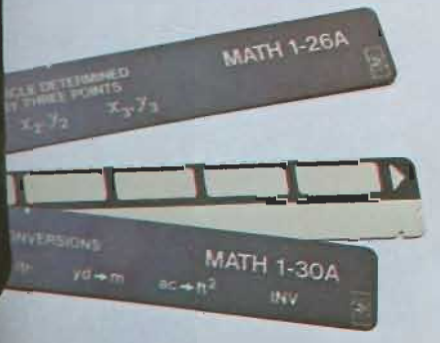
Hewlett-Packard presents a quantum leap in calculator technology: the HP-65 fully programmable pocket calculator.

The HP-65 brings computer science one large step closer to you. It can make your life easier if you solve the same problem again and again, no matter where you happen to encounter it.

- You can write, edit and record your own programs;
- You can take advantage of pre-recorded programs from Hewlett-Packard;
- And you can perform 51 pre-programmed calculating functions and data manipulation operations from the keyboard.



HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

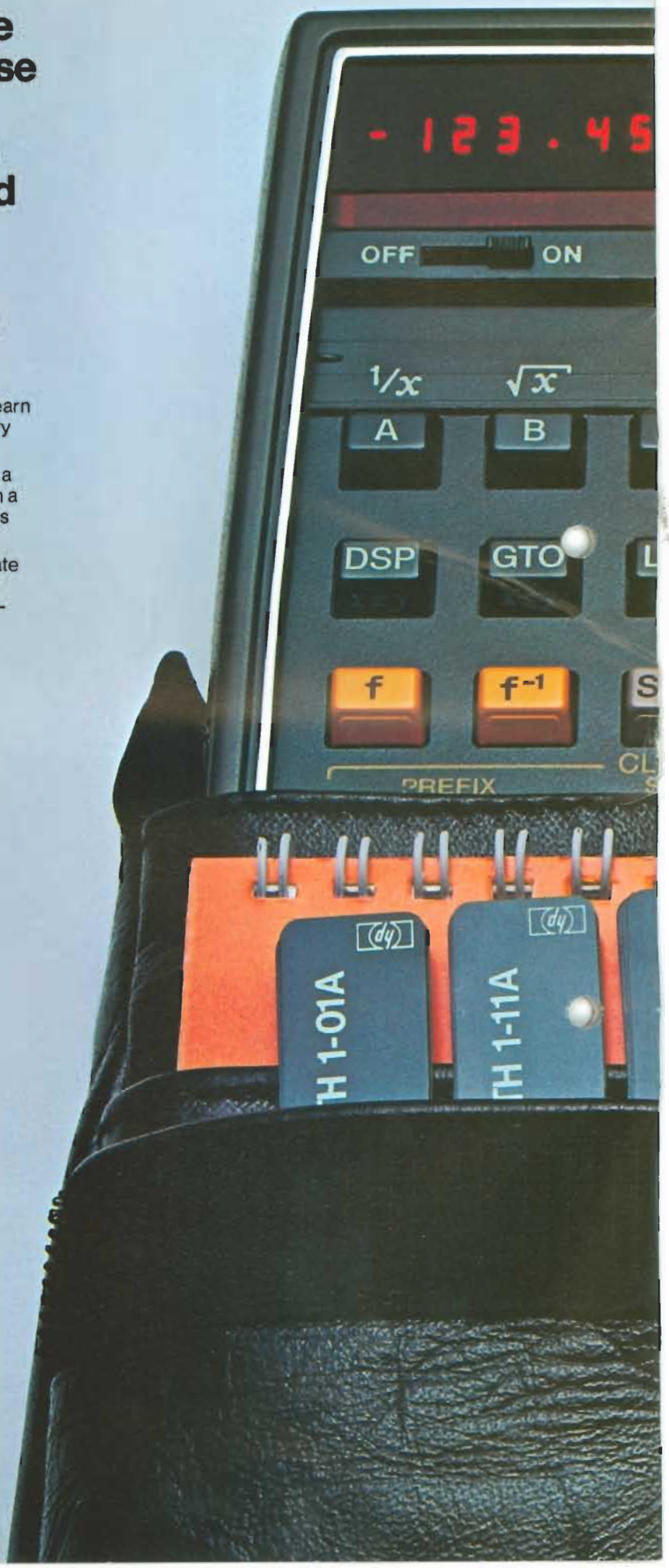
The fundamental significance of the HP-65: it brings a precise and time-saving computing tool, programming, within the reach of everyone who should be taking advantage of it.

