# Heathkit

VOLUME 223      WINTER 1991

*Precision beam antenna rotation is automatic with Heath's IntelliRotor*

*Exciting Home Automation Catalog inside!*

Heath HD-1780    IntelliRotor

36°N 13°E JM66 57
1:02:32 AM 5011 mi

# Contents

**Ordering Information**
*Order by phone toll-free, 24 hours a day, seven days a week; by mail or by fax. Use Heath Revolving Charge, VISA, MasterCard or American Express. For more information see the center insert in the new Home Automation Catalog.*

**Home Automation**
*Turn to the center of the Heathkit Catalog for the best in home control products.*
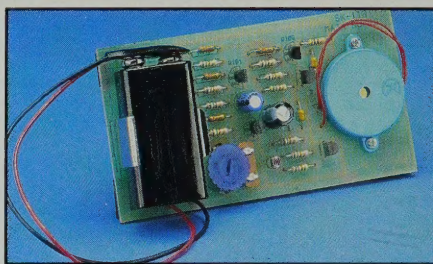


## Build the electronic cricket for family fun

**SKILL LEVEL 1** Here's an unusual house pet that guarantees fun for the whole family. With the Heathkit Cricket, the game of "hide and seek" takes on a new meaning. Hide the Cricket anywhere in the house, then turn off the lights. Your pet chirps when the room is dark and becomes silent when you turn the lights on.

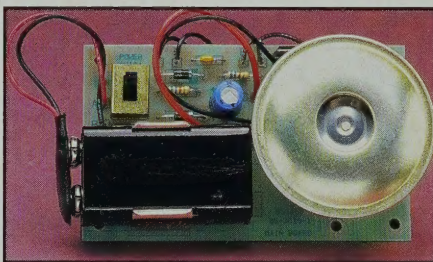Why does the Cricket chirp only when it's dark? Find out for yourself by learning how a light-dependent-resistor works. Also learn that the Cricket's buzzer is a piezoelectric device that vibrates to make sound. Requires a 9-volt battery (not included).
**Kit SK-113** (1 lb.) . . . . . . . . . **$12.95**



## The metronome that never needs winding

**SKILL LEVEL 1** Beethoven had one, so did Schubert. Now you too can have your own metronome, and build it yourself. The Heathkit electronic Metronome uses a curved string of nine LEDs that flash back and forth from one end to the other. A clicking sound you can set from 40 to 240 beats per minute helps you keep your tempo perfect.

Then learn how your new metronome keeps perfect time. Find out how five major circuits all work together to count, make a clicking sound and make the LEDs light in sequence. Works with a 9-volt battery (not included).
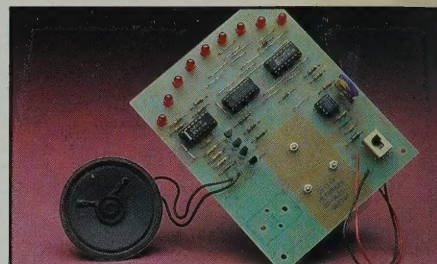**Kit SK-114** (1 lb.) . . . . . . . . . **$19.95**



## Burglar alarm keeps your belongings safe

**SKILL LEVEL 1** Be the first in your neighborhood to have your own mini alert system. Use it to protect your bedroom, tree house or even the family car. The loud squeal will send intruders running. The Heathkit manual shows you how to set up both home and car security systems, plus how to hook up a bell or the alarm buzzer externally.

Then use detective-like skills to learn exactly how your burglar alarm operates. The manual explains the silicon-controlled rectifier and why it's so important. Uses a 9-volt battery (not included).
**Kit SK-115** (1 lb.) . . . . . . . . . **$14.95**



## Electronic dice do the job for you

**SKILL LEVEL 1** Your favorite card and board games take on a new twist when you play with the Heathkit Electronic Dice. No more rolling dice the old fashioned way. Simply push a button and watch the LEDs light. In an instant, they'll produce a random combination of two of the possible eleven patterns for a game that's exciting and fun for everyone.

Plus, you'll learn about integrated circuits, LEDs, counters, clock circuits and more. Find out how they all work together to roll your dice. Uses a 9-volt battery (not included).
**Kit SK-117** (1 lb.) . . . . . . . . . **$19.95**

Cover photo – Larry Mulvehill, WB2ZPI – CQ Magazine

## Infrared motion sensor beeps as it detects movement and heat

**SKILL LEVEL** Need an automatic doorbell/security alarm for your treehouse, fort or room? Then the Infrared Motion Sensor is for you. The sensor detects movement and body heat, triggering a beeper and an LED to let you know someone is nearby.

Find out how infrared detection works, what a Fresnel lens is and how it catches and directs light. And learn how pyroelectric sensors are optical devices, much like your eyes, that detect changes in infrared energy.

You'll enjoy using the Infrared Motion Sensor long after it's built. Requires a 9-volt battery (not included).
**Kit SK-116** (1 lb.) . . . . . . . . **$24.95**



## Moving wings make this dragonfly look like it's actually flying

**SKILL LEVEL** Entertain your friends with this interesting little bug. The Heathkit Dragonfly looks like it's really flying with paper-thin wings that move without any visible mechanism. How does this happen? The wings are made of an amazing high-tech material called piezoelectric film that actually changes shape and size when voltage is applied.

Learn how piezoelectric materials, bimorphs and voltage work together to make your Dragonfly operate. A great conversation piece for kids and adults. Requires a standard 1.5-volt AA battery (not included).
**Kit SK-118** (1 lb.) . . . . . . . . . **$21.95**



## Make balloons and pictures talk with the Magical Film Speaker

**SKILL LEVEL** Amaze your family and friends with a Mylar balloon, a mirror or a picture on the wall that talks and plays music. You can use the Magical Film Speaker to liven up parties, entertain guests, perform ventriloquist acts and other exciting experiments.

Piezoelectric film is the key. Simply plug the Magical Film Speaker into your radio, tape the film to an object and listen as the film reproduces sound. You'll learn how to increase and decrease sound by bending the film, see how the film reacts to a light bulb and more! Requires a standard 9-volt battery (not included).
**Kit SK-120** (1 lb.) . . . . . . . . . **$21.95**



## Learn to solder correctly with our soldering course

This Heathkit Educational Systems course teaches you everything you need to know about soldering. You'll learn the techniques, the proper tools to use and how to clean your soldering iron.

