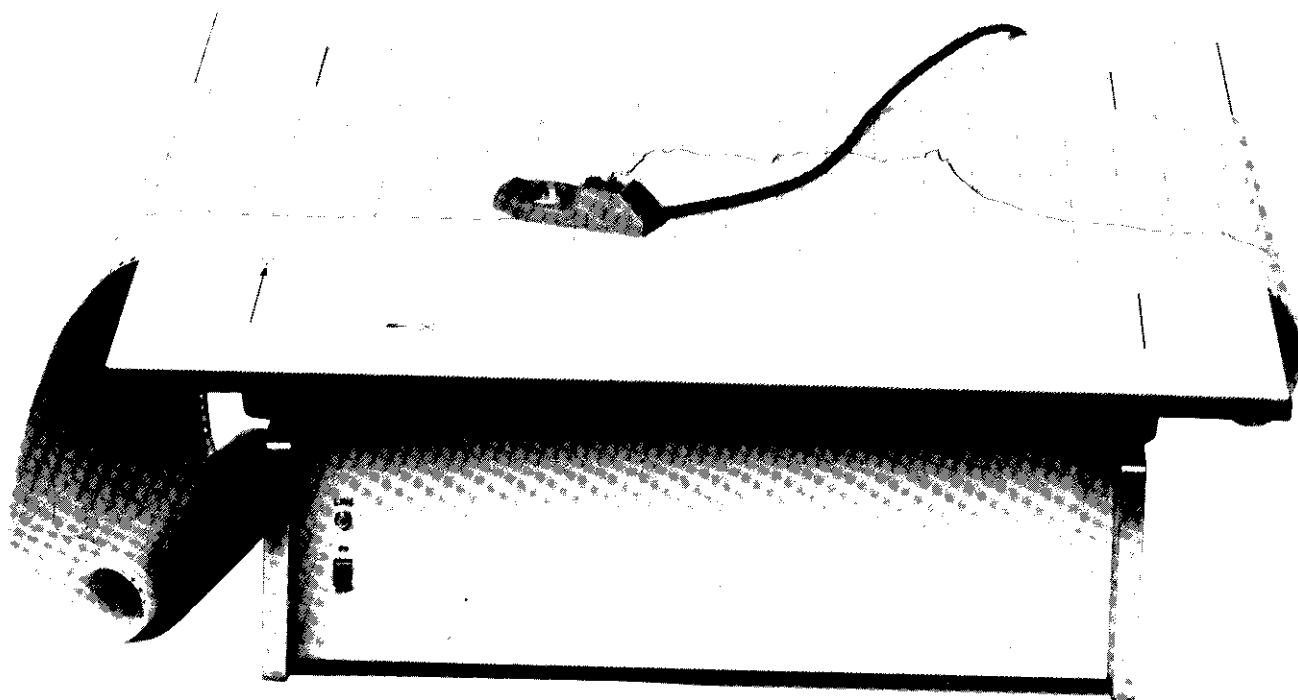


HEWLETT **hp** PACKARD

MODEL
64

**9864A
DIGITIZER**

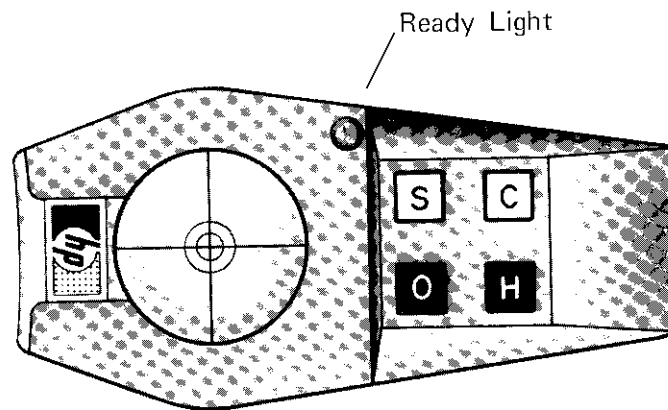
TECHNICAL DATA MAY 1973



9864A DIGITIZER

The 9864A Digitizer provides a convenient method of entering analog data into the 9800 Series Programmable Calculators for analysis. X, Y coordinates may be entered into the calculator as single samples for selective analysis, or the continuous mode may be used to automatically enter successive coordinates. The reference origin may be set at any point on the digitizing surface. An origin shift feature allows entry of data up to +99.99 inches in both X and Y without resetting the reference origin; long strip charts and large maps may be analyzed on the 17" X 17" platen.

