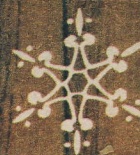


WINTER KITBUILDING FUN-1980



Heathkit®

Brand new kits lead the way into the 1980s — and keep your family company all winter long!

- New Heathkit 4-Element, Tri-Band Yagi Antenna is our easiest-to-assemble ham antenna ever with an industry first — a detailed, step-by-step assembly manual — page 92
- Berlitz Self-Instruction Language Programs in French, German, Italian and Spanish, plus an electronic Language Translator — page 14
- Three new Heathkit Continuing Education Programs — Descriptive and Inferential Statistics — page 13; IC Timers — page 11
- New Heathkit Ultrasonic Cleaner takes care of hard-to-clean items with ease — page 17



HEATHKIT ELECTRONIC CENTER CATALOG NO. 848R

HANDY INDEX ON BACK COVER

"Heath" and "Heathkit" are registered trademarks of Heath Company.

© 1980 Heath Company

Heathkit Computer Systems—with extra-value convenience

The world's leader in quality electronic kits leads the way in personal computers and computer systems that give you more values and features — while saving you money

For over 30 years, Heath Company has been at the forefront of consumer electronics, most recently in computers. Heath was one of the first to offer a personal computing system when we designed an analog computer back in 1957. We felt, even back then, that computers were the wave of the future, so we kept up our interest and enthusiasm for computers. Today, Heath continues to develop one of the most complete and innovative lines of computers and computer systems available anywhere. Whether you purchase Heathkit Computer products in economical, easy-to-build kit form or as fully assembled units, you'll get well thought-out, expertly designed products that offer substantial benefits over competing products. When you buy Heathkit Computer products, you get extra value for your computing dollar.

- Three different computer systems to fill any computing need
- A full selection of video terminals and other peripherals
- Dual floppy disk storage systems
- Versatile systems software
- Guaranteed updates of disk-based software for one year after purchase
- Memory and interfacing to make your Heathkit Computer even more versatile
- Thorough and accurate Heath documentation — the best in the computer industry
- Complete nationwide service support

How to select a computer. There are many considerations in selecting a computer: Do you want built-in peripherals or the flexibility to design your own system? Do you want the ability to expand your memory power as your skills grow? How good is the systems software? Is it compatible with existing software? Will the manufacturer stand behind the computer?

You can be sure of the answers to these questions when you consider the full line of Heathkit Computers and computer systems.

Three very different computers for very different people. Heath designs computers for people, and because people want very different things from computers, Heath has designed three different computers:

For flexibility — the H8. If you're interested in developing hardware, need more than 48K of read-write memory or write physical I/O routines in Assembly language, the H8 is for you. Its versatile bus-oriented architecture, expandability and hardware front panel position it as the right computer choice. With seven plug-in positions for memory and I/O, you have the flexibility to design your own system. See page 76 for more H8 details.

For convenience — the All-In-One H89. If you're more interested in running software than in hardware development and experimentation, the H89 gives you a complete, balanced computer system in one convenient package. It's less flexible and expandable than the H8, but the H89 is every bit as powerful and very cost-effective. And the H89 has a "personality" which a first-time computer user will find comfortable. The H89 includes computer, terminal, floppy, 16K RAM, keyboard and keypad. Just add software and you're ready to run. For more information on the All-In-One Computer, see page 74.

For advanced applications — the 16-bit H11A. If you need a computer for scientific uses, real time systems or other advanced applications, and DEC PDP-11V03 hardware and software capability is significant, the H11A is your choice. We offer a large selection of compatible hardware and software, including an IBM 3740 compatible 8-inch disk system, BASIC and FORTRAN languages and optional hardware floating point arithmetic. See page 78 for more information on the Heathkit H11A Computer.

SAVE 5% when you buy a system!



H8 8-bit Personal Computer



H89 All-In-One Computer with Floppy Disk Storage

H27 Floppy Disk System for the H11A Computer offers dual-drive versatility



Value-packed Heathkit Software includes programs written in MICRO-SOFT™ BASIC™ and Assembly languages, in audio cassette or floppy disk formats, that make our computers more versatile for you. Our complete software line can help you write your own programs easily. And we won't let your disk-based Heathkit Software go out of date — for one year after purchase, we'll send you any changes, free of

charge. See page 82 for full details on easy-to-use Heathkit software.

HUG — the Heath Users' Group — keeps you informed of new computer programs written by other members and available to you, and keeps you up to date on new developments in Heathkit Computer Products. Owners of Heathkit Computers can become members of this group, which shares an extensive program library. See page 84 for more details on HUG.

Heath documentation is the best in the computer industry. If you want to build a Heathkit Computer System yourself, we make it easy with complete, easy-to-follow assembly manuals which take you, step-by-step, from unpacking to plugging it in. You'll understand your computer from the inside out. And in both kit and assembled forms, Heath's operating and instructional manuals are fully detailed and thorough. Documentation is one of the most important parts of any computer system, and when it comes to documentation, you'll begin to realize the full value of a Heathkit Computer.

and flexibility for your needs

H19 Smart
Video Terminal

H14 Hard Copy
Line Printer

Powerful H11A 16-Bit
Personal Computer



Heath offers complete service support. Technical expertise, advice and service for your Heathkit Computer System are always available. Service experts at the Heath factory or at the 55 Heathkit Electronic Centers from coast-to-coast can help you keep your Heathkit Computer System working right. That's one important advantage of buying your computer from a company with 30 years of experience in computing.

You get the convenience of one-stop shopping for all of your computer needs. The complete selection of Heathkit Computers, terminals, printers, computer accessories and software is available between the covers of the Heathkit Catalog. Heathkit Computer Products are designed to work together, and to look like they belong together. When you buy a Heathkit Computer System, you can count on a balanced, harmonious system. And you'll take pride in knowing that you built it yourself.

The time to purchase a computer has never been better.

Save 5% when you purchase a complete Heathkit Computer System. Simply choose the H8, H11A, H88 or H89 computer, one major peripheral and any I/O devices and accessories you need to complete your computer system. Then, deduct 5% from the total price (excluding shipping and handling charges). It's the ideal way to get the exact computer system you need.

Is your business ready for a computer?
Here's an easy way to find out the answer

NEW



\$49⁹⁵

Computer Concepts for Small Business is designed to give you the information and understanding you need to evaluate the usefulness of a computer in your business. Are the benefits worth the cost? Our program helps you decide.

If you're a businessman who's thinking about using a computer in your business, Computer Concepts for Small Business is for you. Designed for the businessman who knows little or nothing about computers, this program shows you how a computer can serve your business needs. It covers: **The Computer and How It Works:** Including types of memory, storage media, I/Os and software. A detailed discussion of different types of applications software, covering the typical tasks a computer system can perform for a small business.

The Data Processing Department and Personnel: This covers the organization of a typical data processing (DP) department; the roles of the data processing manager, data processing engineer, systems analyst, operator and other personnel; and a comparison of permanent employees versus free-lance personnel, including the advantage of each type of employee.

Alternatives in Computer Services: Including a comparison of the advantages of owning your own computer system versus a time-sharing arrangement and using a service bureau, with a discussion of the typical problems of each arrangement.

How To Select a Computer: Discusses how to define your data processing requirements; how to put together the right combination of hardware, peripherals and software; and how to get the most from outside data processing services.

The program includes a 160-page text with 3 appendices and 3 cassettes. Completion of the final exam with a passing grade earns you 1 CEU.

EC-1103, Shpg. wt. 5 lbs. **49.95**

MONEY-BACK GUARANTEE

If you're not satisfied with any Heathkit Self-Instruction program, we'll completely refund the purchase price.

All-In-One Computer: a complete system in one compact unit

- Heavy-duty professional keyboard
- Numeric keypad in calculator format
- Smart video terminal
- Two Z-80 microprocessors — one for computer, one for terminal

- 16K random access memory, expandable to 48K
- Built-in floppy disk storage
- Rugged construction
- Easy-to-read 12" CRT

Heath builds so much computing power and so many features in one computer for this low price:

Only **\$1695⁰⁰** for H89

You can get all the power and built-in peripherals you need for any personal computing task in one compact, desk-top computer—the Heathkit All-In-One Computer! With convenience features that make it easy to program and operate, this 8-bit computer can make computerizing your home or business a reality.

The All-In-One's heavy-duty professional keyboard can control all video terminal functions, with eight user-function keys available to give you extra flexibility. Select baud rates of up to 9,600 through the keyboard. Direct cursor addressing lets you insert and delete characters anywhere on the screen, and the terminal supports line graphics characters from keyboard or computer.

Designed in calculator format, a numeric keypad makes entering arithmetic programs faster and easier. Shifted functions give you cursor control for insertions and deletions.

The smart video terminal is one of the most sophisticated ever designed. Both the terminal and the computer have their own Z80 microprocessors. This means the All-In-One Computer can perform a multitude of high-speed functions, because the terminal never has to share processing power with the computer—not the case with most other desk-top computers and computer systems.

A 12-inch (diagonal measure) cathode ray tube produces clear, sharp, easy-to-read characters. Upper and lower case letters are formed by a 5 x 7 dot matrix in the format of 24 lines by 80 characters (with a special non-scrolling 25th line). Lower case letters with descenders use a 5 x 9 dot matrix. Also features 33 line graphics characters using 8 x 10 dot matrix.

You can expand the Heathkit All-In-One Computer to meet your needs. It comes with 16K RAM, expandable to 48K, with memory diagnostics built in to make memory checks faster and easier. Accessory interfaces let you communicate with printers, cassettes or time-share systems (with appropriate software), and all communication is EIA RS-232 Standard.

The built-in floppy disk system makes this a true All-In-One Computer, giving you tremendous storage capacity for programs and data. Each 5¼-inch diskette has 100K bytes of storage. The WANGCO/Siemens single-drive floppy disk system gives you virtually instant access to any information. Load programs in seconds, access and update data fast with the same H17-1 drive described on page 77.

The All-In-One Computer is built to withstand the toughest working environments, with a tough, rugged structural foam cabinet protecting its circuitry. And a convenient lift-off top gives you easy access to

the H89 Computer's components and circuitry.

Order your Heathkit All-In-One Computer today. With so much computing power and so many features built in, this desktop computer brings exceptional value within your reach. Put this exceptional value to work for you now!

H89 All-In-One Computer, with floppy disk system. Includes H88-5 Audio Cassette Interface.

