HEWLETT-PACKARD

A Masterstroke of Productivity

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153

HP-94 Handheld Industrial Computer

Watch productivity rise while costs decrease when you put the HP-94 Handheld Industrial Computer to work for you in remote data collection.

This high-quality, rugged, portable computer system combines intelligence with bar code capability to put productivity gains where you need them – right on your manufacturing floor. And the HP-94 can be customized to fit your exact needs.

With the HP-94, manufacturing productivity goes up because:

■ Data entry and computation errors are eliminated.
■ Mistakes are corrected as they are entered, through built-in error-checking routines.
■ Time is saved through elimination of the need for filling out forms, mailing, keypunching and verifying data.

■ Data is available faster, and communications are improved.

Costs go down because:

■ The need for data entry personnel is reduced.
■ Fewer dispatchers are required.
■ The need to mail forms and other papers is reduced or eliminated.
■ Expensive multi-part forms are eliminated.

Put Computer Power Where You Need It

The HP-94's benefits to your business are clear and easy to measure.

The small, battery-powered HP-94 weighs less than two pounds. So it can easily be carried to where it's needed.

Data can be entered from the keyboard or by scanning the wand over bar code labels. The data can be processed immediately and then uploaded at the end of the workshift to get information where it's needed, when it's needed.

How Can the HP-94 Be Used?

The HP-94 is an excellent tool for applications in a wide variety of manufacturing and service industries. Some of its uses are:

- Tracking parts or finished goods for better inventory control and quality assurance
- Receiving and stocking parts
- Identifying locations and quantities of goods to be shipped
- Periodic inventory collection

It's Rugged, Reliable . . . and From Hewlett-Packard

In portable manufacturing applications, you need products that are rugged. That stand up to rough environments and the rough handling they get. Products that you can rely on. In other words, you need exactly what you get when you buy from Hewlett-Packard.

When you buy an HP-94 Handheld Industrial Computer, you're getting a product that's part of a long tradition of innovative, reliable and complete solutions to computing problems. The HP-94 is constructed with the top-of-the-line, high-quality workmanship that people worldwide associate with Hewlett-Packard products. And the HP commitment to quality and service lasts long after the product is delivered.

HP provides a single-vendor solution. Your system will be easier to use because all of its individual elements – like bar code wands, mass storage devices, printers, modems and host computers – are designed to work together. And by working with just one company, you get the convenience you need when you want to expand your system or require service.

The Easy-to-Use HP-94 *

The rugged HP-94 computer system is designed for easy use in remote data collection, information processing and data communications in manufacturing environments.

Battery powered and compact, the HP-94 can be carried anywhere on the factory floor. Up to 256K bytes of RAM provides lots of flexibility.

Features	Benefits
Rugged, industrial design	Reliable operation in the factory and in the field.
4-line x 20-character LCD display	Easy to read. Allows viewing of prompts and data simultaneously.
High capacity, user-replaceable NiCad battery pack	Extended use between charges; convenient replacement.
Lithium battery back-up	Protection against memory loss.
8-bit/16-bit, 80C88-compatible processor	Sophisticated processor in a portable package.
Built-in RS-232C interface; asynchronous up to 9600 baud	Communications to host computer.
Built-in bar code wand interface	Fast, easy, accurate data entry.

Options

64K, 128K, or 256K bytes built-in RAM	Large storage for your data collection needs.
A variety of RAM, ROM or EPROM choices	Flexible, expandable. Meets your needs as they grow and change.
Electro-luminescent backlight for display	Easy to read in dark areas.
Software Development System	Easy to develop software in BASIC and 8088 Assembly language using IBM PC-compatible system.

Expansion Choices

Depending on your needs, either 64K, 128K or 256K bytes of built-in RAM is available. This table describes HP-94 choices.

With this built-in RAM:

	64K bytes	128K bytes	256K bytes
You can add:	Either a 40K-byte RAM card, OR A ROM/EPROM card (insert a maximum of 128K bytes of ROM or EPROM)	Either a 40K-byte RAM card, OR A ROM/EPROM card (insert a maximum of 128K bytes of ROM or EPROM) OR Through a service upgrade, a 128K-byte RAM memory board	Maximum capacity. No additional RAM or ROM/EPROM can be added.

The HP-94 may be purchased with a standard LCD display or an LCD display with an electro-luminescent backlight.

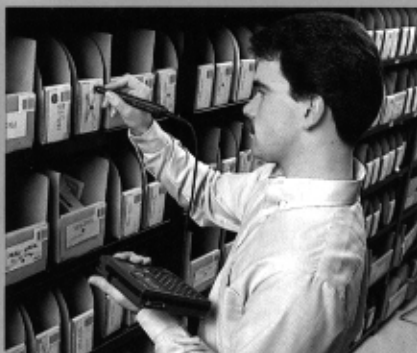## Easy to Operate

Because the HP-94 is programmable, software can be customized to precisely fit your application. Whether data is entered via wand or keyboard, programmable prompts show in the ample 4-line, 20-character display to lead each step of the way. With the electroluminescent backlight option, the display is easy to read even in dark areas. The HP-94 can be programmed to edit data as it is entered and to prompt for correction of inaccurate entries. So you can rely on fast, accurate data collection.