If you don't work at a desk, or if your budget can't cope with a multi-thousand dollar calculator expenditure, you may never have considered programming as an aid to the solution of your problems.

(Simply defined, programming is the ability of a machine to learn and automatically execute the keystroke sequence necessary to solve a problem.)

Now you can calculate wherever you want to—in the field, in a taxi or at home. The HP-65 weighs 11 ounces and comes with a built-in rechargeable battery pack that provides several hours of continuous calculating power.

As important, you can take advantage of an extremely accurate and time-saving tool, programming, without spending a lot of money. The HP-65 costs far less than any other fully programmable calculator now available.



You don't have to be a professional programmer to use the HP-65.

There are three distinctly different ways to use the HP-65 and two of them require no programming ability whatsoever.

1. HP-65 as a calculator.

Like Hewlett-Packard's very popular HP-45, the HP-65 is an extremely powerful scientific calculator. It provides 51 separate pre-programmed functions and data manipulation operations which you can use directly from the keyboard.

2. HP-65 in conjunction with pre-recorded programs from Hewlett-Packard.

You can take advantage of programs prepared by experts in your field simply by inserting a magnetic card into your HP-65, thanks to a Magnetic Card Reader that transfers programs from magnetic cards to machine.

To accommodate persons who wish to use the HP-65 in this way, Hewlett-Packard offers a variety of pre-recorded program packages, called Application Pacs. Each Pac contains as many as forty pre-recorded programs applicable to a specific discipline (currently Surveying, Math, Statistics, Electrical Engineering and Medicine, with others to come). A complete list of the contents of each Application Pac is available from Hewlett-Packard.

If you plan to write your own programs, you'll be impressed with the HP-65's programming capability.

The third way to take advantage of the HP-65 is to use it to create your own programs. The HP-65 is fully programmable, which means:

1. After keying in your program, you can edit it and preserve it on a magnetic card.
2. You can choose between alternate computational paths based on logical comparisons or on arbitrary decisions.
3. You can program up to five user-definable functions utilizing any of the other functions.
4. You can call these definable functions from the keyboard or from other programs.
5. The HP-65 has 100 program steps available, which—in combination with the 51 pre-programmed functions, operational stack and nine storage registers—permit you to write complex programs that could require many more steps on other programmable machines.

Two examples illustrate the HP-65's programming capability:

1. You can write on the HP-65 a program that solves first order differential equations using the Runge-Kutta method of computing the input impedance of an arbitrarily long ladder network containing series or shunt R, L and C.
2. On the HP-65 you can write in 66 program steps a program for determining log normal distribution that requires 86 program steps on a representative desk-top calculator.

The HP-65 is truly fully programmable, the only fully programmable calculator you can carry in your pocket.

How to write a program on the HP-65.

1. Work out the keystroke sequence you'd use to solve the problem manually.
2. Add the steps needed to mark the program's beginning and end.
3. Move the W/PRGM-RUN switch to W/PRGM.
4. Key the program into the machine. (You can delete or insert steps if you make an error.)
5. Preserve the program on a magnetic card.
6. Switch the machine to RUN mode and verify that the program works.
7. Clip the corner of the magnetic card to protect card from accidental erasure.