The text is well illustrated and easy to read. Plus, you'll receive a parts pack including solder and all the parts you need to practice what you've learned.
**EI-3133** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

## *new* Save with a complete 10-piece tool set

Not everyone who begins to build kits wants to spend a fortune on tools. This complete 10-piece tool set gives you everything you need to get started in electronic kit building at one low price. The set includes a UL listed 30-watt AC soldering iron, stand, solder, heat sink, needle nose pliers, diagonal cutters, 3 screw drivers and a soldering helper tool.
**ST-100** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$15.95**

# DC power supply kit has many uses

**SKILL LEVEL 1** Power up your hobby kits, tape player or CB with the DC Power Supply. It gives you a variable output from 4 to 18 volts and supplies 3 amps 50% duty cycle or 2 amps continuous. In the included assembly manual, you'll learn the purpose of a power transformer and rectifier, filter and regulator circuits. Dimensions are 3" H x 4 1/2" W x 6 1/2" D.

1 **Kit SK-101** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . **$49.95**

# Dual-mode stereo synthesizer for more exciting TV sound

**SKILL LEVEL 1** Your favorite TV programs come to life with the dual-mode Stereo Synthesizer. This kit converts your TV's mono input into two different channels for more exciting sound and more fun TV viewing. Along with assembly instructions, the SK-107 manual explains low pass, high pass and band pass filters. Requires a 9-volt battery or the Battery Eliminator (on page 5). Optional cabinet (below right).

2 **Kit SK-107** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$19.95**

# One-watt audio amplifier increases audio output

**SKILL LEVEL 1** Here's a fun kit to use with your radio, portable tape player, intercom or TV sound system. You'll get more sound and extra listening enjoyment. A phono input and output socket on the amplifier makes hookup between your audio equipment and speaker easy. Plus, learn how to change gain and frequency response. Requires a 9-volt battery or Battery Eliminator (on page 5). Optional cabinet (below right).

3 **Kit SK-104-H** (l lb.) . . . . . . . . . . . . . . . . . . . . . **$19.95**

# Brighten your parties with the sound flasher

**SKILL LEVEL 1** Add sparkle to your next get-together with the Sound Flasher. Enjoy watching as the music and voices in the room cause lights to brighten and dim. The SK-109 assembly manual explains how AC can be converted to DC and shows how pulses control lamp brightness. Operates on 120 VAC, 60 Hz. Dimensions are 2 1/4" H x 3 1/8" W x 5 7/8" D.

4 **Kit SK-109** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$21.95**

# Pocket-size radiation monitor

**SKILL LEVEL 1** Check suspected radioactive elements with this compact, hand-held Geiger counter. The affordable RM-4 Monitor uses the sensitive, industry-standard Geiger-Mueller tube to detect and warn of low levels of radiation - even "harmless" levels. For the ultimate in accuracy, the monitor can be calibrated to a standard traceable to the National Bureau of Standards Cesium 137 Gamma source.

A flashing red LED indicates detected radiation. An audible beeper provides an additional warning. Plus, the easy-to-read meter shows measured radiation levels on three selectable ranges. Comes with zippered carrying case, belt clip and carrying strap. Requires a 9-volt battery (not included). Dimensions are 5 3/4" H x 2 7/8" W x 1 1/2" D.

5 **Kit RM-4** (2 lbs.). . . . . . . . . . . . . . . . . . . . . . . **$139.95**

# Non-abrasive jewelry cleaner, a Heathkit best seller

**SKILL LEVEL 1** Now you can use the same ultrasonic method popular with professional artisans, jewelers and coin collectors to clean and sanitize precious, delicate items. The Heathkit Ultrasonic Cleaner literally vibrates dirt, stains and undissolved solids from hard-to-clean jewelry, watch parts, glass, coins, dentures and more. All delicate items, except pearls and turquoise, are safely cleaned without abrasion. Uses ordinary laundry soap or softener for most cleaning jobs. Plugs into household AC outlet. 6" L x 4" W x 2 3/8" D.

6 **Kit GD-1151-H** (4 lbs.) . . . . . . . . . . . . . . . . . . . **$99.95**

Accessory:
**Amplifier and Synthesizer Cabinet**
Assembled SK-99 (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$6.95**
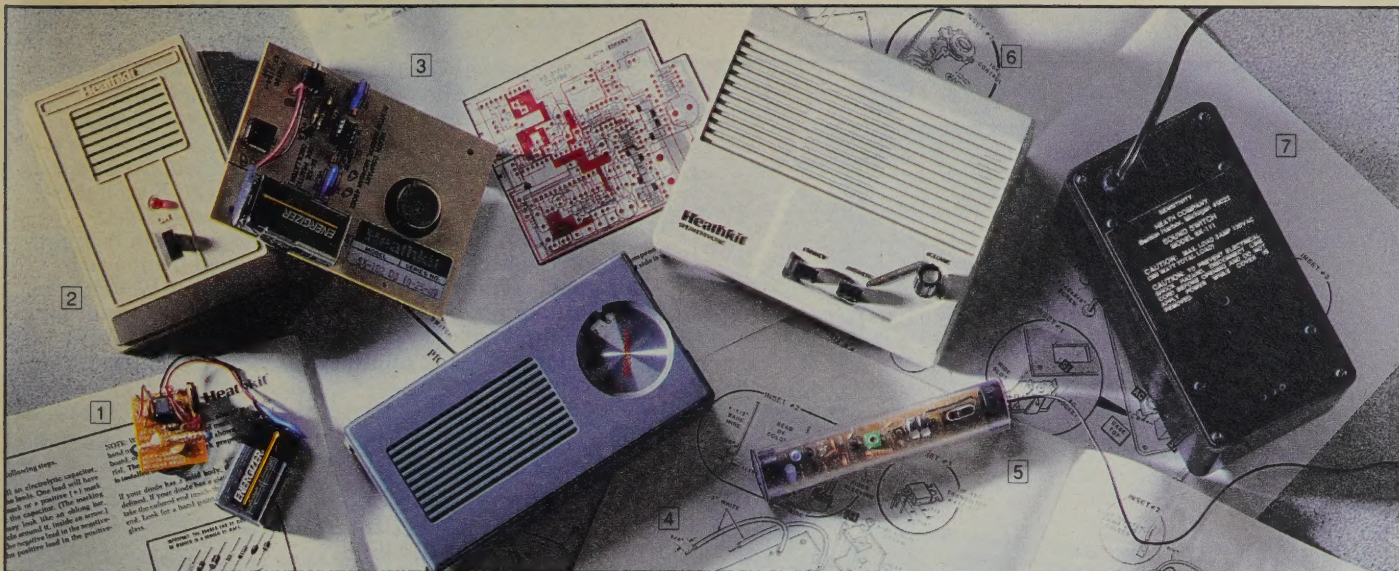
# Next time you go fishing take along the fish caller

**SKILL LEVEL 1** You'll find that it's easy to attract and catch fish with our simple-to-build Fish Caller. The Fish Caller produces a sound that travels through water to attract hungry fish to your boat or dock. You'll learn about oscillators and timing circuits, too. Requires a 9-volt battery (not included).

