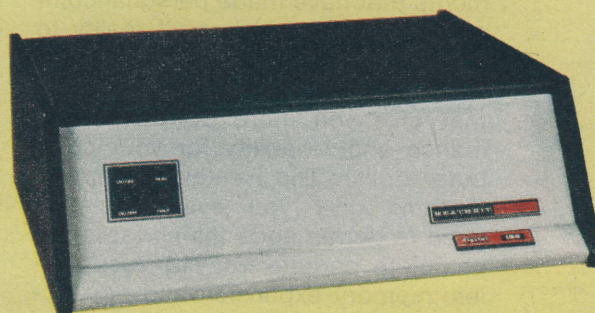# Heathkit®

FALL 1977

© 1977 Heath Company See index on page 2

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## New

### THE HEATHKIT COMPUTERS

The "total system" computer products for home, hobby, educational and business applications. With powerful software to get you up and running fast, superior documentation and service support, sensational low prices too. They're the ones you've been waiting for! See pages 2-11.

H11 16-Bit Digital Computer, pages 6-7

H10 Paper Tape Reader/Punch, page 8

H8 8-Bit Digital Computer, pages 4-5

H9 Video Terminal, page 9

## HEATHKIT MAIL ORDER CATALOG 817

## New Heath-recommended electronic products

Telephone Answerer, page 76

Electronic Chess Game, page 77

Video Recorder, page 99

Indoor Greenhouse, page 76

## New Kit Products for FALL

Active Audio Processor, page 39
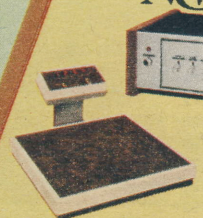
Electronic Digital Scale, page 104

FET Multimeter, page 60
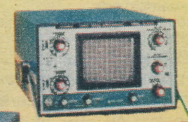
Low-Priced Oscilloscope, page 68

# handy index

# Introducing HEATHKIT

## THE NEW VALUE STANDARD IN PERSONAL WITH EXCLUSIVE HEATH—DESIGNED SOFTWARE

**Heath company** has been interested and involved in personal computing since we first marketed an analog computer system all the way back in 1957. This continuing interest, along with recent technological developments that have made personal computing systems a practical reality to the general public, has resulted in two "total design" computer systems that give you more power, performance and reliability for your computer dollar. The Heathkit computer systems give you everything you need to get up and running fast, with complete peripherals, I/O accessories, memory expansion and easy-to-use systems software, plus documentation that's the finest available anywhere.

**Total System Design!** The Heathkit computer line, both hardware and software, has been designed from the ground up to be a total computing system that meets the needs of both the beginning and advanced computer hobbyist. The two mainframes are based on performance-proven microcomputers, the 8080A and the LSI-11. These CPU's were chosen because of their world-famous performance, reliability and

efficiency, and the tremendous amount of existing software, documentation and source materials that are available. The Heath-designed CRT terminal, paper tape reader-/punch, and serial and parallel interfaces make total system setup fast and easy, and the Heath-designed software provided assures immediate usefulness and versatility.

**Superior Documentation!** Heath company is world-famous for the accuracy and clarity of its instruction manuals. The Heath computer line continues this well-deserved reputation. Assembly, operations and software manuals are written with easy-to-understand step-by-step instructions and full illustrations that leave nothing to chance or interpretation. Simply follow the instructions in the manual and you'll be up and running fast.

**Service and Support!** As in all Heathkit products, easy self-service and troubleshooting are definite benefits that can result in substantial cost-savings over the life of the product. These considerations, along with nationwide service and techni-
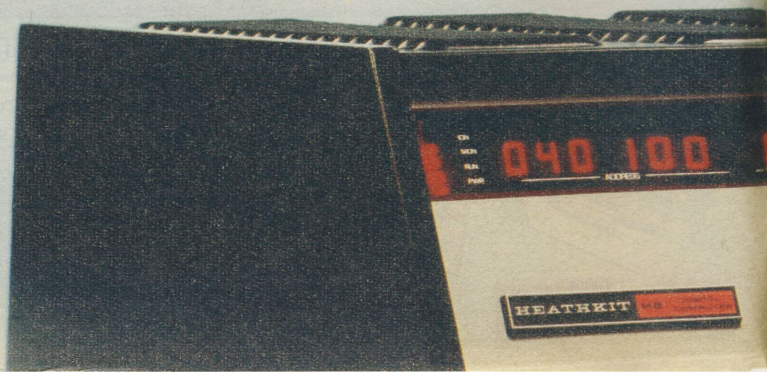
# PERSONAL COMPUTERS . . .

## COMPUTING SYSTEMS FEATURING TWO POWERFUL COMPUTERS PLUS FULL DOCUMENTATION AND SERVICE SUPPORT

cal assistance at Heathkit Electronic Centers or the Heathkit factory, mean that you have the most reliable protection for your computer investment available anywhere.

**System Versatility!** Both Heathkit computers offer full expansion potential and adaptability to meet any application. Mass storage capability is available in both audio cassette and paper tape format on the H8 and in paper tape format on the H11. Additional memory expansion boards can be added to either unit, along with an expanding number of I/O devices.

**Continuing Development.** Heath will continue to design and develop new comatible products to make their computer systems even more valuable to you. Coming in the future will

be—floppy disk storage, line printer, additional applications programs, additional memory, and self-instructional courses in programming. All Heathkit computer users are eligible for HUG™, the Heath User's Group Heathkit H11 customers are also eligible to join DECUS™, the Digital Equipment Corporation User's Society.