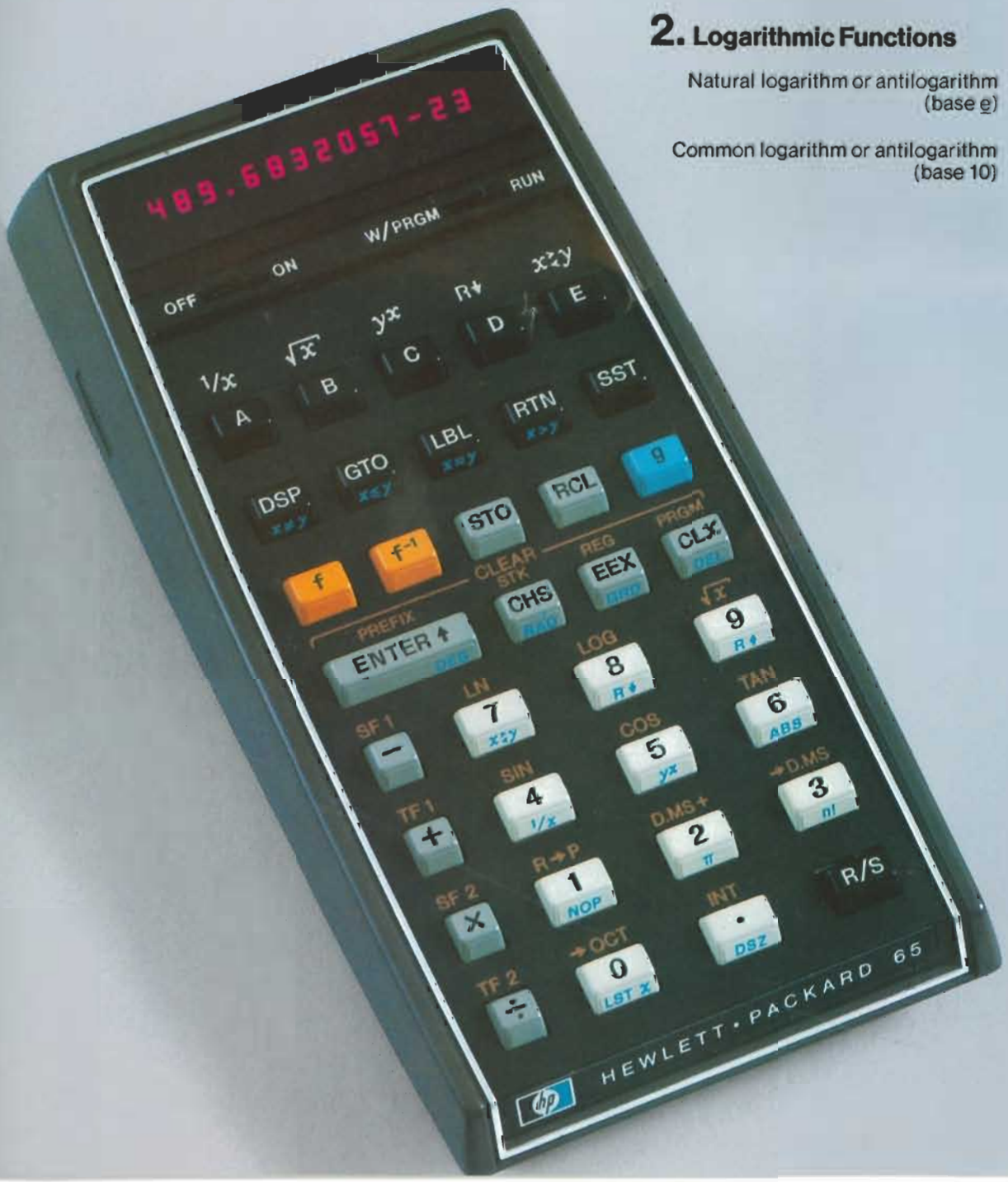

-123.4567890-23
OFF
ON
W/PRGM
RUN
1/x
√x
yx
R↓
x≷y
A
B
C
D
E
DSP
STO
LBL
RTN
SST
f
f-1
STO
RCL
g
PREFIX
CLEAR STK
REG
PRGM
ENTER ↑
CHS
EEX
CLX
SF 1
LN
LOG
√x
7
8
9
TF 1
SIN
COS
TAN
4
5
6
SF 2
R→P
D.MS+
→D.MS
1
2
3
TF 2
→OCT
INT
0
R/S
HEWLETT • PACKARD 65

The HP-65 as a scientific calculator.

We've mentioned that the HP-65 ranks with the HP-45 as a scientific calculator, even if you don't use its programming capabilities. Now we'd like to validate this proposition by listing the 51 pre-programmed calculating functions and data manipulation operations the HP-65 is pre-programmed to perform, along with the keystrokes it takes to execute them.

Please note that the HP-65's five prefix keys in row 3 (f , g , STO , RCL , 9) enable each of the 19 suffix keys to perform multiple calculating functions.