1 **Kit SK-105-H** (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$8.95**

# An intercom for your home

**SKILL LEVEL 1** Use the Heathkit Intercom to talk to a family member in another room without leaving what you're doing, or call someone to the phone without shouting. At least two intercoms are required, and you can link up to four units using two-conductor wire. Requires a 9-volt battery (not included) or PS-2350 Battery Eliminator (below right). Dimensions are 4 1/2" H x 3 1/4" W x 1 3/4" D.

2 **Kit SK-108** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

# The Morse code oscillator lets you practice your skills

**SKILL LEVEL 1** Learn international Morse code with this code practice oscillator. Enter code on the built-in push button or hook it up to your own keyer. Adjust the tone and volume to your liking, too. A great practice aid for beginners in amateur radio, this kit demonstrates the use of an oscillator circuit that switches voltages on and off. Requires 9-volt battery (not included) or PS-2350 Battery Eliminator (below right).

3 **Kit SK-102** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

# Portable AM radio is favorite first kit

**SKILL LEVEL 1** Enjoy quality reception with this compact AM radio. It features a high-gain antenna and a 2-in. dynamic speaker for clear, crisp sound. Use a 9-volt transistor battery (not included) or the Battery Eliminator (at right) with 120 VAC. Separate earphone supplied. 3 1/2" H x 6 3/8" W x 1 1/4" D.

4 **Kit GR-1009** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$29.95**

# Build the FM wireless microphone for hours of entertainment

**SKILL LEVEL 1** Entertain your friends or be a DJ for your own radio show with this FM Wireless Microphone kit. Transmit your voice to any FM radio up to 50 ft. away. It's a fun and easy kit you can build in a few hours. You'll learn FM radio theory, too. Operates on two watch batteries (included). Length 5".

5 **Kit SK-106-H** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$14.95**

# Keep your hands free for other tasks with the speaker phone

**SKILL LEVEL 1** Now you can continue with other activities during a telephone call. The Heathkit Speaker Phone frees both your hands while you carry on a phone conversation. You can even answer without lifting the handset from its cradle. Connect the speaker phone to the phone line by plugging it into any standard modular telephone connector. In the included assembly manual, you'll learn about rectifiers and filters, too. Includes volume, privacy and answer controls. Dimensions are 2" H x 5 3/4" L x 4 3/4" D.

6 **Kit SK-110** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$44.95**

# Control lamps from a distance with the sound activated switch

**SKILL LEVEL 1** Turn on a TV or a lamp from across the room - just by clapping your hands. The first time the switch picks up a loud sound it turns on the device. The following loud sound turns it off again. Learn about flip-flop circuits in the included assembly manual. Uses 120 VAC. Dimensions are 2 1/4" H x 3 1/8" W x 5 7/8" D.

7 **Kit SK-111** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

Accessory:
**Battery Eliminator**
Assembled PS-2350 (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$7.95**

even corrects the time lost for the WWV/WWVH signal to reach your clock. Front panel LEDs include *Capture*, *Data*, and *Hi Spec* plus three frequency indicators. *Capture* lights when the WWV/WWVH 1000-Hz tone burst is detected. *Data* flashes when BCD signals are received and *Hi Spec* lights when complete time information is displayed.

Audio announcements of the time can be monitored with built-in speakers adjusted from a rear panel volume control. Uses 120 VAC or 12 VDC. An outdoor antenna is recommended, but may not be required in your area. Assembled GCW-1000-H includes RS-232 interface for connection to your computer.

**Kit GC-1000-H** (6 lbs.) . . . . . . . . . . . . . . . . **$249.95**
**Assembled GCW-1000-H** (6 lbs.) . . . . . . . **$380.00**

Accessories:
**Computer RS-232 Interface**
Kit GCA-1000-1 (1 lb.) . . . . . . . . . . . . . . . . . **$49.95**
**Heath/Zenith Interfacing Software** Sets clock at power-up and generates a display of the GC-1000.
GCA-1000-3 (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$49.95**
**Technical Manual** Comprehensive manual includes expanded circuit description, large schematics, disassembly procedure, alignment procedure and IC data charts.
GCA-1000-4 (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$24.95**
**Outdoor Antenna** Tuned dipole antenna effective on 5, 10 and 15 MHz. Mounts on vertical mast or tower leg and includes 50 ft. of transmission cable and BNC connector.
GCA-1000-5 (4 lbs.) . . . . . . . . . . . . . . . . . . . . **$99.95**

Save $15.00 on this high-tech package. Includes GC-1000-H Most Accurate Clock and GCA-1000-4 Technical Manual.
**GCS-1000-1** (7 lbs.) . . . . . . . . . . . . . . . . . **$259.90**

© Esselte Map Service. Reproduced from the World in Maps "Earth 1990" wall calendar published by EARTHBOOKS, Incorporated, Denver, Colorado

## Know the exact time anywhere in the world with the Most Accurate Clock

Experience the precision of a microprocessor-based time piece synchronized with the National Bureau of Standard's (NBS) cesium atomic clock. The patented Heath Most Accurate Clock automatically scans for three NBS radio station frequencies (WWV/WWVH at 5, 10 and 15 MHz) and receives Binary Coded Decimal (BCD) signals to give you the hour, minute, second and tenth-of-a-second in Universal Coordinated Time (UTC).

This precision instrument displays UTC or any of the world's standard 24 time zones. A propagation delay switch

GC/GCW-1000-H Specifications: **Receiver:** AM heterodyne, single conversion with tuned RF amplifier. **Sensitivity:** 1μV or less for 10 dB s + n/n. **Audio Output:** 250 mV into 8 ohms. **Clock Accuracy:** Within ±10 mS when Hi Spec LED is on. **Reference Frequency Output:** 3.6 MHz (trimmed by inboard intelligence). **Power Requirements:** 120/240 ± 15 VAC, 50/60 Hz @ 100 mA or 11 to 16 VDC @ 750 mA (150 mA with display turned off). **Dimensions:** 3 7/8" H x 9" W x 6 1/4" D less antenna. **Operating Temperature:** 32 to 100°F (0 to 38°C).