We're confident you'll find the Heathkit computer line one of the most intelligent, sensibly developed and complete product lines available today. It offers you total versatility and expansion capability to go wherever your imagination and programming prowess takes you. And, in the Heathkit tradition, it offers the best price/performance and reliability combination you'll find anywhere.
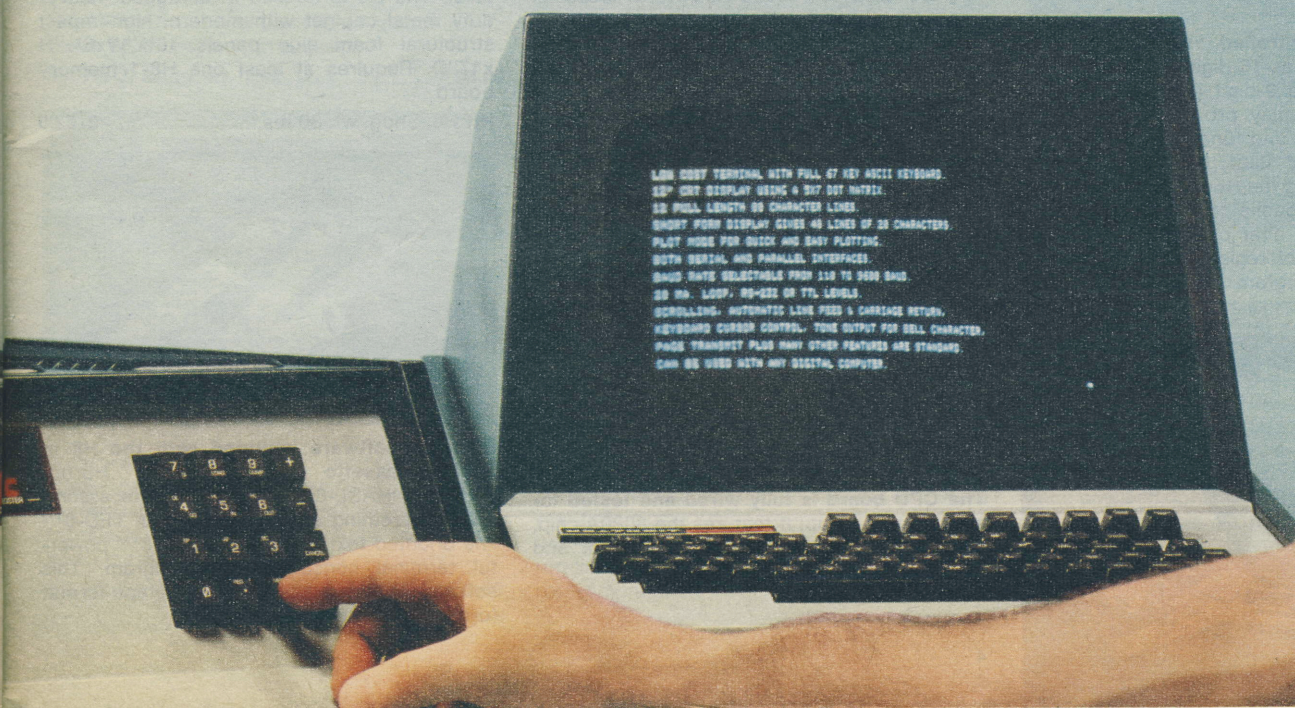
# THE HEATHKIT H8 COMPUTER

The powerful, easy-to-use hobbyist's computer with the "intelligent" front panel featuring an octal entry keyboard and digital readout—plus a fully wired and tested 8080A CPU and systems software at no extra cost!

## $375.00

## Designed with features for the Beginner and the Advanced Experimenter!

- Built-in extended ROM monitor controls front panel program
- Heavy-duty power supply handles to 32K memory
- Exclusive Heath 50-line fully-buffered bus has positions for up to 10 plug-in circuit boards
- 9-Digit front panel display has 3 readout modes
- Built-in speaker provides audible feedback for keyboard entry
- Convection cooled power supply—no fan needed
- Includes BASIC, assembler, editor and debug software

**The Heathkit H8 Computer** is a powerful 8-bit machine based on the famous 8080A chip. It's combination of unique features and low cost makes it an outstanding value among general-purpose computers on the market, and thanks to Heath's exclusive design, it's one of the most versatile.

**The interrupt-controlled "intelligent" front panel** on the H8 has 16-digit keyboard for octal data entry and 9-digit octal readout. The keyboard and display provide access to all memory, registers and functions providing far more information than conventional computers, and making the H8 an ideal trainer and learning tool. Functions of the front panel include display and alter of memory locations; display and alter of registers; dynamic monitoring during program execution; program

execution control; automatic tape load and store through a built-in routine that permits one-button program loading; and write or read any I/O port.

**The exclusive Heath-designed 50-pin bus** is fully buffered to reduce noise and crosstalk and "glitch" free to eliminate timing problems. The bus is implemented on a heavy-duty printed circuit mother board with wide, heavy copper foils for greater physical strength and reliability. The board has positions for up to 10 plug-in circuit boards that accept the CPU, memory, I/O and other accessory cards. There's plenty of room for expansion and all I/O bus connectors are supplied with the mother board so expansion is fast and easy when you want it.

**The H8's built-in power supply** is convection-cooled for adequate ventilation without noisy fans. Separate IC regulators provide distributed regulation with a heat sink on each circuit board for excellent heat dissipation. Switch-selectable 120/240 VAC, 50/60 Hz increases versatility.

**The CPU board is fully wired and tested** for easy system setup. It features the 8080A chip, clock, systems controller, ROM monitor and

full bus buffering. Seven vectored interrupts are available for quick response to I/O requests.