CALCULATING FUNCTIONS	KEYSTROKE
1. Arithmetic Functions	
Add	+
Subtract	−
Multiply	×
Divide	÷
2. Logarithmic Functions	
Natural logarithm or antilogarithm (base e)	f or g LN
Common logarithm or antilogarithm (base 10)	f or g LOG



3. Trigonometric Functions

Set operating mode (decimal-degrees, radians or grads) — g DEG or g RAD or g GRD

Sine or arc sine — f or f^{-1} SIN

Cosine or arc cosine — f or f^{-1} COS

Tangent or arc tangent — f or f^{-1} TAN

Add or subtract degrees/minutes/seconds (or hours/minutes/seconds) — f or f^{-1} D.MS+

Convert angle from operating mode to or from degrees/minutes/seconds — f or f^{-1} →D.MS

Convert rectangular coordinates to or from polar coordinates — f or f^{-1} R↔P

4. Exponential Functions

Square root or square — f or f^{-1} $\sqrt{x}$ x^2

Raising a number to a power — g y^x

Reciprocal (can be used in conjunction with y^x function to extract nth roots) — g $1/x$

5. Other Pre-programmed Functions

Extract integer or decimal portion of a number — f or f^{-1} INT

Factorial — g n!

Recall value of π to 10 significant digits — g π

Convert decimal-base integers to or from octal-base integers — f or f^{-1} OCT

"Roll down" or "Roll up" numbers in the operational stack — g R↓ or R↑

Clear display — CLX

Clear operational stack or all nine addressable storage registers — f CLΣ or CLREG

Recall last input argument from special "last-x" storage register — g LST x

Store or recall numbers from any of the nine addressable storage registers (by pressing an arithmetic operation key immediately after the STO key, you can perform register arithmetic, e.g.: 2 STO × 3 doubles the contents of register R3). — STO or RCL 1 2 ... 9

The HP-65 is a fully programmable machine.

The following descriptions of the HP-65's programming features should give you a grasp of what we mean when we say this machine is "fully programmable."

1. W/PRGM-RUN Switch.

When the W/PRGM-RUN switch is placed in the W/PRGM position, all subsequent keystrokes are put into the User Program Memory, one after the other, without altering data stored in the HP-65's data registers. As this is done, the display shows a numerical code which represents the keyboard position (row, column) of the last program step entered (except for the digits which are shown as themselves). When the HP-65's built-in card reader is switched to WRITE mode, the entire program can be recorded on a magnetic card for future use.

2. User-Definable Keys.

All five of the top-row keys, [A] — [E], are user-definable. To define the function of the [A] key, for example, simply press [LBL] (label) [A] followed by the keystroke sequence that represents the desired function.

3. Program Structure Keys.

LBL x=y
(label)

Up to 15 labels are available by pressing [LBL] followed by a digit (0-9) or a letter (A-E) key.

GTO x≤y
(go-to)

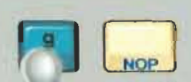
A [GTO] program step, followed by a suffix (digit 0-9, letter A-E), finds the [LBL] with the same suffix.

(return)

Pressed from the keyboard, RTN goes to the top of the memory. Programmed at the end of a user-definable function, RTN stops execution and returns control to the keyboard.

(run/stop)

If included in a stored program, a R/S step halts execution and returns control to the keyboard. Pressing R/S when a program isn't running will cause execution to resume at the next step.



(no operation)

If included in a stored program a g NOP step will merely advance program to the following step and is often used in conjunction with conditional-skip instructions. The entire 100-step program memory can be filled with g NOP steps (i.e. cleared) by pressing f PRGM.

4. Conditional Skip Functions.

Among the most powerful features on the HP-65 are the conditional-skip functions which enable the calculator to choose which calculations to do next. For example, the HP-65 provides two flags which can be set or cleared either from the keyboard or by an appropriate program step. The condition of these flags can be tested at any point in the program by including an appropriate test-flag instruction. The program will then either advance sequentially or skip over the next two steps depending on the condition of the tested flag. The flags are controlled by the SF1, TF1, SF2, TF2, and appropriate prefix keys.

The g x=y, x≤y, x≠y, and x>y functions each cause a comparison of values in the X and Y registers of the operational stack. If test condition is not met, the program skips over the next two steps. DSZ (decrement and skip on zero) subtracts one from an integer previously stored in register 8 and causes program to skip over the next two steps if the remainder is zero.

5. Program Edit Keys.

The remaining three functions are used primarily to edit user-written programs. Because the HP-65 lets you single-step through a program and add or delete individual steps at will, it's much easier to "de-bug" or modify a program than with many other programmable calculators.