Keyboard

Large, wide-spaced keys make keyboard data entry quick and easy. The ABC format of the alpha keyboard means it isn't necessary to be a typist to use it. And with the touch of a key, a number pad is ready for quick entry of numeric data. The keyboard is even redefinable, and custom overlays are available.

Bar Code Capability

Combine HP's high-performance bar code wands with the HP-94 for fast, accurate data collection. This powerful system reads popular bar codes including 3 of 9 Code, Interleaved 2 of 5 Code, and UPC/EAN/JAN. Program the HP-94 to provide audible and visual feedback and prompting, and to display data for verification.

Three wand options are available for use with the HP-94. Each has a durable metal case, replaceable sealed sapphire tip and high-ambient performance for operation in direct sunlight.

Software Development System

An easy-to-use software development system allows the customization of your own programs in BASIC or 8088 Assembly languages using PC-DOS-compatible machines, such as the Hewlett-Packard Vectra PC or IBM PC, XT, and AT computers. Software can be customized using your own resources or through the Hewlett-Packard Independent Custom Consultant program.

Communications

Transmit data to a host computer at up to 9600 baud via the built-in RS-232C interface. The HP-94 can communicate on-line with the host to update central data bases, dispatch information, perform status checking, and send or receive electronic mail. Hard copies, printed at the data collection site, are an option too.

Specifications
Typical Wand Reading Characteristics

	High Resolution	General Purpose	Low Resolution
Minimum recommended nominal narrow element width	.13mm	.19mm	.33mm
Wavelength	820nm	655nm	655nm
Tilt angle	0°-45°	0°-45°	0°-45°
Scan speed	3-50 in/sec	3-50 in/sec	3-50 in/sec

Communication Capability

The HP-94 can communicate with other RS-232C devices that have these capabilities:

Transmission mode	serial, asynchronous, full duplex
Handshake	XON/XOFF or none
Baud rate	150 to 9600
Data bits	7 or 8
Stop bits	1 or 2
Parity	Even, odd, or none
Start bits	1

HP-94

Dimensions .... 14.6 cm (5.75 in) x 16.5 cm (6.5 in) x 3.8 cm (1.5 in)

Power Requirements

Batteries .... Rechargeable NiCad Battery Pack (HP 82431A)

Battery voltage .... 4.8 volts

Operating Requirements

Operating temperature .... 0° to 55° C (32° to 131° F)

Storage temperature .... –40° to 65° C (–40° to 149° F)

Humidity .... 0 to 95% relative humidity

Display (Liquid-crystal)

Character font .... 5 x 8 dot matrix

Capacity .... 4 lines

Window size .... 20 characters per line

Character set .... Roman 8, 256 characters

Character Range

A-Z, a-z, 0-9, European characters, and punctuation, plus 16 user-defined characters

Dynamic Range

Real precision .... $1.0E-64$ to $1.0E+64$

Significant digits 14

Integer precision .... $-32,768$ to $32,767$

Variable types .... Integer, real, string, numeric and string arrays (any number of dimensions, limited only by available memory)

Continued

Specifications

Clocks & Timers
Perpetual real-time clock calendar

Beeper
The beeper is programmable with parameters for short and long durations.

Redefinable
Keys 16

Multiple File Structure
The number of files in the HP-94 is limited only by the amount of available RAM.

File types	BASIC, data, device, driver, keyboard extension

ROM/RAM

Built-in operating system ROM	32K bytes
Built-in user RAM	64K, 128K, or 256K bytes
User-installed options	With 64K or 128K bytes built-in, you can add *either* a 40K-byte RAM card *or* a ROM/EPROM card. Insert a maximum of 128K of ROM *or* EPROM into the ROM/EPROM card.
Service upgrade	With 128K bytes of RAM built in, one additional 128K-byte memory board can be installed.
Maximum system RAM	256K bytes

Built-in Interfaces

RS-232C	Asynchronous up to 9600 baud
Bar code	5-pin DIN

Other products for use with the HP-94 include:

Product Number	Description
HP 82410A	128K Memory Board (field service upgrade)
HP 82411A	40K RAM Card (user installable)
HP 82412A	ROM/EPROM Card (user installable)
HP 82431A	Battery Pack (spare)
HP 82430A	Battery Recharger
HP 82470A	RS-232C Level Converter (for use with a modem)
HP 82470B	RS-232C Level Converter (for use with a printer)
HP 82520A	Software Development System (consists of software on 5¼″ disc and documentation)

For sale in U.S. only, pending final verification of compliance with applicable FCC Rules and Regulations.

For additional information about Hewlett-Packard's handheld computers in manufacturing solutions, call the HP office nearest you and ask for your technical computer or instrument representative. Local HP sales offices are listed in the white pages of your telephone book.

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