The H8 includes all system software in 1200 baud audio cassette format (see below for details). The H8 is housed in a rugged, heavy-duty metal cabinet with modern, high-impact structural foam side panels 16¼"W x 6½"H x 17"D. Requires at least one H8-1 memory board.

**Kit H8,** Shpg. wt. 30 lbs. ........................ **375.00**
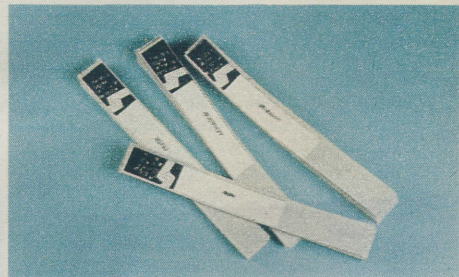
**Systems software included with the H8 in audio cassette form:** Benton Harbor BASIC™, HASL-8™ 2-pass absolute assembler for creating efficient programs; TED-8™ line oriented text editor; and BUG-8™ powerful terminal console debug program. This software is also available in paper tape format (order H8-15, next page).

# Compare these H8 power and performance features!

The Heath-exclusive 50-pin bus is implemented on a heavy-duty 10-position mother board with all I/O connectors supplied

Bus lines are fully buffered to eliminate cross-talk and "glitch-free" to prevent timing problems

Heavy-duty power supply is convection cooled to eliminate the need for noisy fans

Modular circuit boards with un-confined heat sinks to en-hance cooling and im-prove heat dis-sipation

Rugged steel chassis and securely mounted and braced circuit boards make the H8 a truly reliable and long-life machine

H8 front panel provides direct-access to registers and memory; one-button load and dump; I/O keys for direct communication with any port.

**Memory Display**

**Register Display**

**I/O Port Display**

**Status Lights indicate:**
- Power-On
- Interrupt-Enable
- Monitor
- Run

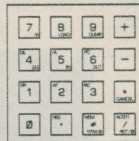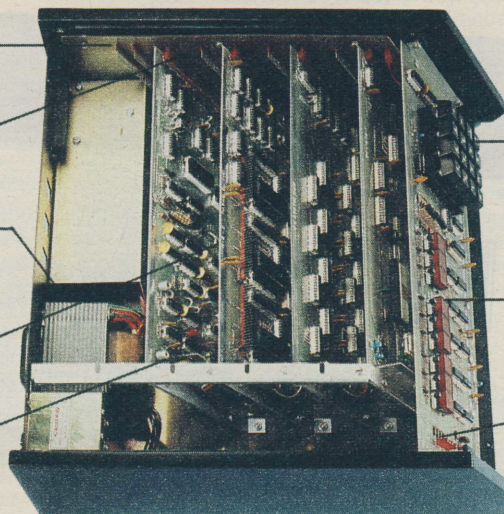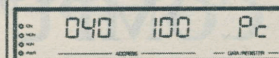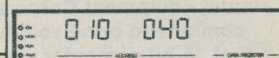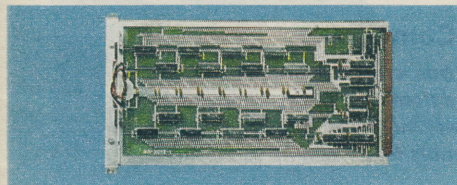Informative front panel displays are continuously updated even while program is executing giving you instant access to registers and memory for direct monitoring of program activity

## H8 Accessories, Interfaces, Software and Manual Set

**H8-1 Memory Board.** 8K Static RAM card with 4K memory plugs directly into H8 bus. Maximum capacity, 8192 8-bit words. Access time, less than 450 nS. With on-board regulators, heat sinks and full buffering.

**Kit H8-1,** Shpg. wt. 2 lbs. ...................... **140.00**

**H8-3 Chip Set.** Kit of eight IC's expands H8-1 to full 8K storage. With sockets.

**Kit H8-3,** Shpg. wt. 1 lb. ........................... **95.00**
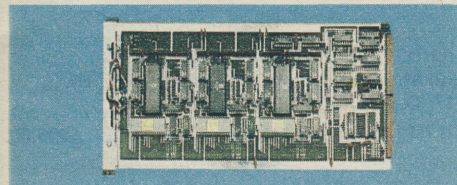
**H8-2 Parallel Interface.** Connects H8 to parallel devices such as paper tape reader/punch, line printer or your own devices. Has three independent parallel ports, each with 8 bits input and 8 bits output and universal handshaking capability. Compatible with all Heath software and peripherals, required to high-speed parallel interface the H10 paper tape reader/punch (page 8). 390 mS maximum transfer time. With diode-clamped inputs, buffered outputs and full interrupt capability.

**Kit H8-2,** Shpg. wt. 3 lbs. ...................... **150.00**
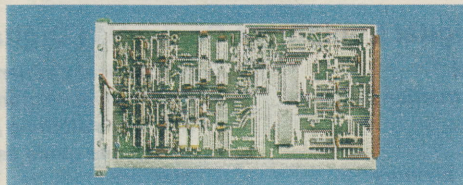
**H8-5 Serial I/O and Cassette Interface.** Connects the H8 to serial devices such as the H9 video terminal (page 9) or the H36 DEC Writer II (page 10). Features jumper selectable data rate from 110 to 9600 baud, common input/output interfaces including 20 mA current loop and EIA RS-232C compatible levels. The cassette recorder interface permits use with the Heathkit ECP-3801 cassette recorder/player (page 10). Uses the popular Byte/Manchester of "Kansas City" standard recording format. Control lines for remote start and stop of two cassette units allow separate record and playback for easy program or file editing. Also has full interrupt capability.