Kit H89, Shpg. wt. 86 lbs. **1695.00**

WH89-CS Completely Assembled All-In-One Computer, with floppy disk system, 48K memory and serial I/O. Does not include H88-5 Audio Cassette Interface.

WH89-CS, Shpg. wt. 54 lbs. **2895.00**

H88 All-In-One Computer, without floppy disk system. Includes H88-5 Audio Cassette Interface.

Kit H88, Shpg. wt. 59 lbs. **1295.00**



H88 All-In-One Computer
without floppy disk
system.

Two independent Z80 microprocessors enable terminal and computer to act independently. CPU is completely wired and tested.

To add memory simply plug ICs into sockets. No soldering necessary.

Two-port serial I/O interface hooks up to time-share systems and printers. H88 and H89 include cassette interface.



H89 includes built-in floppy disk storage.

High-resolution CRT with P4 phosphor produces sharp, clear images.

Video screen displays 1,920 easy-on-the-eyes characters at one time.

Rugged structural foam cabinet protects your All-In-One Computer.

Numeric keypad in calculator format permits faster, easier arithmetic entries.

Professional electronic keyboard designed for easier reach, surer touch.

SPECIFICATIONS: Processor: Z-80. Clock: 2.048 MHz. Memory: 16K bytes user RAM (expandable to 48K). Video Terminal: High-resolution CRT with P4 phosphor. Screen Character Capacity: 1,920 characters. Character Type: 5 x 7 dot matrix (upper case), 5 x 9 dot matrix (lower case with descenders). Keyboard: 80 keys, typewriter format, with numeric keypad in calculator format. Cursor: Blinking, non-destructive underline or block. Cursor Controls: Up, down, left, right, home, CR, LF, back space and tab. Cursor Addressing: Relative and direct. Tab: Standard eight-column tab. Refresh Rate: 60 Hz at 60 Hz line frequency, 50 Hz at 50 Hz line frequency. Edit Functions: Insert and delete character or line. Erase Functions: Erase from beginning of line, erase to end of line, erase line and beginning of page, erase to end of page, erase line and erase page. Power Requirement: 120/240 VAC, 50/100 Hz at 90 watts maximum. Dimensions: 13" H x 17" W x 20" D (33 cm x 43.2 cm x 50.8 cm).



Accessories and software let your All-In-One do even more!

The Heathkit All-In-One Computer runs programs written in MICROSOFT™ BASIC and Assembly languages, including scores of practical programs for your home or business. And the optional accessories enable you to perform more tasks, store more data and communicate with more peripherals, making the All-In-One even more versatile!

Cassette Systems Software for the Heathkit All-In-One Computer. Easy-to-use features include extended Benton Harbor BASIC, a modified version of Dartmouth BASIC, an easy-to-learn-and-use conversational language which uses simple English statements and algebraic equations; Assembly (HASL-8), a language which assembles source code and produces object code, utilizing all the standard 8080 mnemonics, extended mnemonics and numerous pseudo instructions; Text Editor (TED-8), a general-purpose, line-oriented text editor that is used primarily to prepare source code that can be assembled using the HASL-8 Assembly Language above, but can also be useful for letter writing, manuscript editing and preparation of newsletters; and Console Debugger (BUG-8), which you can use to load, execute and debug machine language programs in your computer.

H88-18, Shpg. wt. 5 lbs.20.00

Systems Software for the All-In-One Computer's Floppy Disk Storage System. Includes a diskette containing extended Benton Harbor BASIC; a two-pass absolute assembler; a text editor to prepare source code for BASIC and other languages; a full set of disk utility programs for convenient file manipulation and a console debugger to make debugging user machine language programs easier and faster. Dynamic File Allocation permits efficient use of free disk space, eliminating time-consuming disk-compacting utilities. Supplied on a standard diskette.

H89-17, Shpg. wt. 5 lbs.100.00

16K Random Access Memory Expansion Chip Set. Expand the capability of your Heathkit All-In-One Computer by adding one or two 16K RAM chip sets. The All-In-One Computer is equipped with 16K RAM; maximum memory capacity is 48K RAM.

H88-2, Shpg. wt. 1 lb.150.00

Two-Port Serial I/O Interface. Lets the All-In-One Computer communicate with the H14 Line Printer, time-share systems (with appropriate software) or any other serial peripheral. Two serial I/O ports support an EIA standard RS-232-C interface.

H88-3, Shpg. wt. 2 lbs.85.00

Popular MICROSOFT™ BASIC Computer Language. One of the most versatile languages for personal computing. Features direct access to CPU ports and memory locations, IF-THEN-ELSE control structure for more highly-structured programming, powerful program edit and file management facilities, powerful string processing functions, automatic line numbering and renumbering, double-precision floating point arithmetic, more. Requires floppy disk drive and minimum 32K memory (48K recommended).

H8-21, Shpg. wt. 3 lbs.100.00

Floppy Disk Storage System, Drive and Interface for the H88 All-In-One Computer. Store up to 100K bytes of information on each 5¼-inch diskette. Famous WANGCO/Siemens single-drive system for speedy access to information. (Included in H89 only). Diskettes not included.

H88-4, Shpg. wt. 22 lbs.490.00

Audio Cassette Interface for WH89 All-In-One Computer. Connects your WH89 with a cassette recorder/player, such as the Heath-recommended ECP-3801A (page 80). Allows your computer to store and use more information. Standard with H88 and H89 All-In-One Computers.

H88-5, Shpg. wt. 2 lbs.95.00

Heathkit H8 Personal Computer gives you plug-in



8080A-based computer with front keyboard, digital readout and 7 plug-in board positions

- Built-in ROM monitor controls front panel program
- Heavy-duty power supply handles to 65K memory
- Get both hardware and software support from the same reputable source

The Heathkit H8 — the computer that grows as you grow. You get the flexibility to design your computer system just the way you want it. With seven positions for plug-in modules, you can put together any combination of memory and I/Os. Our large selection of H8 peripherals, accessories and software give you unmatched versatility.

Novices can use the H8 as a computer trainer by adding 4K of memory. The 16-key front panel keyboard provides octal data entry, direct access to registers and memory, one-button program load and dump, and input/output keys to directly communicate with any port. And you can directly monitor program activity with the H8's nine-digit octal readout, which provides much more information than conventional computers.

The features we pack into the H8 Computer mean more value to you. A heavy-

duty power supply lets the H8 handle up to 65K of memory (including I/O), while convection cooling means no fan is needed to prevent overheating.

The CPU board, including the 8080A chip, clock, systems controller and ROM monitor, is fully assembled, wired and tested for easier kit assembly and faster system setup. An exclusive Heath-designed 50-pin fully-buffered bus gives you more room for memory and I/Os. The H8's built-in speaker gives you audible feedback and special effects. Front panel status lights keep you up to date on your computer's status. With all these features and more, the Heathkit H8 Computer is an excellent choice to be the heart of your computer system.

When you add more memory, interfaces and peripherals, your H8 System can become even more powerful and versatile. You'll be able to write more highly sophisticated, higher-level programs. The optional H17 Floppy Disk System gives you even greater storage capacity, and the capability to load programs and update files instantly.

The unique flexibility of the H8 means you can design an H8 Computer System from a vast selection of peripherals and accessories — including additional memory, cassette data storage, CRT terminals, hard copy printers and an acoustic modem — to meet your unique computing needs. And because the H8 is based on the popular 8080A CPU, the amount of existing software makes your system immediately practical.

Design your own H8 Computer System

With seven plug-in board positions for memory and input/output devices, your Heathkit H8 Computer System can grow as you needs grow. Some of your options are described on the chart below. Each box represents a plug-in module.

Memory	16K WH8-16	8K H8-3 + H8-1	4K H8-1
Mass Storage	Cassette ECP-3801A	Floppy with controller H17	
Interface	Serial/ Cassette 1-port H8-5	Serial 4-port H8-4	Parallel 3-port H8-2
Peripherals	Terminal H9, H19	H14 H36, WH34	MODEM WH-13

Or save with one of our complete H8 Systems

HKS81 Hobbyist System. Includes the Heathkit H8 Computer, H8-5 Serial I/O and Cassette Interface, H8-1 8K Memory Board, H8-3 4K Chip Set, H9 CRT Terminal, ECP-3801A Audio Cassette Recorder and H8-18 Cassette Software. Everything you need to get started. If purchased separately, \$1003.00. **Save \$108.00** when you buy the system.

HKS81, Shpg. wt. 94 lbs. \$95.00

HKS82 Advanced System. A more powerful, more versatile system for the advanced computerite. Includes H8 Computer, H8-4 Four Port Serial I/O, WH8-16 16K Memory, H17 Floppy Disk System, H19 CRT Terminal and H8-17 HDOS Software. If purchased separately, \$2,124.00. **Save \$129.00** when you buy the system.

HKS82, Shpg. wt. 143 lbs. \$195.00

WHS83 Assembled Advanced System. Includes WH8 Computer, WH8-4 Four Port Serial I/O WH8-16 16K Memory Card, WH17 Floppy Disk and 48-17 HDOS Software. If purchased separately, \$1644.00. **Save \$149.00** when you buy the system.

WHS83, Shpg. wt. 81 lbs. \$1495.00

flexibility at an affordable price—and floppy disk capability



Heavy-duty power supply, rugged steel chassis and securely mounted and braced circuit boards

Modular circuit boards slide into the mainframe for easy memory and I/O expansion, easy servicing

The H8's intelligent front panel provides the most informative display of any personal computer

Front panel keyboard gives you more control of your H8 Computer

Use the H8 as the heart of your computer system

When you buy the Heathkit H8 Computer, you get the flexibility and versatility you need to really personalize your computer system — at a price that fits your budget. Whether you buy one of our complete systems or design your own, you can build an H8 System to suit your needs.

Memory and I/O accessories are offered separately from the computer itself, so you have complete freedom to assemble a computer system that meets your specific computing needs. To build a complete system using the H8 you'll need both memory and interface accessory cards. The type and number of memory and interface accessories you'll need will be determined by your application.

The H8's optional software is supplied in 1200 baud audio cassette or diskette forms to help get you up and running faster. You can begin communicating with the H8 right away, with Benton Harbor, BASIC, the HASL-8 2-pass absolute assembler, the TED-8 line-oriented text editor and the BUG-8 terminal console debugging program. For complete details on H8 software, see page 82. When you buy an H8 Computer, you'll also be eligible for membership in HUG, the Heath Users' Group, which maintains a growing program library. Details on page 84.