Analog data in virtually any graphical form may be placed upon the digitizing surface, or platen for analysis. The free-moving hand-held cursor provides the operator with a mechanically unencumbered curve follower. Data is entered with an accuracy of 0.015 inches, which is well within the accuracy of most analog recordings. To improve the relative accuracy of a small recording, the original curve can be digitized, smoothed, and replotted several times up-size on the 9862A Plotter. The replotted curve can then be placed on the platen for analysis.



CURSOR for the 9864A

Ready Light: When on, indicates that the 9864A is ready to digitize.

The 9864A also responds to a "beep" command; it causes an audible tone for approximately 0.1 seconds. This can be used, for instance, to signal the operator when the area within a closed figure has been completely digitized.

The four operating controls for the 9864A are contained on the cursor.

- S – Single Sample: After the data entry command in either keyboard or program mode of operation, PRESS S to enter the X and Y coordinates into the calculator display.
- O – Set Origin: The origin can be set anywhere on the digitizing surface, allowing four-quadrant capability. To set the origin, place the cross-hairs of the cursor over the point desired for the origin, and PRESS O.
- C – Continuous Sample: Push to set in Continuous Sample mode; push again to remove from Continuous Sample mode.

In keyboard mode of operation, enters the X and Y coordinates into the calculator after the data entry command.

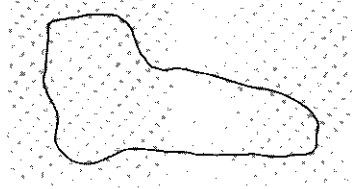
In program mode of operation, enters the X and Y coordinates into the calculator after the data entry command, followed by a resume program execution command from the 9864A to the calculator.

H – Hold: Push to hold present position; push again to release hold.

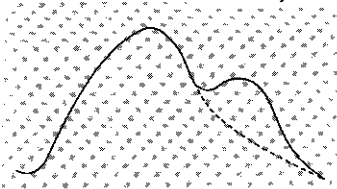
HOLD can be used to translate the origin. When HOLD is pressed, the cursor moved to a new point, and HOLD is pressed again, the new point assumes the coordinate values of the last point digitized. Using this technique, documents which are larger than the 17 X 17 inch area of the digitizing area can be analyzed. Coordinate points of $-99.99 \leq X \leq +99.99$ inches ($-2539,7 \leq X \leq +2539,7$ mm) and $-99.99 \leq Y \leq +99.99$ inches ($-2539,7 \leq Y \leq +2539,7$ mm) can be digitized. Once the limit +99.99 is reached, the digitizer "rolls over" to 0.00.

APPLICATIONS OF THE 9864A

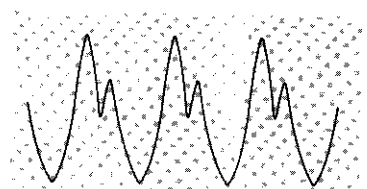
Cardio Pulmonary



Ventricular Volume

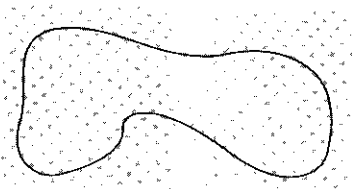


Dye Dilution Curve
Area Under Extrapolated Curve



Pressure-Time Curve
Data Reduction

Analysis of Irregular Shapes

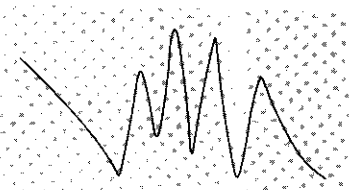


- Calculate area, centroid, moment of inertia
- Perimeter length
- Volumes of irregular solids from drawings or photographs

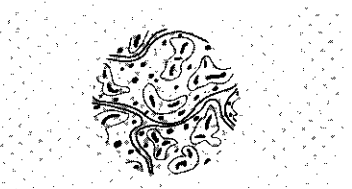


Analysis of Irregular Waveforms

- Calculate area under curve
- Determine fourier coefficients
- Velocity and displacement diagrams from acceleration curve
- Oscilloscope tracing photograph analysis