**Kit H8-5,** Shpg. wt. 3 lbs. ...................... **110.00**

Note: Proper operation of H8 software and H8-5 is assured only with the Heathkit ECP-3801 cassette recorder/player and ECP-3802 cassette tape. Heath is not responsible for improper operation associated with other cassette units.

**Extended Benton Harbor BASIC™.** A faster and more powerful version of the BASIC supplied with the H8. Includes character strings, additional convenience commands, math functions, dynamic storage allocation, access to real-time clock, keyboard interrupt processing and more. A minimum of 12K memory is required to run this BASIC, 16K memory is recommended.

**H8-13** (1200 baud audio casette). 1 lb. ..... **10.00**

**H8-14** (fan fold paper tape). 1 lb. ............ **10.00**

**Paper Tape Systems Software.** A paper tape version of the H8 system software. Four fanfold paper tapes, one each for Benton Harbor BASIC™, HASL-8™ assembler, TED-8™ editor and BUG-8™ debug. For H10 paper tape reader/punch (page 10) or other paper tape I/O equipment.

**H8-15,** Shpg. wt. 1 lb. ............................... **20.00**

### H8 Manual Set
### only $25

Price of manual set is refunded when you purchase an H8, simply enclose HM-800 salesslip with your order.

Here's your chance to LOOK before you buy, and with no risk! The HM-800 manual set includes the complete assembly and operations manuals for the H8 Digital Computer, H8-1 memory card, H8-2 parallel interface; H8-3 4K Expansion Chip Set; H8-5 Serial I/O and Cassette Interface; H9 Video Terminal and H10 Paper Tape Reader/Punch. The complete H8 software documentation is also included! All in handsome 3-ring binder that's handy for reference and additional information.

**HM-800,** Shpg. wt. 11 lbs. ...................... **25.00**

NOTE: Manuals are included with each kit.

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# THE HEATHKIT H11 COMPUTER

**Two of the finest names in electronics, Heath Company and Digital Equipment Corporation (DEC) combine to bring you the world's first 16-bit computer priced within reach of the general public!**

## $1295.00

## Heathkit®/Digital Equipment Corp.® H11 Digital Computer

- *Uses the performance-proven LSI-11 CPU*
- *Executes the famous 400 + PDP-11/40 Instruction Set and powerful software*
- *Fully wired and tested DEC KD11F board*
- *4096 x 16 read/write MOS semiconductor memory*
- *Mechanically superior bus with 38 high-speed lines*
- *Single-level, vectored automatic priority interrupt*
- *Efficient switching power supply with built-in cooling fan*
- *Backplane guide assembly for µP and up to six I/O and memory modules*

**The new Heath/DEC H11** personal computer combines the advanced performance-proven hardware and software of the famous LSI-11 with Heath's expertise in kit design and documentation to bring you a personal computer of almost incredible power and performance. Equivalent commercial versions of the H11 would cost literally $1000's of dollars more!

**The LSI-11 bus** has 38 high-speed lines containing data, address, control and synchronization lines. Sixteen lines are used for time multiplexing of data and addresses. All data and control lines are bidirectional, asynchronous, open-collector lines providing a maximum parallel data transfer rate of 833K words per second under direct memory access operation.

**The fully wired and tested KD11F board** contains the CPU with eight general registers which serve as accumulators, index, autoincrement/autodecrement registers or stack pointer; and a 4096x16 MOS semiconductor memory. Additional cards can be added to expand memory up to 20K in the H11 cabinet (32K words total).

**The backplane/card guide assembly** holds the microcomputer and up to six I/O and memory modules. All LSI-11 bus data, control and power connections are routed on the printed circuit backplane to each module location. The backplane/card guides are fully compatible with all standard DEC LSI-11 accessories.

**An efficient, well-designed power supply** provides the required DC voltage for the LSI-11 as well as all accessory modules. The supply features overvoltage and overcurrent/short circuit protection, power fail/automatic restart and a built-in fan for quiet cooling. The dual primary power configuration can be connected for 115 V, 60 Hz or 230 V, 50 Hz AC.

**Other features** of the H11 include single-level, vectored, automatic priority interrupt, realtime clock input, ODT/ASCII console routine/bootstrap resident in microcode. The H11 is supplied with versatile PDP-11 software (described below) which uses the famous PDP 11/40 instruction set with over 400 commands.

The H11 is housed in a rugged metal cabinet with structured foam side panels, 6½"Hx19"W x17"D. For 110/220 VAC, 50/60 Hz.
**Kit H11,** Shpg. wt. 34 lbs. ......................**1295.00**

PDP-11™ software included with the H11 consists of: ED-11 editor; PAL-11S relocatable assembler; LINK-11S link editor; Absolute Loader; ODT-11X debug program; IOX executive program; DUMP AB and DUMP R; BASIC and FOCAL™ (4K and 8K versions). The software requires a minimum of 8K memory, with 12 to 16 K total recommended for maximum capability. See software License agreement, next page.

**NOTE:** DEC, DIGITAL, FOCAL and PDP are registered trademarks of Digital Equipment Corporation.

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# H11 Accessories, Software and Manual Set
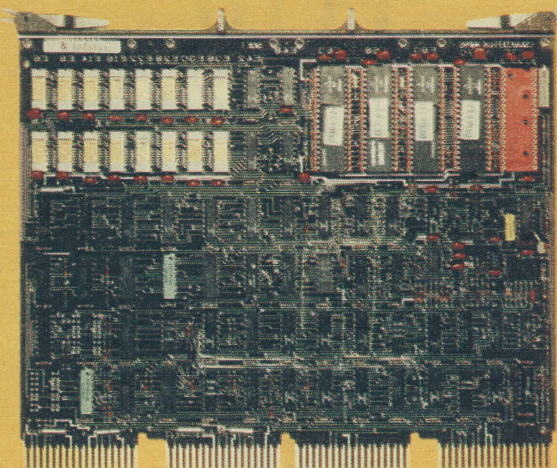


**Fully Wired and Tested KD11F Circuit Board.** The "heart" of the LSI-11 is the standard DEC LSI-11 microcomputer board. The 16-bit CPU functions are contained in 4 silicon gate N-channel MOS LSI integrated circuit chips for high reliability and superior performance. The 4096-by-16 read/write MOS semiconductor memory is composed of LSI 4K dynamic RAM chips for fast access time with low power consumption. The board is fully wired and tested to facilitate kit assembly and provide greater reliability and less chance of error.