The value-priced H8 is housed in a heavy-duty metal cabinet with modern, high-impact structural foam side panels. Operates on switch-selected 120/240 VAC, 50/60 Hz. Dimensions, 6½" H x 16¼" W x 17" D. Requires at least 4K of memory to operate. (See page 83).

Kit H8, Shpg. wt. 31 lbs.289.00

Factory Assembled and Tested H8 Computer.

WH8, Shpg. wt. 30 lbs.349.00

Examine the manuals before you buy. Here's your chance to look before you buy, and with no risk. The HM800 Manual Set includes complete assembly and operations manuals for the H8 Computer, H8-4 Interface, H14 Printer, WH8-16 Memory Board, H19 CRT and H8-17 software. When you order the H8 Computer, deduct \$25.00 from the purchase price (not including shipping and handling charges). HM800, Shpg. wt. 11 lbs.25.00

NOTE: Individual product manuals are included with each kit.



H17 Floppy Disk makes your H8 System ever more versatile

You get vast storage and programming capacity, instant access to any program and easy loading with the H17 Floppy Disk System. You'll really see the power of your computer once you add a floppy disk system. And with the optional second drive, you can profit from added dual-drive versatility and capacity.

The H17 Floppy Disk System gives you the storage and programming capacity you need to load programs instantly. Store hundreds of programs on a single disk and have immediate access to any one of them, anytime you need it. And you can update your data instantly. The H17 makes your H8 Computer System a "total versatility" system.

Designed exclusively for use with the H8, the H17 stores up to 100K bytes of data on a standard, hard-sectored 40-track diskette which measures just 5¼" in diameter. The disks are easier to handle — and easier to load — than paper tape or cassettes.

The H17 uses the famous WANGCO/SIEMENS 82 single drive system, a performance-proven disk drive which provides accurate high-speed access to data. The WANGCO/SIEMENS 82 drive performs much better than most equivalent competitive drive systems. And it's supplied fully assembled and tested for the H17.

To get even more data and program storage area, add the optional H17-1 Second Drive and make your H17 a versatile dual-drive floppy disk system.

To use the H17 effectively, you need at least 16K RAM for the H8 and the H8-17 Operating Systems Software (see p. 82). A single blank diskette is included.

Kit H17, Shpg. wt. 28 lbs.495.00

WH17, Factory assembled and tested H17. Shpg. wt. 28 lbs.550.00

Optional Second Drive. Adds dual-drive versatility to the H17. Get a total of 200K bytes of available data and program storage area.

H17-1, Shpg. wt. 5 lbs.315.00

Package of 5 Blank Diskettes for use with the H17 Floppy Disk System.

H17-2, Shpg. wt. 1 lb.each 25.00

H17 Floppy Disk Operating Software gets you running fast

Get your floppy disk system up and running fast with specially engineered systems software — loaded with convenience features

The Operating Systems Software for the H17 Floppy Disk System includes a diskette containing the standard H8 software. This includes Extended Benton Harbor BASIC, a 2-pass absolute assembler, a text editor to prepare source code for BASIC, Assembly and other languages, a console debugger for easy debugging of user machine language programs and a full set of disk utility programs to make file manipulation more convenient for you.

Special features of the operating software include

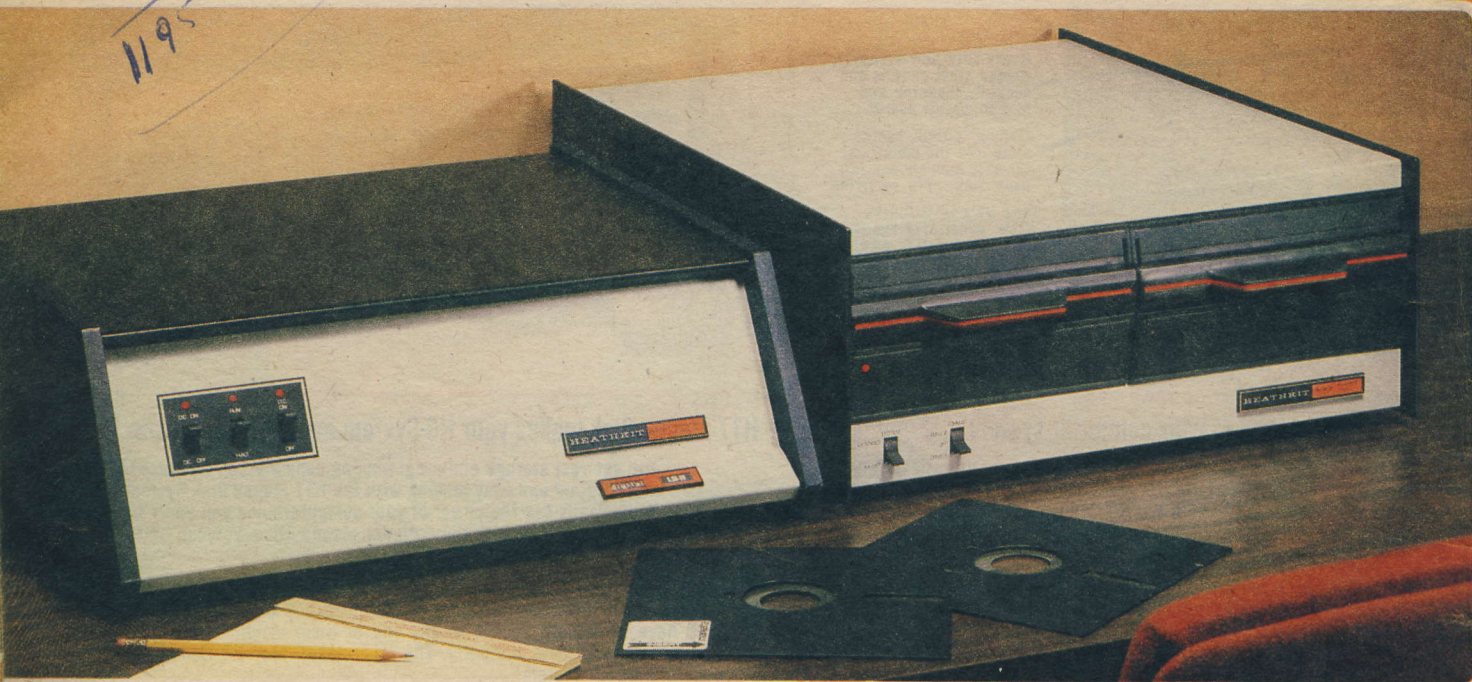
Dynamic File Allocation, which automatically keeps free space available to permit unlimited file size and prevent squeezing of disks. Special facilities support running and backup of single-drive configurations to permit copying and transferring between disks, even with a single-drive system. Device independence permits direct communication between any program and any device. A file utility program allows bulk manipulation of files.

Get the most from your H8 Computer and H17 Floppy Disk System with H8-17 Operating Software. Supplied on a standard diskette.

H8-17, Shpg. wt. 14 lbs.100.00



Heathkit H11A Computer brings 16-bit power



The most popular business/science computer on the market is now available at a price you can afford

Designed for the more serious computerite, the Heathkit H11A Computer offers the power and potential you need to implement more sophisticated computing applications. Most computerites find that their problem-solving and programming capabilities grow quickly, and before long, they run out of computing power. The H11A is the computer that meets the demand for superior performance in scientific, educational and small business applications. When you buy the H11A Computer, you get real computing potential.

The H11A gives you all of the power, speed and flexibility you'll ever need in a microcomputer. It uses the same powerful microprocessor and runs all software designed for the DEC® PDP-11/03. You can choose from a vast selection of practical programs to run your home more efficiently, to reduce the clerical costs of your business and to process all types of data more efficiently than before. If you've been around computers and your computing needs require extra power, the H11A Computer is designed for you.

The 16-bit vs. 8-bit issue: Your choice of a 16-bit or 8-bit computer depends

upon your needs. If you're an advanced hobbyist or professional with demanding computing applications, the 16-bit H11 is your best choice. The H11A has adequate computing power, even for the more complex and sophisticated jobs that you will be tackling later. When you buy the H11A, you are purchasing ultimate immediate performance and maximum future potential.

The H11A features the new, physically smaller KD11-HA microcomputer (half-size LSI-11/2). This makes the Heathkit H11A identical to the DEC PDP-11/03, but at a fraction of the cost. This smaller configuration allows you to put more computing power and versatility into the H11A by providing an extra plug-in slot for additional memory or I/O interface.

You get the flexibility to configure the exact computer system you require with the H11A. Seven plug-in slots let you add any combination of I/Os and a maximum of 60K bytes memory. The basic Heathkit H11A Computer is supplied with a handsome cabinet, heavy-duty power supply, and a backplane that includes bus and a fully assembled CPU board. You can add your selection of optional memory and I/O accessories to the mainframe. A wide selection of software is also available. (See pages 82 and 83 for accessories and software to make your H11A Computer System even more versatile. Complete H11A Systems Software for the H27 Floppy Disk System is available below).

H11A Operating Systems Software for the

Heart of the H11A — the KD11-HA Microcomputer

The KD11-HA 16-bit Microcomputer module forms the heart of the H11A Computer. It's only half the size of the KD-11F (LSI-11), but you get more flexibility when you configure your H11A System.

There is no on-board memory, so you can match your RAM/ROM requirements to meet your particular needs. And full compatibility with the LSI-11 family means you can combine components from both the LSI-11 and LSI-11/2 families.

Features of the KD11-HA include a PDP-11/34 instruction set, a raw computer speed of 380 nS microcycle time, resident firmware debugging (ODT) and ASCII console routines, as well as single and double operand instructions. The KD11-HA gives you the power and flexibility you need for advanced system configurations.

The HT-11 Systems Software lets you immediately enjoy the full benefits of a rapid-access floppy disk system. You get easy-to-use programs, including:

EDIT: A text editor to create or modify files for programs and documentation.