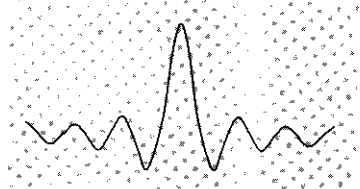
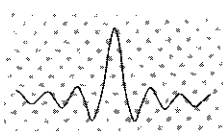
Photograph Analysis



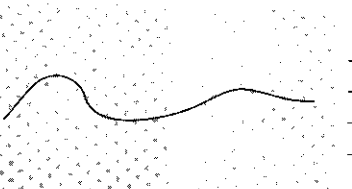
- Micro biology: cell size comparison
- Statistical analysis of data
- Volume of crystals

Scaling with Plotter

- Trace original curve smooth the data, and plot to any desired scale.
- Plot derivative and integral of curve



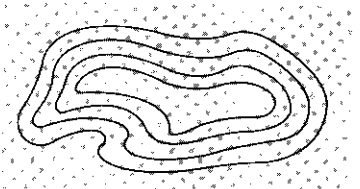
Statistical Analysis



- Mathematical modeling of curves
- Curve fitting
- Regression analysis
- Analysis of strip chart recordings

Contour Maps

- Ocean floor mapping
- Areas of forests or crops
- Lake and reservoir surface area
- Profile plots of terrain
- Cut and fill determination



Other Applications

- Auto styling and metal optimization.
- Antenna pattern profile
- Nuclear data analysis

SPECIFICATIONS

Active Digitizing Area:

An area of 17 X 17 inches (431,8 X 431,8 mm)

Resolution:

0.010 inches (0,254 mm)

Accuracy:

+0.015 inches (+0,38 mm) per axis from 15°C (59°F) to 30°C (86°F)

+0.030 inches (+0,762 mm) per axis from 30°C (86°F) to 50°C (122°F) and 0°C (32°F) to 15°C (59°F)

Origin:

Can be placed anywhere on the digitizing surface

Maximum Tracing Speed:

150 inches (3810 mm) per second

Record Modes:

Single (S) – Digitizes one point at a time

Continuous (C) – Automatically enters successive points

Lockout:

Cursor may be lifted 0.040 inches (1,0 mm) above platen before data lockout. Data lockout is indicated by an audible tone of approximately 0.75 seconds.

Hold:

Pressing the hold button locks in the coordinates of the last digitized position on the platen. These coordinates may become the initial coordinates for a subsequent cursor position on the platen by locating the cursor over the new coordinates and pressing the hold button again. Coordinates digitized thereafter continue from the locked-in coordinates.

Compatibility:

Operates with HP 9800 Series Programmable Calculators and peripherals.

Graphic Media:

Flat non-magnetic material less than 0.025 inches (0.64 mm) thick may be digitized without loss of accuracy.

GENERAL

Power:

50–60 Hz, 75 Volt Amps, 115/230 V, +10%

Dimensions:

Electronics Package:

5–1/2 inches high (139,7 mm)
17 inches wide (431,8 mm)
18–1/2 inches deep (469,9 mm)

Platen:

22 inches (558,8 mm)
22 inches (558,8 mm)
2 inches (50,8 mm)

Weight:

Electronics Package: 24 lbs. (10,9 kg)

Platen: 13 lbs. (5,9 kg)

PURCHASE PLANS:

Contact one of the Hewlett-Packard world-wide sales and service offices for specific prices and plans in your area.

Service Contracts Available.



SERIES 9800 PROGRAMMABLE CALCULATOR
AND 9864A DIGITIZER

For more information, call your local HP Sales Office or East (201) 265-5000 • Midwest (312) 677-0400 • South (404) 436-6181 • West (213) 877-1282. Or write: Hewlett-Packard, Calculator Products Division, P.O. Box 301, Loveland, Colorado 80537. In Europe: P.O. Box 85, CH-1217 Meyrin 2, Geneva, Switzerland; Canada: 275 Hymus Boulevard, Pointe Claire, 730, Quebec; Japan: YHP, 1-59-1, Yoyogi, Shibuya-Ku, Tokyo, 151; Other areas of the world: HP International, 3200 Hillview Ave., Palo Alto, California 94304.

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