**The compact, efficient power supply** uses less power to operate and generates less heat than conventional supplies. Has overvoltage and overcurrent/short-circuit protection, plus automatic power-up- and power-down se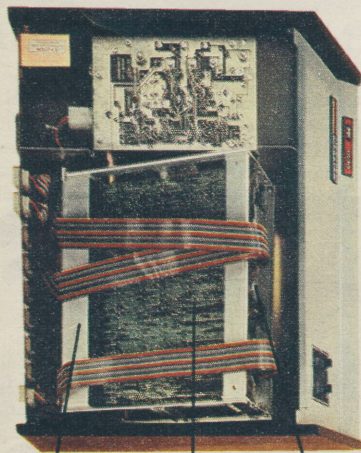quencing for high reliability and long life operation. A built-in quiet-running fan provides efficient cooling and prevents heat buildup.



Rugged steel chassis and extra-thick backplane with heavy, solid connectors for added strength.

Card cage swings up for easy access and service even when the H11 is operating.

Accessory boards slide directly into card guide and are held securely in place. All card connectors are supplied for easy expansion.
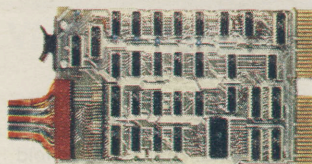


**H11-2 Parallel Interface.** Required for interfacing the H11 to the H10 Paper Tape Reader/Punch (page 8). Also for other LSI-11 backplanes. With connectors
**Kit H11-2,** Shpg. wt. 2 lbs. ........................ **95.00**
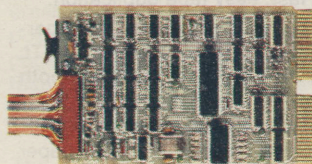


**H11-5 Serial Interface.** For use between LSI-11 bus and serial devices such as the H9 video terminal (page 9) or LA36 DEC Writer II (page 10). Includes all mating connectors. For H11, other LSI-11 backplane machines. With connectors
**Kit H11-5,** Shpg. wt. 2 lbs. ........................ **95.00**

**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 or eliminate arithmetic subroutines, speeds up program execution and eases program development. Saves memory space too. 40-pin dual inline package IC plugs into socket on KD11F board.
**H11-6,** Shpg. wt. 1 lb. ............................ **159.00**



### H11 Manual Set
### only $25

Price of manual set is refunded when you purchase an H11, simply enclose HM-1100 saleslip with your order.

Complete assembly and operations manual for H11, H11-1, H11-2, H11-5, H9, and H10. Also includes complete software documentation.
**HM-1100 Manual Set.** Shpg. wt. 12 lbs. .. 25.00

NOTE: Manuals are included with each kit.



**H11-1 4K Memory Expansion Module.** Plugs directly into H11 backplane, adds 4K x 16-bit word capacity to H11 memory. Access time, less than 500 nS. Fully compatible with PDP 11/03 and other LSI-11 backplane machines.
**Kit H11-1,** Shpg. wt. 2 lbs. ........................ **275.00**

# THE HEATHKIT
# H10
# PAPER TAPE READER/PUNCH

- **Solid-state reader with stepper motor**
- **Precise ratchet/solenoid drive for high accuracy and consistent punching**
- **Totally independent punch and reader**
- **Copy mode for easy tape duplication**
- **Heavy-Duty Built-in power supply**
- **For Heathkit H8 and H11 computers, others too**

## $350.00

**H10 Deluxe Paper Tape Reader/Punch**

**The H10 paper-tape reader/punch** is a general-purpose mass storage peripheral using reliable low-cost paper tape. It's fully compatible and styled to match the H8 and H11 computers, and it works reliably with any other computer through a parallel interface. The H10 uses standard 1" wide roll or fan-fold 8-level paper tape. Standard punched paper tape gives you the reliability, durability and trouble-free handling you need for effective mass storage of programs and data.

**The reader** reads tape up to a maximum rate of 50 characters per second. A full sensitivity adjustment on each channel permits any color, thickness, quality (oiled or unoiled) paper tape to be used. Sensitive Darlington photo transistors and an incandescent lamp reader head provide reliable reading. The powerful stepper motor drive insures accurate tape positioning and movement.

**The punch** operates up to maximum speed of 10 characters per second. Ratchet/solenoid drive and solenoid control of punches provide high-accuracy and consistent punching.

**Controls include** power on-off, read and punch start. A feed control feeds blank tape through the punch for leader tape, a copy control provides fast, easy tape duplication.

**Interfacing** is provided by separate 8-bit parallel input and output buses with standard TTL logic levels and handshaking lines for both reader and punch. A rear panel 24-pin interface connector and mating cable are supplied.