## Digital clock with battery backup

Dependable and easy to use, this reliable digital clock is perfect for anyone just getting started in kit building. Time and date are displayed in large 4-digit, 7-segment LEDs. For comfortable reading day or night, brightness automatically varies according to surrounding light. A built-in battery backup feature keeps internal circuitry running in case of power failure, and a snooze button causes the alarm to sound at 9-minute intervals each time you press it. Attractively styled dark grey cabinet measures 2 7/8" H x 7 1/8" W x 4 3/8" D. Operates on 120/240 VAC, 50/60 Hz. Battery not included.

**Kit GC-1108** (4 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . **$29.95**

Storage tray

4" long nose pliers

Diagonal cutters

Wire strippers

Interchangeable tips

4 oz. rosin core solder

1/4" nut driver

Slotted screwdriver

Phillips screwdriver

Soldering aid tool

20-watt soldering iron

## Electronic tool kit with carrying case

This is a perfect selection of tools for the kit builder. Included are a Weller 20-watt soldering iron with two interchangeable tips, a soldering aid, a 4 oz. spool of solder, wire strippers, diagonal cutters, 4 in. needle nose pliers, 1/4 in. nut driver, and a slotted and Phillips screwdriver. These tools are contained in a durable 3" H x 10 3/4" W x 10" D carrying case with built-in handle. All tools are stored in a molded storage tray.
**Assembled GHP-1270** (2 lbs.) . . . . . . . . . . . . . . . . . **$49.95**

## Weller temperature-controlled soldering station

This lightweight soldering pencil features low voltage, 700°F closed loop temperature control for steady and fast soldering and a component-protecting grounded tip. Detachable stand contains a water reservoir.
**Assembled GDP-1108** (5 lbs.) . . . **$89.95**
Accessory:
**5 Assorted Tips** GDP-1109 (1 lb.) . **$17.95**

## Precision LUXO magnifier lamp

See the most minute details with the famous LUXO magnifier lamp - even those hard-to-see soldering connections. This precision-ground 2 to 1 magnifier provides a wide, distortion-free view of a circuit board through its polished 5 in. lens. And, an energy-conserving, 22-watt circular fluorescent bulb provides uniform and shadowless lighting. Lamp moves at a touch and stays where you put it. Arms have 45 in. total reach. Includes clamp-type mounting bracket. 120 VAC, UL approved.
**Assembled GDP-200** (7 lbs.) . . . . . . . . . **$89.95**
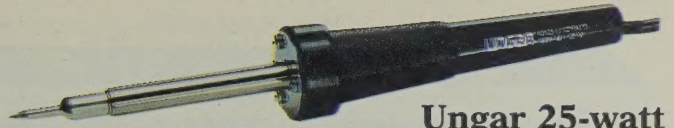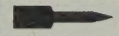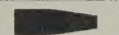
## Ungar 25-watt 700°F soldering iron

Ungar irons combine economy with performance for all types of home and work jobs. This 4 oz. unit is ideal for hobbies and delicate repairs. Its replaceable tip design accommodates the variety of accessory tips shown below. And the heat-resistant handle is molded for comfortable handling. UL listed. Iron holder included.
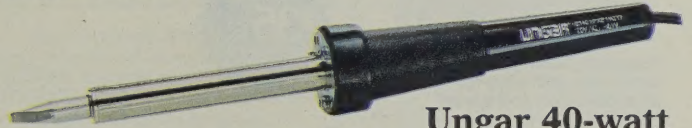**Assembled GDP-3125** (1 lb.) . . . . . . . . . . . . . . . . . . . **$9.95**

| | |
|---|---|
| | (2) pencil |
| | (2) small chisel |
| | (2) long taper chisel |

## Replacement tips

2 pencil tips, 2 small chisel tips, 2 long taper chisel tips.
**GDP-3100** (1 lb.) . . . . . . **$7.95**

## Ungar 40-watt 900°F soldering iron

This tool is essential for every work bench and tool kit. Balanced and cool to the grip, this 40-watt soldering iron is the one you'll use for bigger electrical repair, electronics, hobby and kit assembly jobs. It features a replaceable tip design to accommodate the variety of tips described above. UL listed, comes with its own holder.
**Assembled GDP-3140** (1 lb.) . . . . . . . . . . . . . . . . . **$12.95**

## The work center solution
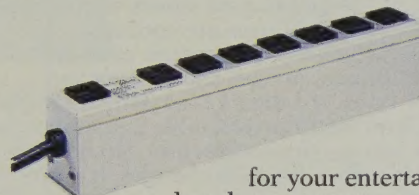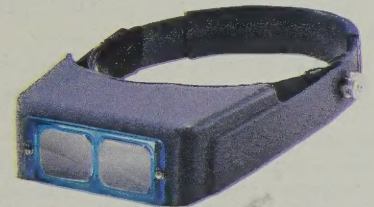
The Smart Outlet Box is perfect for your entertainment center, work bench or computer system. Simply plug the main unit into the control outlet, the other components into the remaining outlets. Power the current-sensing socket and all your equipment comes on at the same time. Surge protection, 10-amp capacity.
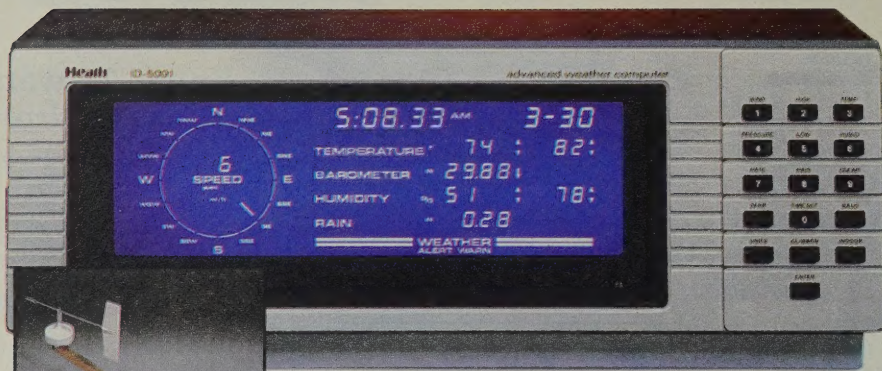**Kit GD-1495** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . **$59.95**

## Headband magnifier

This comfortably fitting magnifier with adjustable headband frees both your hands for work. Shatter and scratch resistant lenses magnify 2 1/2 times. Fits over eyeglasses.
**Assembled GDP-201** (1 lb.) . . . . . . . . . . . . . . . . . . . . **$29.95**

Overall dimensions: 5 3/4" H x 15 1/2" W x 8 3/4" D

Precision boom assembly includes wind vane and cups for measuring wind direction and speed.