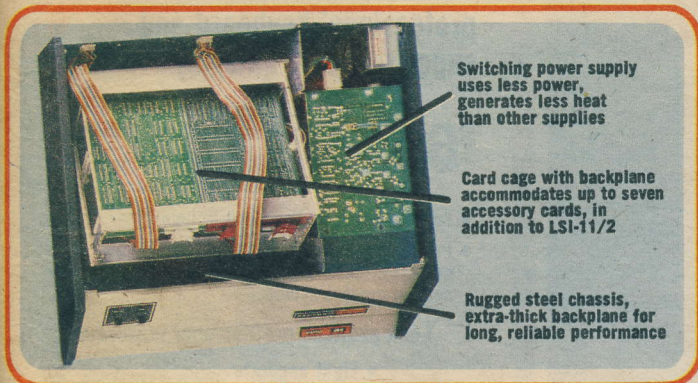
EXPAND, ASMBLE AND CREF: Utility programs for macro-expansion, Assembly Language processing and cross-reference listings. Supports the entire PDP-11 instruction set and several pseudo-operators.

LINKER: Converts object modules produced by the assembler or the FORTRAN compiler into a run time format. Services include relocation of code, linking of global references and the creation of a runnable program file for use by the rest of the system.

LIBRARIAN: Creates and maintains libraries of subroutines for use by the linker.

PIP: The Peripheral Interchange Program is the file maintenance and transfer utility program of the HT-11. It has commands for moving, copying and renaming files, plus other commonly-used file operations.

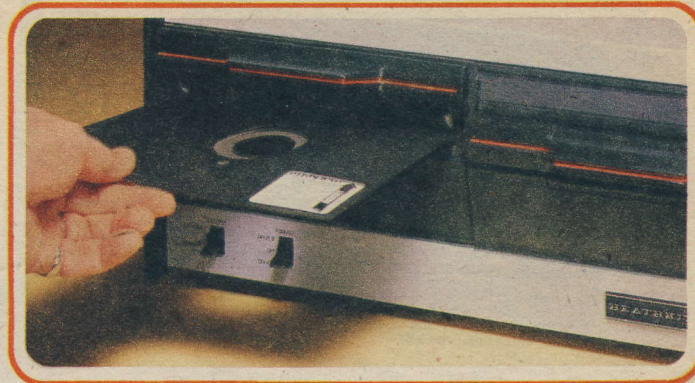
to the advanced computerite—at an affordable price



Switching power supply uses less power, generates less heat than other supplies

Card cage with backplane accommodates up to seven accessory cards, in addition to LSI-11/2

Rugged steel chassis, extra-thick backplane for long, reliable performance



Get the power and versatility you need in the H11A Computer

- 16-bit computing power with up to 60K words of memory
- DEC® half-size KD11-HA (LSI-11/2) CPU
- Compatible with DEC PDP-11/03
- Plug-in flexibility for memory and I/Os

Learn by building it yourself. What better way is there to know your computer than by building it yourself? The Heathkit H11A Computer lets you understand it better. You can build it yourself and benefit from the knowledge — and the savings. Like all Heathkit designs, the H11A comes with an easy-to-follow assembly manual — and a nationwide network of service centers to help you, should a problem arise. And when you build it yourself, you can also perform more of the service steps yourself, to keep your computer in top operating form.

Whether you buy an H11A Computer System or the computer itself, compare the price of the H11A with comparable 16-bit computers. Buy this extra-powerful Heathkit computer and find out why the combination of advanced design and quality components make the Heathkit H11A Computer one of the best 16-bit computer values anywhere.

Kit H11A, Shpg. wt. 43 lbs.1195.00
Factory Assembled and Tested H11A Computer.
WH11A, Shpg. wt. 43 lbs.1895.00

SPECIFICATIONS: Central Processing Unit: Uses DEC KD11-HA CPU. Word Length: 16 bits. Instruction Set: PDP-1103. Memory: Directly addresses 32 K. I/O Addressed: 28 K to 32 K. RAM/ROM: 0 to 28 K. Backplane: Eight 2-wide module slots. Power Supply: Overcurrent and overvoltage protected, switching regulator. Internal fan for cooling. Inputs: 120/240 VAC; 60/50 Hz, at 200 watts maximum. Outputs: +5 VDC at 15 amperes maximum and +12 VDC at 3 amperes maximum. Cabinet Dimensions (overall): 6½" H x 19" W x 17" D. (16.5 x 48.3 x 43.2 cm).

DEC, DIGITAL and PDP are registered trademarks of Digital Equipment Corporation.

H27 Floppy Disk gives you instant access to data

- Z80 Microprocessor-based controller
- Full compatibility with DEC RX01® (PDP-11/03)
- Fast head step time of 8 ms
- Dual-drive capability for a total capacity of ½ Meg bytes

The H27 gives you dual-drive versatility, with a total of ½ Meg bytes of program and data storage to give you enough room for most of your general-purpose application needs. The Z80 Micro-controller in the H27 provides an average access time of 252 mS. You'll have virtually immediate access to all your files and programs.

You get full compatibility with DEC® RXV11® (PDP-11/03) hardware and software, to give you the capability of using the hundreds of applications programs written by users of the DEC PDP-11/03, the world's most popular microcomputer. Performance-proven hardware and software base provides outstanding computer power. While compatible with the RX01 system, the H27 gives you more. A built-in self-test diagnostic on power-up protects existing programs on your disks. A mechanical interlock prevents accidental media damage (if the floppy is not seated properly, the door will not close and the H27 will not operate). A write-protect function protects important files and programs from being written over inadvertently. And a reformatting procedure gives you the capability of writing in the IBM 3740 standard format.

A single-board interface/bootstrap uses one backplane slot, leaving more space for memory and I/O additions to your H11A Computer System. The H27 Floppy Disk System measures 8" H x 18" W x 20" D. It operates on 120 or 240 VAC, 60 Hz power. To use the full capabilities of the HT-11 Operating Systems Software, designed for use with the H27 Floppy Disk System, you need at least 16K words of memory.

Kit H27, Shpg. wt. 93 lbs., Motor Freight1945.00
WH27 Dual-Drive Floppy Disk System. Fully assembled and tested.
WH27, Shpg. wt. 69 lbs., Motor Freight2595.00
H27-2, Pkg. of 5 Blank Disks. IBM 3740 format. Shpg. wt. 2 lbs.30.00

H27 Floppy Disk System to help you get your computer system operating quickly and efficiently

ODT: The HT-11's On-line Debugging Technique aids in debugging user programs by providing commands to display and alter the state of a running program.

BASIC INTERPRETER: This high-level conversational programming language offers access to the HT-11 I/O system and file structure through the BASIC Language. Extensions to standard BASIC include variable-length strings, sequential files, virtual memory arrays, chaining and overlay capability. A "desk calculator" mode can perform once-only calculations or serve as an aid in debugging.

MISCELLANEOUS PROGRAMS: Dump prints contents of files in any of several useful formats. SRCOM compares two files, prints summary of differences.

The easy-to-use HT-11 Operating System for the H27 Floppy Disk System extends the H11/H11A's capabilities. Minimum requirements include an H11 or H11A Computer with at least 16K words of main memory, a console terminal and interface, and a Heathkit floppy disk drive, controller and interface.

***HT-11 Operating System with BASIC, Shpg. wt. 12 lbs.350.00**

FORTRAN for HT-11 System. Binary software features complete ANSI standard 1966 FORTRAN IV with extensions for increased speed. Some of the extensions include: relaxation of statement ordering, use of expressions nearly anywhere, direct access I/O, TYPE ACCEPT and PRINT I/O statements, ENCODE and DECODE statements, END and ERR parameters, random number generator, IMPLICIT statement, more.

***HT-11-1, Shpg. wt. 9 lbs.250.00**

***NOTE:** The HT-11 Disk Operating System and HT-11-1 FORTRAN are compatible only with the Heath H27 or WH27 Floppy Disk Systems. To obtain this software, the Customer Software Sublicense Grant must be signed and you must include the make, model and serial number of your CPU in the blank provided on page 82 and include the Grant with your order.

See pages 82 and 83 for our full selection of operating applications software



The Heathkit H19 Smart Video Terminal has features like professional keyboard and super-sharp CRT display

\$695.00 Kit • Z80 microprocessor-based for fast, efficient data handling
• Extremely wide bandwidth monitor for easy-to-read images

- Full professional keyboard in typewriter format
- Prints complete ASCII set including upper and lower case characters, and special graphic symbols

Look at these professional features:

- Eight separate user-definable function keys
- Separate numeric keypad
- Standard typewriter format
- Heavy-duty keyboard
- Addressable blinking cursor
- Bright, easy-to-read 12" diagonal CRT
- DEC VT-52™ compatible

Powerful Heathkit H19 "Smart" Video Terminal for a multitude of high-speed functions

The H19 Video Terminal is a top-of-the-line general-purpose peripheral designed for use with the Heathkit H8 and H11A computers or with any EIA RS-232 Standard interface. Its powerful Z80 microprocessor makes it ideal for high-speed data handling.

The typewriter format lets you start right in programming from the keyboard. The terminal's 32 separate functions can be controlled from keyboard or computer. A 12-key numeric pad in calculator format makes entry of arithmetic programs fast and easy. Baud rates of up to 9,600 are keyboard selectable for easy changes. Eight user-function keys give you an extra measure of flexibility. The H19 prints the entire ASCII character set, including upper and

lower case letters. The print format is 24 lines by 80 characters (with software controlled 25th line). Addressable blinking cursor lets you make corrections or edit anywhere on the screen. Reverse video lets you emphasize any portion of the screen by reversing white on black.

The big 12" diagonal CRT has outstanding resolution for a bright, clear readout. The terminal also displays 33 different graphic characters that can be arranged for a variety of graphic displays and effects.

Kit H19, Shpg. wt. 49 lbs. \$695.00
Factory Assembled and Tested Version of above.
WH19, Shpg. wt. 43 lbs. \$995.00

H19 SPECIFICATIONS: CRT: 12" Diagonal, P4 phosphor. Display Size: 6 1/2" high x 8 1/2" wide. Character Size: 0.2" high x 0.1" wide (approx.). Character Set: 128 characters (95 ASCII and 33 graphic). Character Type: 5x7 dot matrix (upper case), 5x9 dot matrix (lower case with descenders). Keyboard: 80 keys (60 alphanumeric, 12 function) plus a 12-key numeric pad. Cursor: Blinking, non-destructive underline. Cursor Controls: Up, down, left, right, home, CR, LF and tab. Cursor Addressing: relative and direct. Tab: standard 8-column tab. Refresh Rate: 60 Hz. Erase Functions: erase page, erase to end of line, erase to end of page. Scroll: auto or line/page freeze. Bell: audible alarm on receipt of control G. Video: normal and reverse using an escape sequence. Interface: EIA RS-232C at 110 to 19,200 baud. Communications Mode: full or half duplex. Parity: even, odd, stick or none. Power: 120/240 VAC, 60/50 Hz, 45 W. Dimensions: 13" H x 17" W x 20" D.