**Accessories include** holder for roll paper tape, chad collector tray and collector box for fan-fold tape, 8" roll 900 ft. blank paper tape. Cabinet with metal top and rugged steel chassis, 12-5/8"Hx9¾"Wx19-5/8"D. For 110-130 VAC, 60 Hz or 220-240 VAC, 50 Hz.
**Kit H10,** Shpg. wt. 29 lbs. ...................... **350.00**
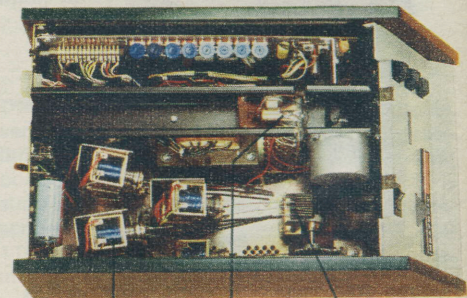
Heavy-duty solenoids for reliable, long-life operation.

Precision machined punch block for accurate, consistent punched holes.

Advanced reader design with stepper motor and solid-state sensors for accurate reading.

H10-2, Three Rolls Blank paper tape, each 8" diameter, 900-ft. min.
H10-2, Shpg. wt. 5 lbs. .............................10.00
H10-3, Three Boxes Fan-Fold Tape. Approx. 1000 ft. each.
H10-3, Shpg. wt. 5 lbs..............................10.00

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# THE HEATHKIT
# H9
## VIDEO TERMINAL

- Low-cost complete ASCII terminal
- Bright 12" CRT display for easy reading
- Short and long-form display formats
- Includes all standard serial interfaces
- Fully assembled and tested control board and wiring harness for easy assembly

## $530⁰⁰

## H9 Long and Short-Form Video Display Terminal

**The H9 video terminal** is a general-purpose peripheral designed for use with the Heathkit H8 or H11 computers. It provides keyboard input and a CRT for the convenient entry and display of computer programs and data. It can be used with any computer in dedicated stand-alone applications or in time-sharing systems.

**Character format** is standard upper case 5x7 dot matrix. The long form display is twelve 80-character lines. The short form display is forty-eight 20-character lines in four 12-line columns. An automatic line carry over feature executes line feed and return when line exceeds character count on both long and short-form displays. A built-in oscillator/speaker generates a 4800 Hz tone and serves as audible end-of-line warning.

**Auto-Scrolling** is featured in both long and short-form. In the long form, as the line enters at bottom, the top line scrolls off screen; in the short form, as the column enters from the right, the left column scrolls off screen. Auto-scrolling can be defeated with a front panel switch. The cursor mark indicates the next character to be typed for accurate positioning. Cursor controls include up, down, left, right and home. Serial data baud rates are selectable from 110–9600. Baud rate clock output and reader control are available on the rear panel connector.

**The erase mode** permits automatic full page erase or erase to end of line starting at cursor position. A transmit page function allows a full page to be formatted, edited and modified, then transmitted as a block of continuous data.

**The plot mode** permits graphs, curves and simple figures to be displayed. Plotting can be accomplished via the front panel keyboard or from external inputs.

**The H9 serial interface** provides EIA RS-232C levels, a 20 mA current loop and standard TTL levels. Parallel interfacing includes standard TTL levels, 8 bits input and 8 bits output and 4 handshaking lines for connection to H10.
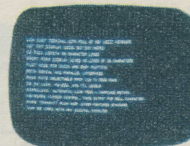
**Long-form Display—** Twelve 80-character lines

**Short-Form Display—** forty-eight 20-character lines in four columns

**Plot Mode—Curves, graphs and simple figures**

**Ultra-compact size,** only 12½"Hx15-⅝"Wx20-¾"D, makes the H9 ideal for desktop or console applications. For 110 VAC, 60 Hz or 230 VAC, 50 Hz.

**Kit H9,** Shpg. wt. 50 lbs. ...................... **530.00**

### Full ASCII 67-Key Keyboard

Function keys are positioned away from keyboard to prevent miskeying.

Standard typewriter keyboard for easy, more accurate input.

Wide, easy-to-use space bar aids accurate typing.
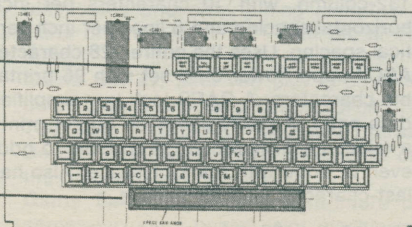
The printed circuit control board for the H9 video terminal is fully assembled and tested. to provide added reliability and simplified kit assembly. There's also a wiring harness with connectors to greatly reduce point-to-point wiring.

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**SAVE on Complete Computer Systems**

You can choose a complete computer system consisting of the H8 or H11 computer, one major peripheral, plus memory and accessories, and deduct 5% from the purchase price (excluding shipping and handling charges). Choose one of the Heath-recommended systems below (which already have the discount calculated for you), or "roll your own" with system components you select!—or choose the special HS-11 Computer system and SAVE EVEN MORE!

**H8 System One:** The minimum recommended H8 system. Includes H8 computer, one H8-1 4K memory, H8-3 4K Chip Set, H8-5 Serial I/O and Cassette Interface, H9 Video Terminal and ECP-3801 Cassette Recorder/Player. If purchased separately, **$1305.00. Heath System Price is $1239.75**

**H8 System Two:** A deluxe H8 System. Includes H8 Computer, Two H8-1 4K Memories, Two H8-3 4K Chip Sets, H8-5 Serial I/O and Cassette Interface, H9 Video Terminal, ECP-3801 Cassette Player/Recorder and H8-13 Extended BASIC in Cassette Form. If purchased separately, **$1550.00. Heath System Price is $1472.50**

**H11 System One:** The minimum recommended H11 System. Includes H11 Computer, H11-1 4K Memory (for a total of 8K memory), H11-2 Parallel Interface, H11-5 Serial Interface, H9 Video Terminal and H10 Paper Tape Reader/Punch. If purchased separately, **$2640.00. Heath System Price is $2508.00**