Interface the ID-5001 with an IBM or compatible computer for a sophisticated weather data storage and analysis system.

# Build a professional weather computer

**SKILL LEVEL 3.** You no longer have to depend on weather reports from stations many miles away. Accurate, up-to-date information is always at your fingertips with the Advanced Weather Computer. Available ready-to-use or ready-to-build, it's an essential weather instrument for the home or professional weather center.

A striking cobalt blue, the backlit digital liquid crystal display shows wind speed in miles per hour, knots or kilometers per hour. A 16-point compass shows wind direction. Indoor and outdoor temperatures are continuously displayed in Fahrenheit or Celsius, barometric pressure in inches of mercury or millibars. Arrows show rising and falling values and their rates. A 6-digit 12- or 24-hour clock displays day and date, and features selectable automatic leap year and daylight savings time correction. No need to worry about resetting the clock for time changes, it automatically corrects itself.

Displays include minimum and maximum readings plus time and date of occurrence, wind chill temperature and fog display (with optional humidity sensors). Audible and visual Alert and Alert-Warn signals warn of severe conditions.

Note: Boom requires one of the cables listed at right. Order with your ID-5001-C or IDW-5001.

**Kit ID-5001-C** (18 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$599.95**

**Assembled IDW-5001** Includes RS-232 Interface and Humidity Sensor. 120 VAC only. (20 lbs.) . . . . . . . **$999.95**

Receive a FREE RS-232 Interface Accessory (a $49.95 value) when you purchase the ID-5001-C Weather Computer, the IDA-5001-1 Humidity Sensor and the IDA-5001-2 Rain Gauge Sensor (both above right). **Kit IDS-5001-2** (25 lbs.) . . . . . . . . . . . . . . . . . **$699.85**

*Your actual monthly payments may vary depending on your account balance.

Accessories:

**Indoor/Outdoor Relative Humidity Sensor**
Kit IDA-5001-1 (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . **$59.95**

**Rain Gauge Sensor** Kit IDA-5001-2 (3 lbs.) . . . . . . . **$39.95**

**Technical Manual** Comprehensive manual especially for the engineer includes detailed circuit descriptions, numerous signal wave forms and detailed explanation of the technology.
IDA-5001-4 (2 lbs.) Ordered separately . . . . . . . . . . . **$24.95**
Ordered with the ID-5001-C or IDW-5001 . . . . . . . . . . **$9.95**

**Advanced Weather Computer Software** Check weather conditions instantly on screen, as often as you like; you won't disrupt the program you're working on. Stores data in industry-standard file format. For IBM or compatible computers. Use Lotus, Symphony or Windows to graph and manipulate data.
IDA-5001-5 (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$49.95**

**50 ft. Cable** IDA-1290-1 (2 lbs.) . . . . . . . . . . . . . . . . . **$12.95**

**100 ft. Cable** IDA-1290-2 (4 lbs.) . . . . . . . . . . . . . . . . **$22.95**

**150 ft. Cable** IDA-1290-3 (6 lbs.) . . . . . . . . . . . . . . . . **$32.95**

Specifications: **WIND SPEED: **Gust Mode** Instantaneous peak speed. **Average Mode:** 60 second averaging. **Accuracy:** ±5% or better. **WIND DIRECTION: Gust Mode:** 1 second averaging. **Average Mode:** 60 second averaging. **Wind Mode:** 60 second averaging of displays to nearest 10°. **THERMOMETER: Temperature:** -40°C to +70°C. -40°F to +158°F. **Accuracy:** ±1 from -40°C to +70°C. ±2° from -40°F to +158°F. **BAROMETER: Pressure Range:** 28.00 to 32.00 in. Hg, 948 to 1083 millibars. **Accuracy:** 29.00 to 31.00 in. Hg. ±.25% plus ±.033%/°C(±.075 in Hg. plus ±.01 in. Hg./°C). **RAIN GAUGE: Units:** inches to 99.9, centimeters to 250, automatic decimal point adjust. **Repeatability:** ±1 count in 10 for 1-inch-per-hour rainfall. **RELATIVE HUMIDITY: Measurement Range:** 10%-90%. **Operating Range:** 0°C to 50°C (32°F to 122°F). **GENERAL:** 120/240 VAC, 50/60 Hz.

**In conformance with the National Weather Service and FAA guidelines for Wx instrumentation at supplementary aviation Wx reporting stations.

8

**Indoor/outdoor temperature in Fahrenheit and Celsius**

**Wind direction and speed in knots, mph or kmph**

**Barometric pressure in inches and millibars**

## Gather precise weather information with the Digital Weather Computer

**SKILL LEVEL 3** The Heathkit Digital Weather Computer is an indispensable addition to your home or business – anywhere you'd like to know exact weather conditions.
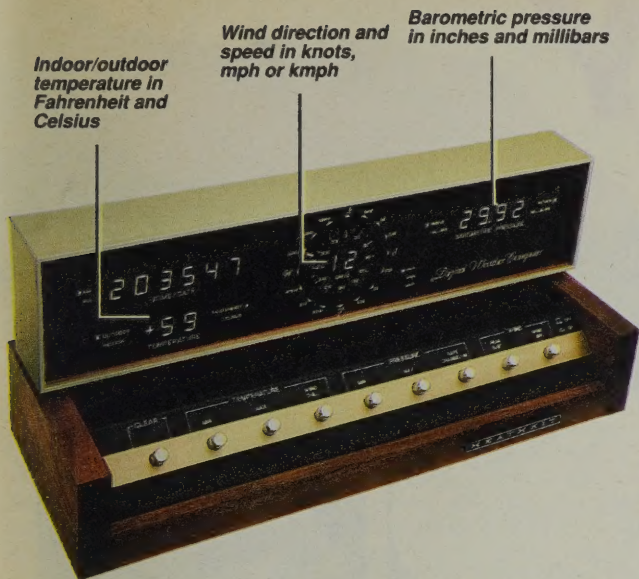
Microprocessor-controlled memory stores the high temperature for the day along with its time of occurrence, the low temperature for the night and its time of occurrence, and the time and pressure of the last high or low pressure front that moved through your area. You can also check wind direction and barometer readings to determine the weather picture for the near future. With all this information at your fingertips, you'll plan your outdoor activities with confidence.