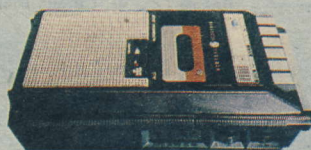


Save \$120 on H9 CRT Video Terminal and Keyboard

Displays twelve 80-character lines. Has auto-scrolling, plot and erase modes, automatic line carryover, cursor, built-in speaker. Serial interface provides EIA RS-232C levels, 20 mA current loop, TTL levels. Parallel interfacing includes TTL levels, 8 bits input, 8 bits output, 4 handshaking lines. 120/240 VAC, 60/50 Hz. 12 1/2" H x 15 3/4" W x 20 3/4" D.

Kit H9, 50 lbs. Was \$499.00, Now \$379.00
Adapter Cable. Interface H9 with other devices.
WH9-1, Shpg. wt. 1 lb. \$15.00
80

Assembled Cassette Recorder/Player



Ideal for data storage

This Heath-recommended assembled Cassette Recorder/Player is ideal for data storage use with computers. Features volume and tone controls, push-button select of record, play, rewind, fast forward, stop, eject. Also has built-in 3-digit counter with reset button. Factory wired; not a kit.

ECP-3801A, Shpg. wt. 4 lbs. \$60.00
Heath-recommended high output, low noise, premium grade audio recording tape. Pack of three 30-minute blank cassettes.
ECP-3802, Shpg. wt. 1 lb. per pack \$6.00

Acoustic Modem



Ideal for any phone

Cat Modem by Novation lets your computer talk to other computers over standard telephone lines. Designed especially for the small computer, it features selectable originate and answer modes. LED display of unit status and special acoustic self-testing. Compact, powerful. Plugs directly into wall sockets. Data exchange occurs at any speed up to 30 characters per second, via standard EIA-RS-232C interface. The ideal computer communications link. Many practical and fun applications. Fully assembled.
WH13, Shpg. wt. 3 lbs. \$195.00

Printers: from low-cost matrix to letter quality font

Popular LA36 DEC Writer II provides sharp "hard copy" printout for your computer



Fully assembled!

Prepaid shipment!

\$1550⁰⁰

Sensational low price!

Fast and reliable, the H36 is an advanced technology teleprinter featuring a 7 x 7 dot matrix print head, switch selectable 10, 15 and 30 cps printing speeds. Handles variable width forms from 3" to 14⁷/₈"; adjustable left and right hand tractors half or full duplex operation; ANSI-standard multi-key rollover; typewriter-like keyboard. Prints 10 characters per inch horizontal spacing, 6 lines per inch vertical. Compatible with all Heathkit Computers and most others. With 20 mA current loop I/O, connecting cable and integral stand.

The H36 (LA36 DEC WRITER II) is shipped Motor Freight, prepaid to your nearest terminal in the Continental U.S. H36 DEC Writer II, For 120 VAC, 60 Hz **1550.00**

H36-1 Fan-fold Paper for H36. Standard 14⁷/₈" x 11" white and green, single-part, lined paper. 3200 sheets per carton. H36-1, Shpg. wt. 47 lbs. **35.00**

H36-2 EIA Interface. Provides EIA RS232-C Interface for LA36, 9-ft. cable with 25-pin data-set type connector. Required to operate H36 with H88 and H89 Computers. H36-2, Shpg. wt. 1 lb. **70.00**

H36-3 Acoustic Coupler. Provides hookup to phone lines for time-sharing. Kit H36-3, 10 lbs. **270.00**

H36-4, Ribbon Accessory, Shpg. wt. 7 lbs. **15.00**

DEC is a registered trademark of Digital Equipment Corp.

Compact, Versatile DEC Desktop Computer Teleprinter



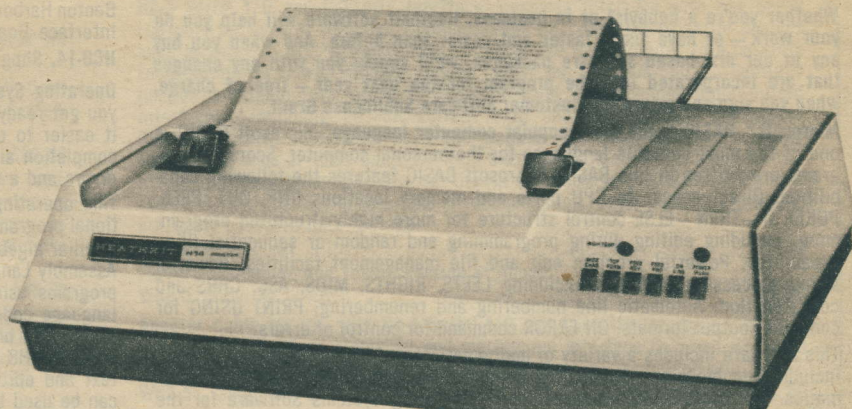
Convenient desktop design makes the LA34 ideal for office uses

Desktop teleprinter prints the full 128 character ASCII set with switch selectable 110 and 300 baud rates. Offers true 30 cps print speed, adjustable character widths, adjustable line spacing, clear printing through a 9x7 dot matrix head. Designed like a standard typewriter for operator ease and convenience, the LA34 features standard sculptured keyboard, cartridge ribbon change, automatic line feed and more. Includes EIA RS232C interface cable, ribbon and paper. 7" H x 22" W x 15¹/₂" D. 120 VAC, 60 Hz.

WH34, Assembled and tested, 40 lbs. **1295.00**

WHA34-1, 3 ribbon cartridges, wt. 7 lbs. **30.00**

WHA34-2, Tractor feed accessory. Wt. 9 lbs. **150.00**



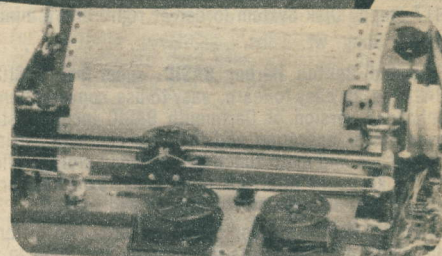
Low-cost H14 Line Printer gives you permanent copies of your programs

\$675⁰⁰ Kit

- One of the lowest-cost microprocessor-based printers
- Use with most computers

The H14 prints standard 96-character ASCII set (upper and lower case) on 5/7 dot matrix print head. Uses readily available 0.5" wide nylon inked ribbon on 2" spools. Maximum instantaneous print speed is 165 CPS with selectable line length of 80, 96 or 132 characters. 6 lines per inch spacing with 8 lines per inch software selectable. Baud rates selectable from 110-4800. Adjustable width sprocket feed handles edge-punched fan-fold paper from 2.5" to 9.5" wide.

The H14 connects to the H8 or H11A computer by the use of a standard (RS-232C) serial interface or 20 mA current loop. Handshaking is provided by a busy control signal. Includes 25-pin male EIA connector and a matching paper catch.



Get the extra features you need the most — at a price the others still can't match.

The H14 is supplied in kit form or fully assembled and factory tested. 4¹/₂" H x 18¹/₂" W x 14¹/₂" D. 120/240 VAC, 50/60 Hz. Requires H8-17, H8-18 or HC8-14 software for H8; HT-11 or H11-18 software for H11 or H11A.

Kit H14, Shpg. wt. 30 lbs. **675.00**

WH14, Assembled version of above.

Shpg. wt. 27 lbs. **895.00**

H14-1, 3200 sheets 9¹/₂" x 11" Fan-Fold Paper for use with H14. 31 lbs. **32.00**

Don't compare the Heathkit WH24/TI810 Line Printer with other, incomplete models

\$1895⁹⁵

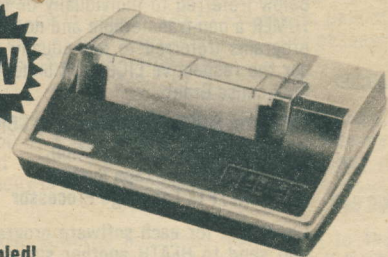
- Unlike others, our price does include upper/lower case, floor stand and paper catch tray



The WH24/Texas Instruments 810 Line Printer is a high-quality, low-priced line printer that can make an impact on both your printing and your printer costs. It has features you usually don't find at such a low price — like optimized 150 cps bidirectional printing, which minimizes printhead travel time and maximizes efficiency, and vertical and horizontal tabbing, which team with bidirectional printing to produce maximized data, regardless of format.

The WH24 has a 256-character FIFO buffer that lets you receive data at speeds from 110 to 9600 baud. Programmable forms length and a wide carriage can handle multiple-part forms, tickets and reports from 3 to 15 inches in width. And a 9 x 7 dot matrix character font prints clearer, more legible characters of an original, and up to five high-quality copies. The WH-24's adjustable tractor drives make it easier to operate. Once a form has been engaged by the

Fully Assembled!



tractor drives, alignment can be made at the main control panel.

Do not compare with incomplete units elsewhere. WH24 includes upper/lower case, floor stand, paper catch tray. 120/240 VAC. 8" H x 25³/₄" W x 20" D. Needs WHA11-5 Serial I/O Card for H11/H11A only. Not required with other Heathkit systems.

WH24, Shpg. wt. 97 lbs., Motor Frt. **1,895.00**

WHA11-5, Serial I/O Card, 1 lb. **150.00**

Accessories and software give your Heathkit

H8/H89 software gives you more ways to use your computer

Whether you're a hobbyist or in business, Heathkit software will help you do your work — or have fun — faster and easier than before. And when you buy any of our disk-based software packages, we'll supply you with any changes that are incorporated into the program for the next year — free of charge, when you sign and return the Customer Software Sublicense Grant.

Microsoft™ BASIC™: the most popular computer language. Microsoft BASIC is one of the most versatile languages for the personal computer. Scores of programs are written in this BASIC. Microsoft BASIC features the following capabilities: Direct access to CPU ports and memory locations (INP, OUT, PEEK, POKE); IF—THEN—ELSE control structure for more highly-structured programming, including editing during programming and random or sequential filing capabilities; Powerful program edit and file management facilities; Powerful string processing functions, including LEFTS, RIGHTS, MIDS, ASC, CHR\$ and concatenation; Automatic line numbering and renumbering; PRINT USING for control of output formats; ON ERROR command for control of errors.

