

HEWLETT **hp** PACKARD

9815

## 9815A CALCULATOR

TECHNICAL DATA\* SEPTEMBER 1975



### DESCRIPTION

The HP 9815A is a desk-top programmable calculator well suited to a variety of scientific, engineering, research, and industrial applications. The 9815 contains a built-in thermal printer with alphanumeric, mathematic, and trigonometric functions, and a high-speed bidirectional data cartridge. The standard 9815 includes 472 program steps and 10 data registers. The memory can be expanded to 2,008 program steps. Input to the 9815 can be via the keyboard, which includes: 15 special function keys, 10-key numeric pad, program language and control keys, editing keys, and 28 scientific functions; or through the 9800 Series input peripherals. The 9815's optional interface module provides the capability to interface to Hewlett-Packard peripherals and various instruments.

### SPECIFICATIONS

#### Programming Language

Programmable Functions: All calculator operations except editing.

Branching: Symbolic, absolute, or calculated addresses. 100 numeric labels, 15 alpha labels (symbolic). 3 for-next loops.

Conditional Operators:  $x = y$ ,  $x < y$ ,  $x \geq y$  (comparison).  $x = 0$ ,  $x$  positive,  $x$  negative (test  $x$  registers). If flag set, if flag clear (test flags).

Flags: 8 flags set, cleared, tested. Includes data entry, error detection, and error override. Change flag without stopping program execution.

Editing: Step, back step, insert steps, delete steps. Automatic address updating. Selective listing of programs or parts of programs.

Subroutines: Called via symbolic, absolute, or calculated addresses. Nested to 7 deep.

Special Function Keys: User definable for program execution. 15 available.

Error Indication: Descriptive error messages printed immediately after error. Programmable error override to continue program execution.

Operating Modes: RUN — manual operation and program execution. PGRM — writing and editing programs. AUTO START — automatic tape rewind, load file 0, execute program when power is switched on.

#### Peripherals

HP 98131A Printer I/O: Interface to HP 9871A Printer. Plotting, variable-character spacing.

HP 98132A Plotter I/O: Interface to HP 9862A Plotter. Scaling, axes drawing, incremental plotting, lettering, and digitizing.

HP 98134A General I/O: Interface to HP 9863A Punched Tape Reader, HP 9864A Digitizer, HP 9866A Thermal Printer, HP 9883A Punched Tape Reader, HP 9884A Tape Punch.

### Interfacing

HP 98133A BCD I/O: 8-digit BCD input with high-speed mode. 8-bit parallel output.

HP 98134A General I/O: Bidirectional 8-bit parallel interface.

HP 98135A HP-IB I/O: General instrumentation connection for instruments compatible with the HP-Interface Bus.

### Storage

Dynamic Range:  $10^{99}$  to  $10^{-99}$ , 0,  $-10^{-99}$  to  $-10^{99}$ .

R/W Memory: 472 program steps, 10 data registers.\*\*

Opt. 001: 2,008 total program steps, 10 data registers.\*\*

\*\*May be allocated by user into any combination of program steps and data registers.

Data Cartridge: 96,384 bytes (8 steps = 1 register, 1 step = one 8-bit byte), 12,048 registers.

Search Speed: 1524mm/sec. (60 in./sec.) bidirectional.

R/W Speed: 254mm/sec. (10 in./sec.).

Tape Length: 42,67m (140 feet).

File Size: 80 bytes to 2,008 bytes, programmable.

Dimensions: 63,5mm x 82,5mm x 12,7mm (2.5 in. x 3.25 in. x .5 in.).

### Thermal Printer

Paper: 2.25 in. wide.

Print: 5 x 7 dot matrix, 16-character line.

No. of Digits: 10 digits maximum, plus sign and signed 2-digit exponent. Print format user selectable.

Available Alpha:  $R \rightarrow Z \ 0 \rightarrow 9 \ , \ : \ ? \ \% \ @ \ ( \ ) \ \$ \ \# \ = \ + \ - \ \uparrow \ ' \ > \ < \ \& \ \> \ \downarrow \ \pi \ \alpha \ * \ 000AEEEN$

### Display

Type: 7-segment gas discharge.

Size: 16 numeric characters. 10 digits maximum with + or - 2 digit exp.

Notation: Fixed, scientific, scientific 3.

### Mathematic Functions

Built-in: Sin, Cos, Tan,  $e^x$ , ln,  $\log_{10}x$ ,  $1/x$ , ASIN, ACOS, ATAN,  $10^x$ ,  $y^x$ ,  $\sqrt{x}$ ,  $\Sigma \pm$ , ACC  $\pm$ , x,  $\sigma$ ,  $P \rightarrow R$ ,  $R \rightarrow P$ , INT,  $\rightarrow D.MS$ ,  $D.MS \rightarrow$ , ROUND X.

### Arithmetic

Configuration: 4-register stack.

Operations:

$+$   $-$   $\times$   $\div$   $\pm$  change sign

$E \ EX$  Enter Exponent  $CL \ X$  Clear x  $CLEAR$  Clear Stack

$R \ \uparrow$  Roll Stack Up  $R \ \downarrow$  Roll Stack Down

$\leftrightarrow$  Exchange x and y  $ENTER \ \uparrow$  Shift Stack Up

### Environmental Range

Temperature:  $5^\circ$  to  $40^\circ$  C Ambient.

Humidity: 80%.

### Size/Weight

Height: 101,6mm (4 in.).

Width: 345,4mm (13.6 in.).

Depth: 342,9mm (13.5 in.).

Weight: 5,9kg (13 lbs).

Shipping Weight: 11,8kg (26 lbs).

### Power Requirement

Source:  $100V \ +5\%, -10\%$   
 $120V \ +5\%, -10\%$   
 $200V \ +5\%, -10\%$   
 $240V \ +5\%, -10\%$  } Switch selectable

Frequency: 48 to 66 Hz.

Consumption: 35W maximum.

### Ordering Information

Equipment: Standard — 9815 with 472 program steps, 10 data registers. Opt. 001 — 2,008 total program steps. Opt. 002 — two I/O channels.

Accessories Supplied:

Guide to the 9815 (09815-90001)

Operating Manual (09815-90000)

Quick Reference (09815-90010)

Programming Forms (09815-90011)

Utility & Test Routines (09815-10000)

Blank Data Cartridge (9162-0061)

Thermal Printer Paper (3 rolls)

Spare Fuse, Dust Cover, Tape

Transport Cleaning Kit.

Accessories Available: HP 98145A Vinyl Carrying Case, Thermal Printer Paper (6 rolls), Blank Data Cartridge (9162-0061).

### Service Contracts Available.

\*Data subject to change.



Sales and service from 172 offices in 65 countries.  
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