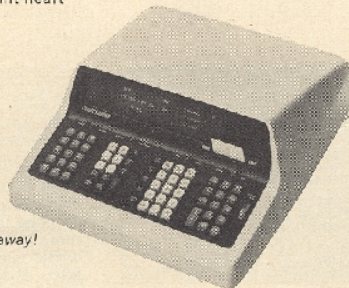
Able—to take on the most complex problems:
roots of a fifth-degree polynomial...
solutions to three simultaneous equations...
Bessel functions... Fourier analysis... elliptic integrals...
real and complex polynomial evaluation...
coordinate geometry... regression analysis...
numerical integration... vector analysis...
and many, many more!
Able to be your fast, responsive mathematical servant.
The new Hewlett-Packard 9100A electronic genie.

This major computing capability
is compressed into one 40 pound package.
Its only moving parts are the keys, the switches
and one decimal wheel.
No noise.

The 9100A computing genie is being delivered *NOW*,
with an extensive—and growing—program library
that puts you in control.

Examine the keyboard, question every key and switch.
Then decide to command the computing genie.
A telephone call or purchase order directed to any
HP Sales and Service Office
(in principal cities throughout the world)
will start the executive process.
If you are still skeptical, or of faint heart
ask for a demonstration.
It will affirm, assure
(and only slightly delay)
your entry into the solid-state
of personal computing power.
Be a Master.
Hewlett-Packard, Box 301,
Loveland, Colorado, 80537;
Europe: 54 Route des Acacias,
Geneva.

9100A puts answers just a touch away!



HEWLETT  **PACKARD**

5

Circle No. 147 on Readers' Service Card

744131 2 computer
1301441815 11 3 accessories
7707 11 keyboard

Dynamic range 10^{-99} to 10^{99} , nearly 200 decades. Observation of math operations on 3 displayed registers. Up to 16 more registers for data storage.

10
POUR

Complex and vector arithmetic
simplified with coordinate trans-
formation keys, rectangular-to-
polar and vice-versa, in milliseconds.

tan 2

Trig functions cover in-
finites and any size
degrees or radians.

SCIENCE, 5

Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Documentation du calculateur Hewlett-Packard HP 9100A (Hewlett-Packard Company),
<https://www.patstec.fr/ressources/objets/detail?id=15919>, consulté le 2026-07-28