This software includes a variety of mathematical and logical functions as well, including double precision floating point number and double precision mathematics. Microsoft BASIC requires H8-17 Operating Systems Software for the H17 Floppy Disk System (order at right) and a minimum of 32K memory.

H8-21, Shpg. wt. 3 lbs. **100.00**

Extended Benton Harbor BASIC: super-fast BASIC. Extended Benton Harbor BASIC is an easy-to-learn, easy-to-use conversational computer language. This enhanced version of Dartmouth BASIC includes strings and files. It provides even faster operation and includes character strings, additional convenience commands and math functions, dynamic storage allocation, access to real time clock, keyboard interrupt processing, expanded error messages and recovery ability, LED display control and key pad support.

Extended Benton Harbor BASIC features two different types of data: numeric data with over six digits of accuracy and Boolean values which permit logical operations. It also features free format programs, enhanced expression, math functions and conditional statement facilities.

A minimum of 12K memory is required to run Extended Benton Harbor BASIC.

16K memory is preferred if full use is to be made of its capabilities. Extended Benton Harbor BASIC supports the H14 Line Printer and the H8-4 Four-Port Serial Interface Board. The software is supplied in 1200 baud audio cassette form.

HC8-14, Shpg. wt. 13 lbs. **20.00**

Operating Systems Software Designed Especially for the H8 Computer. Helps you get ready to program your H8 quickly and easily, with features that make it easier to use and more practical than other systems. Automatic command completion simplifies typing, dynamic syntax checking instantly alerts you to errors and a special user configuration lets you personalize your system.

This operating systems software includes: Benton Harbor BASIC, a conversational programming language which makes use of simple English statements and familiar algebraic equations to perform operations and solve problems; HASL-8 Assembly Language, a two-pass absolute assembler that lets you create source programs using letters, numbers and symbols to generate efficient machine language code. It assembles the source program into a listing and an object program in binary format executable by the H8; TED-8 Text Editor, which converts the H8 Computer and terminal into a powerful typewriter for generating text and editing. It prepares the source code for H8 Assembly language and can be used to prepare reports, write letters and edit manuscripts; and BUG-8 Console Debugger, an enhanced and extended version of the front panel monitor which allows entry and debugging of user machine language programs via an external terminal. It features single or multiple stepping through programs, breakpointing, load and dump from tape storage. A user program is required to use the Console Debugger; and a full set of disk utility programs.

A minimum of 8K memory is required to run this software. This operating systems software is supplied in 1200 baud audio cassette form, which requires an H8-5 Serial I/O and Cassette Interface to load.

H8-18, Shpg. wt. 11 lbs. **20.00**

Operating Systems Software for the H17 Floppy Disk System. Includes a diskette with the standard H8 software (Extended Benton Harbor BASIC, a 2-pass absolute assembler, a text editor, a console debugger and a full set of disk utility programs. This software is supplied on a standard diskette.

H8-17, Shpg. wt. 14 lbs. **100.00**

Have hours of excitement and fun with these H8 computer games

Supplied in 1200 baud audio cassette form, requires H8-5 (opposite) to load.

Biorhythm. Plot your body's biorhythm, know when to take on the world and when to stay home. Runs under extended BASIC, requires 16K RAM.

PA-82, 1 lb. **10.00**

Space War. Guide, control and command the starship Enterprise as it travels

through the galaxy. Requires 24K RAM. **PA-83**, Shpg. wt. 1 lb. **10.00**

Game Set #1. Lets you play 8 popular computer games, including Craps, Orbit, Tic-Tac-Toe, Nim, Hexapawn, Hangman, Hamrabi and Derby. Requires 8K or more RAM. These games will provide hours of entertainment. **PA-84**, 1 lb. **10.00**

CUSTOMER SOFTWARE SUBLICENSE GRANT

HEATH COMPANY ("HEATH") for itself and on behalf of the licensors listed below (referred to individually or together as "LICENSOR") grants to CUSTOMER a non-transferable and non-exclusive sublicense to use the software programs (referred to individually or together as "SOFTWARE") listed under the respective LICENSOR under the terms and conditions stated in this Sublicense Grant.

This form MUST accompany your SOFTWARE order for:

<input type="checkbox"/> Digital Equipment Corporation	<input type="checkbox"/> HT-11 Operating System with BASIC
<input type="checkbox"/> PTSP-11 Paper Tape System	<input type="checkbox"/> HT-11-1 FORTRAN
<input type="checkbox"/> FOCAL/PTS Language Processor	<input type="checkbox"/> BASIC/PTS Language Processor

Check box for each software program purchased with this order only. Sign and send to HEATH another sublicense grant form with future SOFTWARE orders.

Write in the blank your CPU make, model and serial number:

(Fill in blank)

(If CPU is purchased with this order, HEATH will fill in the blank.)

The SOFTWARE is furnished to CUSTOMER for use on the single CPU listed above only and may be modified, or copied (with the inclusion of LICEN-

SOR's copyright notice) only for use on such CPU. The CUSTOMER shall not provide or otherwise make available the Software or any portion thereof in any form to any third party without the prior approval of LICENSOR. Title to the ownership of the Software shall at all times remain with LICENSOR. LICENSOR AND HEATH JOINTLY AND SEVERALLY DISCLAIM ALL IMPLIED WARRANTIES WITH REGARD TO THE SOFTWARE LICENSED HEREUNDER, INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS; and any stated express warranties are in lieu of all obligations or liability on the part of either LICENSOR or HEATH for damages, including but not limited to special, indirect or consequential damages arising out of or in connection with the use or performance of the Software licensed hereunder. This Sublicense Grant, the licenses granted hereunder and the SOFTWARE may not be assigned by the CUSTOMER without prior written consent from LICENSOR. No right to reprint or copy the SOFTWARE, in whole or in part, is granted hereby except as otherwise provided herein.

HEATH COMPANY

By _____

CUSTOMER

By _____

Customer's Signature

computer system more versatility than ever before

Accessories give your H8 computer more capability

Use any or all of these accessories to expand the capability of your H8 Computer and make your system even more versatile.

WH8-16 16K Wired Memory Board. This board lets you expand your H8 Computer to the full capacity of the 8080A CPU. Fully assembled and tested, and factory burned-in to eliminate memory problems.

WH8-16, Shpg. wt. 2 lbs. 395.00

WH8-8 Fully Assembled and Tested 8K Memory Board. 8K x 8 memory card, supplied with 8K of memory. Plugs directly into H8 bus. Features maximum storage capacity of 8192 8-bit words. Uses modern 4K x 1 static memory IC chips. Access time is less than 450 nS. With on-board regulators, heat sinks and full buffering. Factory assembled and tested.

WH8-8, Shpg. wt. 2 lbs. 175.00

H8-2 Parallel Interface. Use this parallel interface to connect your H8 Computer to any parallel device, such as printers which accept parallel I/O. Features three independent parallel ports, each with 8 bits input and 8 bits output, as well as universal handshaking capability. Compatible with all Heathkit software.

Kit H8-2, Shpg. wt. 3 lbs. 150.00

H8-4 Four-Port Serial Interface. The H8-4 is recommended to interface your H8 Computer and H19 CRT Terminal to the H14 Line Printer. All four serial ports support a standard RS-232C interface, including MODEM controls. One port is switch programmable for a 20 mA serial loop. Baud rate is software programmable. All ports feature solderless addressing and vector interrupt jumpers for easy setting. Also has interface connector for DCE and DTE modes. Includes one WH8-41 cable to facilitate connection to line printers, such as the Heathkit H14.

Kit H8-4, Shpg. wt. 2 lbs. 150.00

Factory Assembled and Tested Version of Above.

WH8-4, Shpg. wt. 3 lbs. 250.00

Adapter Cable for Use with H8-4 Four-Port Serial Interface. Provides EIA industry standard electrical and mechanical interface between H8-4 Four-Port Serial Interface and other peripherals.

WH8-41, Shpg. wt. 1 lb. 15.00

H8-5 Serial I/O and Cassette Interface. Cassette interface with one serial I/O port for control terminal. Connects your H8 Computer to serial devices such as the H36 DEC Writer II. Also connects the H8 Computer to a cassette recorder/player mass storage device, such as the ECP-3801A. Features jumper selectable data rate from 110-9600 baud, plus common input/output interfaces — including 20 mA current loop and EIA RS-232C compatible levels. Cassette interfaces uses the popular Byte/Manchester recording format, but runs at 1200 baud. NOTE: A second H8-5 Serial I/O and Cassette Interface cannot be used to connect the H8 Computer to the H14 Line Printer. The H8-4 Four-Port Serial Interface is recommended for H8 Computer systems not using cassette data storage.

Kit H8-5, Shpg. wt. 3 lbs. 95.00

Factory Assembled and Tested Version of Above.

WH8-5, Shpg. wt. 2 lbs. 120.00

Adapter Cable for use with H8-5 Serial I/O and Cassette Interface. Provides EIA industry standard electrical and mechanical interface between H8-5 and other peripherals. For use with H8 Computer. Factory assembled and tested.

WH8-51, Shpg. wt. 1 lb. 15.00

H8-7 Circuit Design Breadboard Card. The H8-7 lets you custom design your own analog or digital circuits for additional interfaces or creating your own memory board. This circuit design breadboard card uses solderless breadboard sockets, also provides address decoding and bus buffering. A 5 VDC power supply for logic circuits is provided on the board. Experimental circuits may be torn down easily and the H8-7 may be easily re-used — or permanent circuits may be created.

Kit H8-7, Shpg. wt. 2 lbs. 90.00

Examine the manuals first. Here's a chance to look before you buy — with no risk. The HM800 Manual Set includes complete assembly and operations manuals for the H8 Computer, H8-4 Four-Port Serial Interface, H14 Line Printer, WH8-16 16K Wired Memory Board, H19 CRT Terminal and H8-17 Operating Software. Then, deduct \$25.00 from the purchase price (not including shipping and handling charges) when you order an H8 Computer.

HM800 Manual Set, Shpg. wt. 11 lbs. 25.00

NOTE: Individual product manuals are included with each kit.

H11A accessories, software and interfaces add flexibility

Modification Kit for H11/WH11 and H11A/WH11A Computers. This special modification kit places the line time clock switch on the front panel for easier access. It's easy to assemble and includes an entirely new front panel.