**H11 SPECIAL SYSTEM OFFER!** A deluxe H11 system discounted even MORE than 5% to really save you money! Consists of H11 Computer, H11-1 4K Memory (for a total of 8K memory), H11-2 Para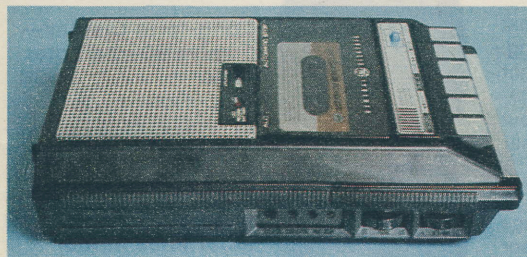llel Interface, H11-5 Serial Interface, H10 Paper Tape Reader/Punch and H36 LA36 DEC Writer II. If purchased separately, **$3605.00.**

**YOU SAVE $255!**     **Special System Price is $3350.00**

HS-11 Computer System. Shpg. wt. 78 lbs. ............................... 3350.00

## Cassette Recorder/Player Mass Storage Peripheral



Heath-recommended cassette recorder for use with H8 computer and H8-5 serial I/O and cassette interface. Provides complete mass storage capability on easy-to-handle standard cassettes. Assembled and tested, not a kit.

**ECP-3801,** Shpg. wt. 4 lbs. ................. **55.00**

Heath-recommended high output, low noise, premium-grade audio recording tape. Pack of three 30-min cassettes.

**ECP-3802,** Shpg. wt. 1 lb. .... **per pack 5.00**

NOTE: Proper operation of the H8-5 and H8 software is assured only with the use of the ECP-3801 cassette recorder/player and ECP-3802 tape. Heath does not assume responsibility for improper operation resulting from the use of other cassette units.

## LA36 DEC Writer II Keyboard Printer Terminal



**SENSATIONAL LOW MAIL-ORDER PRICE!**

**$1495.00**
Fully Assembled

The LA36 is an advanced technology tele-printer offering fast, reliable operation at one of the best price/performance ratios in the industry. It features a 7x7 dot matrix print head for crisp, clear character formation; switch selectable 10, 15 and 30 cps printing speeds; variable width forms handling from 3" to 14-7/8" wide; adjustable left and right hand tractors for precise margin positioning; half or full duplex operation; ANSI-standard multi-key rollover and a typewriter-like keyboard.

Handles up to 6-part forms with a .020" maximum pack thickness. Print format is 132-column, with 10 characters per inch horizontal spacing and 6 lines per inch vertical spacing. Uses the entire 128 character ASCII upper/lower case set with 96 printable characters. A CAPS-lock key simplifies data entry. A parity check on output prints a relacement character, strappable to odd, even or none with mark or space. Also has last-character visibility feature.

The integral 20 mA current loop interface makes the LA36 compatible with both the H8 and H11 computers, as well as most other hobby and personal computers. Operates on 90-132 VAC or 180-264 VAC for reliable performance even under brown-out conditions. With connecting cable and integral stand for easy setup. Overall size, 27½"Wx33¼"Hx 24"D.

**The H36(LA36 DEC WRITER II)** is shipped Motor Freight, prepaid to your nearest terminal within the Continental U.S. Include your phone number on order for notification of arrival. Arrangements for home delivery at extra charge at your option. NO C.O.D. ORDERS ACCEPTED.

**H36 DEC Writer II**............................ 1495.00

**H36-1 Fan-fold Paper for H36.** Standard 14-7/8"x11" white and green, single-part, lined paper. 3450 sheets per carton.

**H36-1,** Shpg. wt. 50 lbs. ...................... **30.00**

**H36-2 EIA Interface.** Provides EIA RS232-C or CCITT-V24 interface for LA36. 9-ft. cable with 25-pin data-set type connector is also supplied. (DEC designation, LAXX-KG.
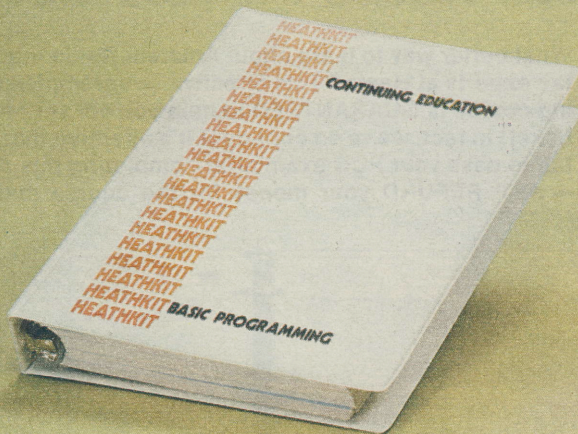
**H36-2,** Shpg. wt. 1 lb. ......................... **65.00**

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# NEW HEATHKIT SELF-INSTRUCTIONAL COMPUTER COURSES

These Heathkit self-instructional courses are designed to help you get the most from your computer investment, whether you buy your computer hardware from Heath or anywhere else. While many predeveloped software programs are available, the only way to realize the full value of your personal computer is to learn programming yourself. These courses use the PROVEN Heathkit individual learning techniques to give you a thorough understanding of programming, even if you have no prior knowledge or experience. They'll show you exactly how to make your personal computer system really personal!