This useful instrument features both a remote windcup and weathervane transmitter with solid-state infrared sensors which mount to a compact boom assembly. And, optical encoding technology means unsurpassed accuracy and reliability. Housed in an attractive cabinet with solid walnut trim, the Heathkit Digital Weather Computer is handsome enough to display in your home. Dimensions are 7 1/4" H x 16" W x 6" D. Requires one of the cables listed below.
**Kit ID-4001** (15 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . **$449.95**

Accessories:

**50 ft. Cable** IDA-1290-1 (2 lbs.) . . . . . . . . . . . . . . . . **$12.95**
**100 ft. Cable** IDA-1290-2 (4 lbs.) . . . . . . . . . . . . . . . . **$22.95**
**150 ft. Cable** IDA-1290-3 (6 lbs.) . . . . . . . . . . . . . . . . **$32.95**

Specifications: **DIGITAL CLOCK/4-YEAR CALENDAR: Time Accuracy:** Determined by accuracy of AC line. No accumulative error. **WIND VECTOR: Accuracy:** ±5% or better. **Direction Display: Accuracy:** ±11.25°. **THERMOMETER: Temperature Range:** -40° to 70°C; (-40° to 158°F). **Accuracy:** ±1° on Celsius readings; ±2° on Fahrenheit readings. **BAROMETER: Pressure Range:** 28.00 to 32.00 in. Hg (inches of mercury), 948 to 1083 millibars. **Basic Accuracy:** ±0.25% plus ±0.033%/°C. **Operating Temperature:** Outdoor assemblies, -40°C to +70°C (-40°F to 158°F). Indoor Unit, 15°C to 35°C (59°F to 95°F). **Power Requirements:** 120/240 VAC. Provision for external battery connection for memory backup during power failures.

## Digital thermometer is easy to read

**SKILL LEVEL 2** Accurate temperatures are easy to read with our Digital Indoor/Outdoor Thermometer. Large, orange display digits can be clearly seen at any time of day or night. In addition, two sensors allow for coninuous or alternating indoor/outdoor readings.

The 2 1/2 digit display even shows above- and below-zero temperatures in Fahrenheit or Celsius. Operates on 120 VAC, 60 Hz. Dimensions are 2 1/2" H x 7" W x 5" D.
**Kit ID-1390-B** (4 lbs.) . . . . . . **$99.95**

Specifications: **Temperature Range:** –40° to +120°F, –40° to +50°C. **Accuracy:** ±1°C from –15°C to +50°C, ±2°C from –40°C to –15°C; ±1°F from +20°F to +120°F, ±2°F from –40°F to 20°F.

## Monitor air moisture for comfort and savings

**SKILL LEVEL 2** Reduce heating and cooling costs with our Relative Humidity Instrument. It helps you determine when to turn on the humidifier indoors or to paint outdoors. You get accurate readings even in remote locations with the electronic sensors and 100 ft. transmission cable. Bright 1/2" digits display the humidity in percent for easy readability. Choose alternate indoor/outdoor readings or display one reading constantly. Dimensions are 2 1/2" H x 7" W x 5" D.
**Kit ID-2295** (6 lbs.) . . . . . . . . **$129.95**

Specifications: **Measurement Range:** 10%-90% relative humidity. **Accuracy:** 25°C, ±10 counts: 0°-55°C, ±20 counts. **Operating Temperature Range:** 0°-55°C (32°-131°F.) **Power Requirements:** 120/240 VAC, 50/60 Hz.

## Weather station

**SKILL LEVEL 2** The best-selling Heathkit Five-Function Weather Station displays indoor/outdoor temperatures in Fahrenheit or Celsius and monitors barometric pressure, wind speed and direction with professional grade sensors. Wall-mounted, dimensions are 20 1/2" L x 7" W  x 2" D; desk-mounted, with included stand, 6 3/4" D. Included anemometer/weather vane mounts to 1" to 1 1/2" diameter mast. Uses 120 VAC, 60 Hz. Requires one of the cables listed above.
**Kit ID-1290** (8 lbs.) . . . . . . . . **$199.95**

Specifications: **Wind Speed:** 0-30 mph, ±2 mph; 0-90 mph, ±5 mph. **Direction:** 8-point readout over 360°, 16-point resolution by lighting two adjacent lights. **Temperature:** 0° to +120°F, ±2°F (typ. INDOOR); -40° to +120°F (typ. OUTDOOR). **Barometric Pressure:** 28-31" of mercury within 0.5", accurate up to altitudes of 10,000'. **Operating Temperature: Receiver:** 32° to 100°F. **Transmitter:** -40° to +120°F.
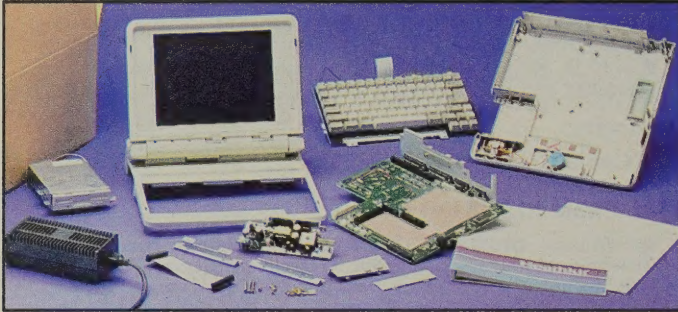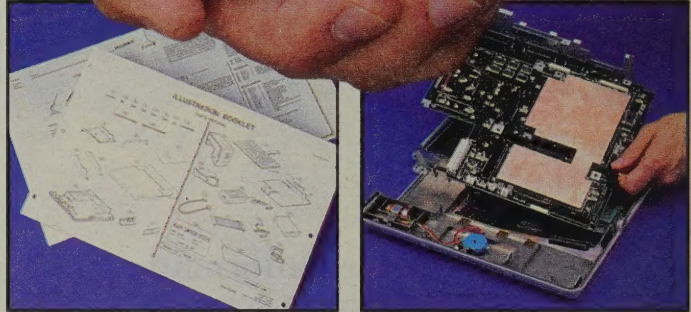
**ORDER TOLL-FREE ANYTIME**
# 800-253-0570

*FAX: 616-982-5577*

# IT'S EASY

If you can use basic tools and follow simple step-by-step instructions, then you have what it takes to assemble a Heathkit computer. Look below and see how easy it really is!
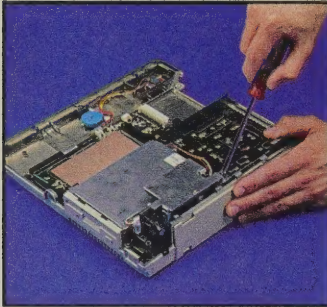
1. Everything to complete your computer kit is included in the box. All you need to supply are some everyday household tools.