Kit 830-35, Shpg. chgs. prepaid 53.50

4K Memory Expansion Module. This module plugs into the backplane of the H11 or H11A Computers. It adds 4K x 16-bit word capacity to memory. Uses high-reliability 1K x 4 static MOS RAM chips. Access time is less than 500 nS. Module contains decode circuitry for operation on 4K address boundaries, and has a handle for easy installation and removal.

Kit H11-1, Shpg. wt. 2 lbs. 135.00

Assembled and tested version of 4K Memory Expansion Module.

WH11-1, Shpg. wt. 2 lbs. 160.00

Parallel Interface. A general-purpose parallel interface featuring 16 diode-clamped latched data input lines, 16 latched output lines, 16-bit word or 8-bit byte data transfers. Has LSI-11 bus interface and control logic for interrupt processing and vectored addressing. Control status registers are compatible with PDP-11 software routines. Four control lines for output data ready, output data accepted, input data ready and input data accepted logic operations. Maximum data transfer rate, 90K words per second under program control. Maximum drive capability, 25 ft. cable. Also compatible with TTL and DTL logic devices.

Kit H11-2, Shpg. wt. 2 lbs. 100.00

Assembled and tested version of H11-2 Parallel Interface.

WH11-2, Shpg. wt. 1 lb. 160.00

Serial Interface. Universal asynchronous receiver/transmitter serial interface module for use between LSI-11 bus and serial devices, such as the Heathkit H9 Video Terminal (see page 80) and the H36 DEC Writer II (see page 81). Has an optically isolated 20 mA current loop or EIA interfaces, selectable baud rates of 50 to 9600. Plugs into H11 backplane, fully compatible with PDP 11/03 and other LSI-11 backplane machines. Supplied with all mating connectors.

Kit H11-5, Shpg. wt. 2 lbs. 115.00

Assembled and tested version of H11-5 Serial Interface.

WH11-5, Shpg. wt. 1 lb. 160.00

Adapter Cable for H11-5 Serial Interface. Provides EIA industry standard electrical and mechanical interface between H11-5 Serial Interface and other computer system peripherals. For use with H11/H11A computers. Fully assembled and tested. **WH11-51, Shpg. wt. 1 lb. 15.00**

16K Memory Module. Provides 16K dynamic MOS random access memory on a 5" x 8½" board. Has on-board refresh, cycle time of 570 nS and access time of 250 nS. Fully assembled and tested. Fully expand memory with only two of these boards! Maximum memory capacity of H11A is 30K words.

WHA11-16, Shpg. wt. 2 lbs. 480.00

32K Memory Module. Provides 32K words dynamic MOS random access memory, with same 570 nS cycle time and 250 nS access time as WHA11-16 16K Memory Module above. Fully assembled and tested. Fully expand memory with just a single board! Maximum memory capacity of H11A is 30K words.

WHA11-32, Shpg. wt. 2 lbs. 995.00

H11-6 Extended Arithmetic Chip. Adds powerful arithmetic instructions to the LSI-11, including fixed point multiply, divide and extended shifts, plus full floating point add, subtract, multiply and divide. Helps minimize arithmetic sub-routines. And the H11-6 saves memory space, too. The 40-pin dual-in-line package integrated circuit (IC) plugs into a socket on the H11/H11A board.

H11-6, Shpg. wt. 1 lb. 165.00

Look over the Manuals before you buy. Complete manuals for H11A Computer, H11-1 4K Memory Board, H11-2 Parallel Interface, H11-5 Serial Interface and H19 Video Terminal. Also includes complete software documentation. Get a first-hand look at the accurate, easy-to-follow assembly manuals that take you, step-by-step, from unpacking to final plug-in. Know your H11A Computer inside out before buying. And when you buy an H11A Computer, we'll deduct \$25.00 from the purchase price. **HM-1100 Manual Set, Shpg. wt. 12 lbs. 25.00**

HUG has over 400 exciting programs for your computer



The Heath Users' Group keeps you up to date on happenings in the Heathkit personal computing world. There's an informative magazine, a complete program library and exchange, new product information and new computing ideas — all at your disposal when you join HUG!

HUG gives you all these advantages:

- A one-year subscription to REMark, the quarterly HUG magazine
- An attractive three-ring HUG binder to hold your magazines, software documentation and other materials
- Forms to submit your own programs to HUG
- The official HUG Identification Card
- Access to the HUG Software Library, which includes over 400 user-submitted programs — including special utility routines, computer-aided instruction, financial packages, amateur radio applications programs, games and much more! See a more complete list of HUG programs below, right.

Only HUG — the Heath Users' Group — can give you all the advantages above and much, much more! HUG puts you in contact with other Heathkit computer owners. In fact, many HUG members are forming local groups to increase the benefits of belonging to HUG. These benefits include:

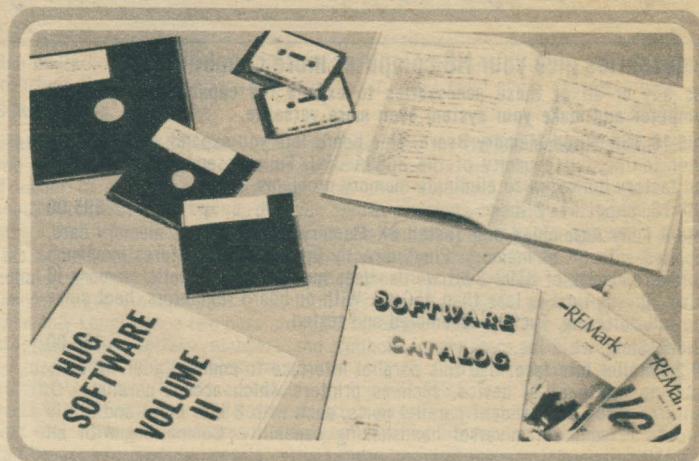
Your own one-year subscription to REMark, the quarterly magazine of HUG that updates you on the latest Heathkit computer product developments and lets HUG members share new hardware modifications, software enhancements, applications programs and other materials with other HUG members.

A three-ring, loose-leaf HUG binder loaded with information that helps you get the most from your membership in HUG, and gives you a place to store software documentation and back issues of REMark magazine, as well as other materials. HUG program submittal forms that enable you to share your unique programs with other HUG members by submitting them to the HUG Software Library.

An opportunity to compete for valuable prizes in HUG software contests.

The official HUG Identification Card, which entitles you to all of the special benefits that are available only to HUG members.

And access to the huge HUG Software Library, a constantly updated and expanded library which now has more than 400 user-submitted programs. Imagine between 30 and 80 programs on a tape for nominal reproduction and distribution cost. Software documentation and disks are also available. The HUG Software Library includes a diversified collection of programs, subroutines and procedures written by members of the Heath Users' Group. Whether you're an amateur radio buff, a businessman or just interested in playing games, you find a program for you in the HUG Software Library. The contents of the HUG Software Library, including computer-assisted instruction, business applications, personal finance programs, amateur radio programs and games, are described in the HUG Software Library Catalog, which is part of the initial HUG membership package. Each HUG Software Library program is listed by its author, program name, a short description of the program, language, version and equipment required to run the program.



If you like what you've seen of HUG so far, check out this partial list of program titles from the HUG Software Library:

- | | |
|-----------------------------|--------------------------------|
| • Accounts Receivable | • QSL File Maintenance |
| • Payroll | • Loop Antenna Designer |
| • Inventory | • Antenna Designer |
| • Tax Program | • Handy Ham Problem Solvers |
| • Declining Interest | • Power Supply Design |
| • Mortgage Tables | • Op-Amp Circuit Design |
| • Loan Amortization | • Morse Code Review |
| • Accounts Payable | • RTTY Send/Receive |
| • Real Estate Depreciation | • Solid-State Amplifier Design |
| • Small Business Package | • Weather Forecasting |
| • Home Budget Maintenance | • Disk Transfer Systems |
| • Personal Accounts Payable | • BASIC Renumbering Programs |
| • Checkbook Programs | • Create-A-Program |
| • Finance | • Interactive Data Base |
| • Credit Card Management | • Word Processor |
| • Peak Budget Demand | • 8080 Emulator |
| • Depreciation Calendar | • CHI Square Multisort |
| • Stock Reporter | • Octal/ASCII Dump |
| • Stock Market Game | • File Maintenance |
| • BASIC Tutor | • Modem Drivers |
| • Space Wars | • Pilot |
| • Star Trek | • Blackjack |
| • Biorhythms | • Football |

HUG membership application information and details are included with your Heath computer — or pick up an application at any store. H11 owners are also eligible for membership in DECUS, the Digital Equipment Computer User's Society.

COMPLETE THIS SPECIAL ORDER FORM AND BRING TO YOUR LOCAL HEATHKIT ELECTRONIC CENTER. PLEASE PRINT YOUR NAME PLAINLY IN CAPITAL LETTERS, USING A MAXIMUM 14 CHARACTERS (INCLUDING SPACES) IN THE BOXES PROVIDED BELOW.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Please enter my order for ___ GDP-1225 name plates. The price is \$2.00 for one, \$1.60 each for two or more (including postage and handling to your Heathkit Electronic Center).

Name _____
 Address _____
 City _____
 State _____ Zip Code _____

CUT OUT ENTIRE FORM ON DOTTED LINE AND ATTACH TO YOUR KIT ORDER

Personalize your kits with this Engraved Brass Name Plate



\$1.60 each for 2 or more
\$2.00 for one

Personalize each Heathkit project with one of these handsome, engraved name plates. Each is done in solid brass with brushed jeweler's finish and is self-adhesive backed for easy application. To order, simply complete form at left and give to the Heathkit Electronic Center clerk when you purchase any regular kit from this catalog.

Learn to speak your computer's language

Heathkit Self-Instruction Program for Assembly Language computing

\$49⁹⁵

- Use the full capacity of your computer system
- Execute your computer programs faster
- Store more information in less space

Assembly Language is the most powerful language that can be used on any computer. Anything that can be done in any other language on a particular computer system can be done in Assembly Language.

Assembly is a true programming language, not just a convenient notation for machine code. The use of labels, computed operands, comments and assembler directives allows the Assembly Language programmer to create a source code that is adaptable to the system and easily read. Assembly includes a mnemonic for every machine operation. There is no need for programmed memory, no time wasted in interpreting. So your programs run much faster.

You can use your computer system's memory more efficiently when you use Assembly Language. It stores more data in less space because codes are shorter and more explicit. By using computed origin statements and other assembler directives, you can make an Assembly Language program operate wherever the computer has space. The use of meaningful labels for subroutines, along with as many remarks or comments as you desire, make a program listing quite readable in Assembly Language.