(clear program)

Pressing f PRGM clears the entire 100-step user program memory so you can begin keying in your own program. f PRGM also clears the five programs that are inserted in the user program memory when the machine is switched on. These define the functions of the top-row (A—E) keys as indicated by the white legends directly above these keys.

(delete program step)

Pressing g DEL deletes a single program step and automatically moves the remaining steps up one place in the user program memory to fill the resulting gap.

(single-step)

In W/PROGRAM mode, the SST key lets you step through each program instruction stored in the user program memory. As this is done, the display shows a number for each step which (except for digits 0-9) represents the location (row, column) of the key corresponding to that particular instruction. In RUN mode the SST key lets you execute a program, one step at a time.

The HP-65 is a logical consequence of a long-standing capability.

In the past thirty years Hewlett-Packard has come to be known around the world as a measurement and computation company. We've grown by designing and manufacturing a variety of precise and technologically superior measuring and computing instruments. Like the HP-65.

Call (408) 996-0100 collect for an HP-65 or more information about an HP-65.

If you'd like to talk specifically about how you can use the HP-65 to solve your problems, we invite you to call Customer Service at the above number collect between the hours of 9 a.m. and 5 p.m. (Pacific Time).

The HP-65 is the latest pocket-sized addition to a full line of Hewlett-Packard scientific and business calculators and computers that runs from handhelds, through desk-top calculators, to mini-computers and full system installations.

What the HP-65 offers you.

1. Time.
Problems you now spend minutes with can be solved in seconds with the help of programming.

2. Precision.
Once you've developed a correct program, you've eliminated any chance of error.

3. Portability.
A powerful computing tool, programming, becomes pocket-sized, so you can use it wherever you happen to be working.

4. Flexibility.
Once you've programmed your HP-65 you can turn it and your problems over to your clerical personnel with the assurance that they'll solve them correctly. Meanwhile, you're free to create some new ones, or have a cup of coffee.

5. An Alternative to Time-sharing.
You can use your time and your time-sharing more efficiently.

6. Economy.
The HP-65 is for people with computer-sized problems and calculator-sized budgets.

7. Programming.
As we said at the outset of this brochure, the HP-65's fundamental significance—the reason we describe it as a "quantum leap in calculator technology"—is that it makes a powerful computing tool, programming, available to you. You can write your own, or you can use ours. Either way, you'll probably save enough time to justify your HP-65 in a matter of weeks.

The HP-65's standard and optional accessories, specifications and warranty.

Standard Program Pac (17 representative programs, 2 diagnostic program cards, 20 blank program cards, a head cleaning card and instruction booklet), and 20 pocket card holders (each holds two cards; provides space for labelling so you don't have to carry the entire Pac when you know in advance you'll only need to use one or two programs).

Soft carrying case, with belt loop.

Safety travel case for calculator.

Quick reference guide.

HP-65 complete with battery pack.

Illustrated owner's handbook.

115/230 V.A.C. adaptor-recharger.

Self-adhesive name tags.

Optional accessories:

Pre-recorded Application Pacs for a wide variety of disciplines (see separate listing for details).

Security cradle.

Spare battery holder.

Hard leather field carrying case.

Additional blank program cards.

Additional program work sheets.

Additional pocket cardholders.

Power:

AC: 115/230 V.A.C. ±10%, 50 to 60 Hz, 5 watts.

Battery: 500 mv derived from nickel-cadmium rechargeable battery pack.

Weight:

HP-65: 11 ounces

Recharger: 5 ounces

Shipping Weight: 2 lbs., 8 ounces (approx.)

Dimensions:

Length: 6.0 inches

Width: 3.2 inches

Height: 0.7 to 1.3 inches

Temperature Operating Range:

Overall limits: 32° to 104°F (0° to 40°C)

Cardreader limits: 41° to 104°F (5° to 40°C)—reading
50° to 104°F (10° to 40°C)—writing

Warranty:

The HP-65 is warranted against defects in materials and workmanship for one (1) year from date of delivery. During the warranty period, Hewlett-Packard will repair or, at its option, replace components that prove to be defective when the calculator is returned, shipping prepaid, to a Hewlett-Packard customer service facility.

This warranty does not apply if the calculator has been damaged by accident or misuse or as a result of service or modification by any person other than at an authorized Hewlett-Packard customer service facility.

No other warranty is expressed or implied. Hewlett-Packard is not liable for consequential damages.

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