2. Easy-to-read manuals and pictorials take you step-by-step through assembly.

3. Installing the motherboard, the heart of your computer, is a simple procedure.

4. Floppy drive and power supply installations take only minutes.

5. Your kit is nearly finished when you attach the keyboard.

6. Lower the cover onto your computer and assembly is complete.

7. A few simple tests will guarantee your computer works properly.

8. Your kit is finished. Amazing how easy it was to build. Now you can proudly say, "I built it myself!"

**Puzzled by computers? Let Heath help you put the pieces together.**

CALL FOR NEW LOW PRICING!

# Select the computing power you need now with Heath's HS-5100

Now you can choose a computer that gives you the power you need today while taking advantage of those shared components that result in lower cost to you – all in a kit that's easy and fun to assemble. Our new HS-5100 provides the chassis and components you need to start computing, complete with built-in VGA video, 1.4 MB floppy drive, 1 MB RAM and five-slot expandability.

Plug in a processor, whether the reliable, industry-standard 80286 or the even faster and more powerful 80386SX. Then add optional Heath floppy drives, a Winchester drive, memory or co-processors to tailor your computer to your needs. If you choose the HS-5100-A with the 80286 processor, you can upgrade later when you require more computing power. Why pay more when Heath offers this common sense way to buy exactly the computing power you need? Move up to a 286 or 386SX-based computer today with the HS-5100.

**Kit HS-5100** Includes built-in VGA video, 1.4 MB 3.5" floppy drive, 1 MB RAM, five expansion slots. Software: MS-DOS, MS Works, Diagnostix and MS Window 3.0. Specify processor board when ordering.

**Kit HS-5100-A** With 286 Processor
(40 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *Call for price!*

**Kit HS-5100-X** With 386SX Processor
(40 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *Call for price!*

Accessories:

**386SX Processor Board** To upgrade HS-5100-A.
Assembled HA-63 . . . . . . . . . . . . . . . . . . . . . . . . . . . (2 lbs.)

**286 Processor Board** Assembled HA-22 . . . . . . . . . . (1 lb.)

**3.5" 40MB 25 MS Winchester Hard Drive**
Assembled HWD-4011 . . . . . . . . . . . . . . . . . . . . . . . (3 lbs.)

**3.5" 1.4MB Disk Drive** Assembled ZD-144 . . . . . . . . (3 lbs.)

**5.25" 1.2MB Disk Drive** Assembled ZD-12 . . . . . . . . (5 lbs.)

**5.25" 360K Disk Drive** Assembled Z-207-7 . . . . . . . . (5 lbs.)

**2MB RAM** (Two 1M SIMMS) Assembled Z-605-1 . . . (1 lb.)

**80287 Numeric Co-Processor** For HS-5100-A
Assembled Z-416-2 . . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**80387SX Numeric Co-Processor** For HS-5100-X
Assembled ZA-3700-CI . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Dual-Port Video Card** Supports VGA, EGA, CGA, MDA or Hercules TTL monitors. Assembled HVB-550 . . . . . . . (1 lb.)

| SPECIFICATIONS | HS-5100 |
|---|---|
| Microprocessor | 80286 or 80386SX |
| Clock Speed | 12MHz (80286) or 16 MHz (80386SX) |
| Memory | Standard: 1 MB  Optional: 8 MB max. |
| EMS Memory | Yes |
| Floppy Disk Drive | 1.4 MB 3.5" |
| Expansion Slots | 5 |
| Video | VGA 31KHz |
| Standard Ports | VGA Video, 1 parallel, 2 serial |
| Keyboard | 101 keys |
| Co-Processor Socket | Yes |
| Clock/Calendar | Yes |
| Operating System | MS-DOS 4.0 |
| Power Supply | 115/230 VAC, 50/60 Hz, 125 W |
| Dimensions | 6 1/4" H x 14" W x 15 1/2" D |
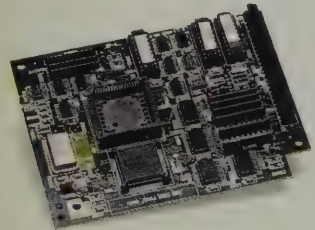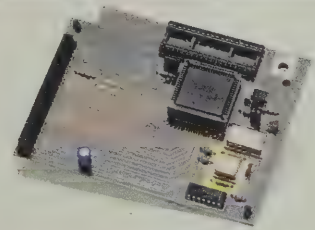
*Plug-in boards let you choose the reliable, industry-standard 286 processor or the even faster and more powerful 386SX!*

HA-63 80386SX

HA-22 80286

**For computer system discounts call 1-800-753-5454, Monday-Friday, 8:00 a.m.-4:30 p.m. E.T.**

25 MHz HS-3629 desktop computer with 3.5" floppy drive and 2 MB standard system RAM

Monitor sold separately on page 16

**40MB 28ms Winchester Hard Drive** Includes all installation cables and formats at 44MB.
Assembled HWD-4028 . . . . . . . . . . . . . . . . . . . . . . (4 lbs.)

**80MB Winchester Hard Drive** Requires Z-417-2 cable (below) to install in floppy-only models. Formats at 72MB.
Assembled ZD-800 . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Winchester Hard Drive Cable** Required for the installation of the first ZD-800 Winchester hard disk drive (described above).
Assembled Z-417-2 . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Memory Expansion Card** Holds up to 4 2MB simms.
Assembled ZA-3600-MQ . . . . . . . . . . . . (1 lb.)