One of the most important and useful requisites of a programming language is that it be flexible, not dependent upon specific addresses and hardware of the computer. In an Assembly Language program, hardware specifications can be made at the beginning of the program and referred to symbolically through the rest of the program. In this way, changes can be located together — easily.

The Heathkit Assembly Language Self-Instruction Program teaches you to program your computer in Assembly Language. You learn the details at your own pace, through a special 400-page text designed for self-study. An exercise workbook provides hands-on experience with programming exercises — you perform each exercise on your own computer system. The programmed instruction text and workbook are so thorough that you can learn to program your computer by studying the text and test questions. To perform the optional experiments, which are necessary for gaining the full benefit of the Heathkit Assembly Language Self-Instruction Program, you must have a computer and for Z80 computers (the 8080 instruction set is essentially a subset of the Z80 instruction set).

The Heathkit Assembly Language Self-Instruction Program is designed for computers using the popular 8080/8085 microprocessor series, which uses standard Intel 8080 mnemonics. This includes the Heathkit H8, H88 and H89 Computers.

Along with the programmed instruction text and workbook, the Assembly Language Program also includes a special Reference Placard, which contains all 244 assembly instructions for easy reference. The other side of the Reference Placard contains the ASCII code chart. If you decide to take the optional final examination and pass with a score of 70 percent or better, you will earn a Certificate of Achievement and 6.0 Continuing Education Units (CEUs).

With the Heathkit Assembly Language Self-Instruction Program, it's never been easier or more fun to learn the most versatile, most powerful computer language.

Now is the time to learn the computer language that puts you in command of your computer's full potential.

Stop at a Heathkit Electronic Center today and ask about the Assembly Language Self-Instruction Program.

EC-1108, Shpg. wt. 7 lbs. \$49.95



Heathkit Self-Instruction Program for BASIC Language computing

\$39⁹⁵

- BASIC — the easiest of all languages to write
- Now BASIC is one of the easiest languages to learn
- Hundreds of programs are available in BASIC

More computer programs are written in BASIC Language than any other computer language. It's the easiest computer language to write — and the easiest computer language to learn.

BASIC — uses familiar English words which cause the computer to perform standardized operations. When a number of these words are strung together to form a program, the computer performs each of the specified operations in turn to complete whatever task the operator desires.

When you know BASIC Language, you can adapt and run hundreds of existing computer programs to meet your specific needs. You can exchange computer programs with others. And you can write your own original programs.

The Heathkit BASIC Language Self-Instruction Program covers all BASIC Language versions, formats, commands, statements and procedures, plus special problem-solving tips that you can use when you write your own computer programs. In the two sections of the Heathkit BASIC Language Program, which are divided into a total of 14 easy-to-follow programmed instruction segments, you will learn all of the standardized words of the BASIC Language, and you'll understand the operation that each word causes the computer to perform. You will get a grasp upon the tools of BASIC Language computer programming, including the numbers, statements, functions, loops, lists, arrays and strings.

The Heathkit Self-Instruction Program will help you understand the importance of proper syntax in BASIC programming, and why the computer needs another program that can interpret the words it reads and perform the desired operations.

The second part of the Heathkit BASIC Language Self-Instruction Program teaches you the creative aspect of writing a computer program. Using the tools you learn in the first section, you'll participate in the decision-making factors that are part of writing a meaningful computer program, one that really does something. The Program will teach you useful computer programming techniques, such as how to define and plan a program, how to format and write a computer program in BASIC Language and how to adapt existing programs to suit your needs.

The course material includes a textbook which explains the BASIC Language, using a technique called programmed instruction. This teaching method makes sure you completely understand the information presented in the text. A special workbook provides programming instructions and experiments that you can perform on your own computer.

Also included with the Program are handy reference cards for Benton Harbor BASIC Statements, ASCII number codes, BASIC direct command statements and a reference chart for math and Boolean algebra operations.

While the BASIC program is keyed to Heathkit computers, it's equally applicable to any computer system using BASIC. And with our BASIC Language Program, a computer language has never been easier or more fun to learn.

Passing the Program's final exam (70% or better score) will earn you a Certificate of Achievement and 3.0 Continuing Education Units (CEUs).

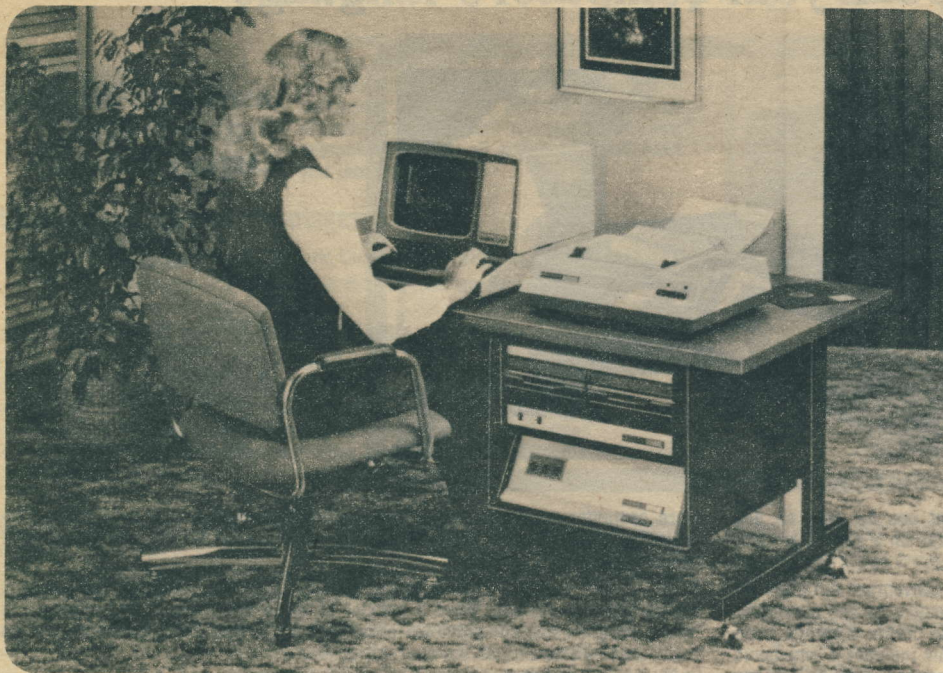
Until you know BASIC, you're missing the full selection of computer programs available to you. Begin the Heathkit BASIC Language Self-Instruction Program today.

EC-1100, Shpg. wt. 7 lbs. \$39.95

Money-Back Guarantee

The programs on this page carry a complete refund of the purchase price, if you're not satisfied.

Accessories make computing easier



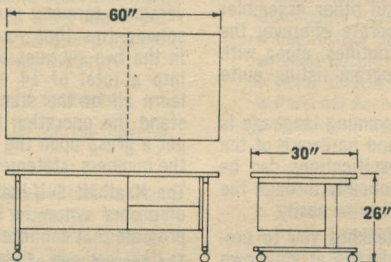
Computer Work Station organizes your computer system, adds efficiency

\$295⁰⁰

- Organizes your computer system in less space
- Components are easily accessible
- Easy-to-clean desk top
- Rugged metal construction

Heath's Computer Work Station organizes your computer system in less space — yet all components are easily accessible! Designed to Heath specifications, the 60" x 30" easy-to-clean formica desk top places I/O's at a comfortable height for seated operators. The lower shelf holds horizontal components. The upper shelf is 8½" H x 20" W x 19¼" D, while the lower shelf is 7" H x 20" W x 19¼" D.

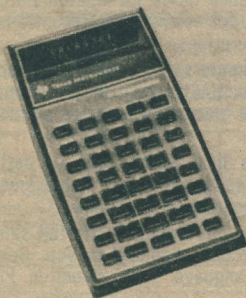
Rugged black steel legs and black sheet metal shelving are designed to last under constant use. Casters make it easy to roll the Computer Work Station from place to place, while caster locks prevent the work station — and your computer system — from rolling



away by accident. The PD-11 Computer Work Station keeps your operator comfortable and efficient — puts every one of your computer system components within easy reach — and its rugged but handsome appearance make it an attractive addition to every office environment.

PD-11, Shpg. wt. 95 lbs., Motor Frt., FOB El Segundo, CA295.00

Multi-function calculator for the computer hobbyist



- Versatile three-key independent memory for complex problems
- Special logic operation for computer applications
- Fifteen levels of parentheses for involved calculations

Designed especially for the computer hobbyist, this fully assembled Texas Instruments Programmer/Calculator features fast conversions between octal, decimal and hexadecimal number systems; logic operations; versatile 3-key independent memory and 15 levels of parentheses for complex problems; constant mode to simplify repetitive calculations; and an 8-digit LED display. Lightweight, ideal for any computer application. Rechargeable battery and AC adapter/charger are included. Factory tested. 5½" H x 3" W x 1¼" D.

PC-11, Shpg. wt. 2 lbs.59.95

Learn more about your computer system with these books



Introduction to Microprocessors, Volume I. An introduction to the basic microprocessor.
EDP-2249.50

Getting Acquainted With Microcomputers. A basic guide to what microcomputers can do.
EDP-2758.95

8080 Machine Language Programming for Beginners. A comprehensive guide to 8080 machine language programming, written for beginners.
EDP-2727.95

PDP-11 Programming Fundamentals. How to program your PDP-11 computer with Assembly language and get the most out of it.
EDP-23910.00



FORTAN IV Self-Teaching Guide. High-level computer programming in FORTRAN.
EDP-2795.95

101 Basic Computer Games. New computer game ideas — all in BASIC — fun for the entire family. Only collection containing a complete listing, sample run and description of each game.
EDP-2377.50

8080 Software Gourmet Guide and Cookbook. Interesting new ideas for your 8080A computer. Over 200 pages. General purpose routines, programming time delays, random number generators, more.
EDP-22810.95



BASIC Software Library, Vol. I. Business and recreational programs to run on your computer.
EDP-24024.95

BASIC Software Library, Vol. II. Special BASIC programs in engineering and statistics.
EDP-24124.95

BASIC Software Library, Vol. III. Advanced business programs that can cut clerical costs.
EDP-24239.95

BASIC Software Library, Vol. IV. General purpose programs with scores of applications.
EDP-2439.95

BASIC Software Library, Vol. V. Programs for the experimenter who enjoys learning.
EDP-2519.95