## BASIC PROGRAMMING SELF-INSTRUCTIONAL COURSE

This course teaches you how to program your computer using the popular BASIC language. BASIC (Beginner's All-Purpose Symbolic Instruction Code) is essential for hobby and personal computing; it is also widely used in education and business. The course covers all formats, commands, statements and procedures plus the creative aspects of computer programming, so you can make practical use of it in solving problems and creating your own unique programs. Like other Heathkit self-instructional courses, it uses programmed instructions backed by practical hands-on computer experiments and demonstrations to reinforce and personalize the text material. An optional final exam (passing grade 70%) brings you a Certificate of Achievement and 3.0 Continuing Education Units*. While the BASIC course is keyed to Heathkit computers, it is also equally applicable to any computer system using BASIC. Available after Oct. 20th, 1977.

**EC-1100,** Shpg. wt. 6 lbs. ....................... 29.95
*Continuing Education Units (CEU's) are nationally recognized means of acknowledging participation in non-credit adult education.

## COMING SOON!

**8080 Programming:** Teaches you the machine and assembly language used with 8080-based computers. Shows you how to use the editor, assembler and debug software to create efficient programs. Ideal for the H8 and other 8080A based machines. Coming soon.

**LSI-11 Programming:** Shows you how to use editor, assembler, linker, debug and executive I/O software to create efficient programs. Applicable to H11 and most other Digital Equipment Corporation PDP-11 series computers. Coming soon.

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**COMING IN OCTOBER! MICROPROCESSOR SELF-INSTRUCTIONAL COURSE**

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## Applications Software—Coming Soon!

These complete software programs will make your H8 and H11 computers even more interesting and useful. Watch for them in future catalogs!

**Blackjack.** Interactive program allows four players to play blackjack on the computer. The computer performs all the functions of the dealer and keeps track of player's progress, wins and losses. Requires 16K of RAM in the H8 and 8K in the H11.

**Biorhythm.** Computes standard biorhythm information and plots sinusoidal curves of your physical, emotional and intellectual characteristics over a given period of time. Requires 16K of RAM in the H8 and 8K of RAM in the H11.

**Startrek.** Probably the most popular computer game around. Lets you guide, control and command the Starship Enterprise in its travels through the galaxy. A truly challenging, sophisticated and entertaining computer game. Runs on the H8 or H11 with 8K or RAM or more.

**Game Set #1.** Lets you play 8 popular computer games including Craps, Orbit, Tic-Tac-Toe, Nim, Hexapawn, Hangman, Hmrabi, and Derby. 8K RAM or more is required on both the H8 and the H11.

**Game Set #2.** Contains eight more popular games including bagles, slot machine, gomoko, yahtze, apollo, gunner, wumpus and cube.

## COMPLETE COMPUTER LIBRARY

**Microcomputer Dictionary and Guide (Matrix).** Comprehensive source of definitions and basic information on computers and related topics. A super reference source. EDP-218 .............. 17.95

**Introduction to Microcomputers Vol. I (Osborne).** Excellent introduction to concepts. EDP-224 ........................................ 7.50

**Introduction to Microcomputers Vol. II (Osborne).** Complete descriptions of all popular microprocessors, 8080, 6800, 6502, SC/MP, Z80, F8, 2650, etc. Good reference. EDP-225 ......... 12.50

**How to Buy and Use Minicomputers and Microcomputers (Sams).** A fundamental text on operation EDP-227 .............. 9.95

**TV Typewriter Cookbook (Sams).** Good text explaining I/O terminals, interfacing, etc. EDP-226 ........................................ 9.95

**Bugbook III (E&L).** Superior reference source on 8080 interfacing and programming. Includes experiments. EDP-231 .............. 15.00

**Bugbook IIA (E & L).** Serial I/O concepts and terminal interfacing. EDP-232 .......................................................... 5.00

**8080 Programming for Logic Design (Osborne).** Programming and Using the 8080 microprocessor. EDP-229 ........................ 7.50

**8080 Software Gourmet Guide and Cookbook (Scelbi).** Excellent source for 8080 programs and subroutines. EDP-228 . 9.95

**Practical Microcomputer Programming: 8080 (Northern Technology).** Machine/Assembly programming EDP-235 .. 21.95

**6800 Programming for Logic Design (Osborne).** Programming and using the 6800 microprocessor. EDP-230 ........................ 7.50

**6800 Software Gourmet Guide and Cookbook (Scelbi).** Excellent source of commonly used 6800 programs. EDP-233 ... 9.95

**6800 Microprocessor Applications Manual (Motorola).** Comprehensive review of typical 6800 applications. EDP-244 ..... 25.00

**M6800 Program Reference Manual (Motorola).** Programming principles and examples for the 6800. EDP-245 ..................... 3.00

**Minicomputer Systems: Organization and Programming (Prentice-Hall).** Emphasis on the PDP-11. EDP-238 ......... 17.95

**PDP-11 Programming (Algonquin).** A programmed instruction text teaching operation and programming. EDP-239 .............. 5.00

**The Minicomputer in the Laboratory (Wiley).** Operation, programming and applications of PDP-11 computers. EDP-246.. 19.50

**Assembly Level Programming (Lexington).** Good basic book on assembly language programming. EDP-236 .................... 14.95

**101 BASIC Computer Games (DEC).** A classic. Have fun with your computer. EDP-237 ................................................. 7.50

**BASIC Software Library, Vol. I.** Complete lists of BASIC applications, bookkeeping games, pictures (graphics). EDP-240 ..... 24.95

**BASIC Software Library, Vol. II.** Math, engineering, plotting and statistical programs in BASIC. EDP-241 ............................. 24.95

**BASIC Software Library, Vol. III.** Advanced business applications programs in BASIC. EDP-242 ................................. 39.95

**BASIC Software Library, Vol. IV.** Games and business applications programs in BASIC. EDP-243 ................................. 24.95

**BASIC Software Library, Vol. V.** Games, graphics, and useful math programs in BASIC. EDP-251 ................................. 9.95

See page 52 for book ordering information

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