**1MB Memory Expansion Simm for CPU**
Assembled ZA-3600-ME . . . . . . . . . . . . (1 lb.)

**2MB Memory Expansion Simm for ZA-3600-MQ**
Assembled ZA-3600-MG . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**80387 25 MHz Numeric Co-Processor**
Assembled ZA-3600-CI . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Weiteks 25 MHz Numeric Co-Processor**
Assembled ZA-3600-CW . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Color Video Card** Dual ports allow you to use either a VGA monitor such as our FTM on page 16, or an EGA, CGA, MDA or Hercules monitor. Automatic sensing and switching allows you to run software written for one display mode in other modes.
Assembled HVB-550 . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**Computer Upgrade Kit** Upgrades H-248, H-2526, H-386 and H-386-3 models.
Kit HUG-386-25 . . . . . . . . . . . . . . . . . . . . . . . . . . . (12 lbs.)

# HS-3629: the most powerful computer kit ever

*SKILL*

This powerhouse pulls away from any pack of PCs, bringing exceptional computing power to your desktop. Its 32-bit, 25 MHz 80386 processor has the muscle to speed through the most demanding programs.

The HS-3629-B is perfect for windowing operations, desktop publishing, software development, CAD/CAM, large spreadsheets and networking. With zero wait state technology and the ability to run most PC and AT compatible software at a swift 25 MHz, the HS-3629 specializes in high-intensity computing. Discover the ease of computing with 386 power and the simplicity of assembling this extraordinary computer yourself!

**Kit HS-3629-B** Includes 2MB RAM 16K cache memory and an HVB-550 video card. Software: MS-DOS, MS Works, Diagnostix and Windows 3.0.
(46 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . *Call for price!*

Accessories:

**3.5" 1.4MB Disk Drive** Black. Requires ZCA-14 (below).
Assembled ZD-14 . . . . . . . . . . . . . . . . . . . . . . . . . . . (3 lbs.)

**ZCA-14 Cable**
Assembled ZCA-14 . . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**5.25" 1.2MB Disk Drive**
Assembled ZD-12 . . . . . . . . . . . . . . . . . . . . . . . . . . . (5 lbs.)

**5.25" 360K Disk Drive**
Assembled Z-207-7 . . . . . . . . . . . . . . . . . . . . . . . . . . (5 lbs.)

*CALL FOR NEW LOW PRICING!*

| SPECIFICATIONS | HS-3629 |
| --- | --- |
| **Microprocessor** | 80386 |
| **Clock Speed** | 25 MHz |
| **Memory** | Standard: 2 MB  Optional: 64 MB |
| **EMS Memory** | Yes, maximum 256K |
| **Floppy Disk Drive** | 1.4 MB 3.5" |
| **Expansion Slots** | 4 |
| **Video Card** | HVB-550 |
| **Standard Ports** | 1 parallel, 2 serial |
| **Keyboard** | 101 keys |
| **Co-Processor Socket** | Yes |
| **Clock/Calendar** | Yes |
| **Operating System** | MS-DOS 3.3+ |
| **Power Supply** | 115/230 VAC, 50/60 Hz |
| **Dimensions** | 6" H x 21" W x 17" D |

**For computer system discounts call 1-800-753-5454, Monday-Friday, 8:00 a.m.-4:30 p.m. E.T.**

*Build your own 80386SX-based laptop computer in only one evening.*

*High contrast Page White display rivals desktop CRT screen quality.*

*The powerful HS-3286 weighs less than 15 lbs.*

CALL FOR NEW LOW PRICING!

# The laptop that outperforms many desktop computers

If your work requires all the power a 386 machine can deliver but often takes you out of the office, then take along the Heath SupersPort 386 SX laptop computer – the road/office solution. With its standard 3 MB system RAM and 16 MHz zero wait state clock speed, the HS-3286-A handles even the most power-hungry programs. Our kit laptop also features the highly acclaimed Page White display and a unique Power Management System that lets you allocate power when and where you need it.

In just a few hours of assembly, you'll have your laptop ready to work for you at home, at the office or on the road. The HS-3286 is the workstation that's always at your side!

**Kit HS-3286-A** Includes a 4.0 A/hr NiCd battery. Software: MS-DOS, MS Works, Diagnostix and Lap-Link. (31 lbs.) *Limited Quantities* . . . . . . . . . . . . . *Call for price!*

Accessories:

**2MB RAM Expansion Card** 2MB base memory expansion card replacement.
Assembled ZA-180-64 . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb)

**2MB RAM Expansion Card** Second or third memory expansion card configured for EMS or extended memory.
Assembled ZA-180-87 . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**80387SX Numeric Co-Processor**
Assembled ZA-3700-CI . . . . . . . . . . . . . . . . . . . . . . . . . . . . (1 lb.)

**20MB Hard Drive** Assembled HA-3286-2 . . . . . . . . . (2 lbs.)

**40MB Hard Drive** Assembled HA-3286-4 . . . . . . . . . (2 lbs.)

**5.25" External Disk Drive** Includes cable and 110 VAC adapter. Assembled ZSS-180-54 . . . . . . . . . . . . . . . . . (8 lbs.)

**3.5" External Disk Drive** Includes cable.
Assembled ZA-1-4 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . (2 lbs.)

**Numeric Keypad** Assembled ZA-180-89 . . . . . . . . . . (2 lbs.)

**Expansion Chassis** Requires ZA-180-91 (below).
Assembled ZA-3040-EB . . . . . . . . . . . . . . . . . . . . . . . . . . (5 lbs.)

**Adapter Cable** Assembled ZA-180-91 . . . . . . . . . . . . (3 lbs.)

**Fax Modem** Sends and receives faxes from your computer, also serves as a 2400 baud modem with MNP capability. (for all H-3286, H-2862 and H-2860 laptops)
Assembled HFM-9600 . . . . . . . . . . . . . . . . . . . . . . . . . (2 lbs.)

**Rapid Charge Battery** Assembled ZA-180-85 . . . . . . (3 lbs.)
**4.0 A/hr Battery** Assembled ZA-180-65 . . . . . . . . . . . (3 lbs.)
**2400 Baud Internal Modem** Assembled ZA-181-23 . (2 lbs.)
**Carrying Case** Assembled ZA-180-83 . . . . . . . . . . . . . (3 lbs.)

| SPECIFICATIONS | HS-3286 |
|---|---|
| Microprocessor | 80386SX |
| Clock Speed | 16 MHz |
| Memory | Standard: 3 MB  Optional: 8 MB |
| EMS Memory | Yes |
| Floppy Disk Drive | 1.4 MB 3.5" |
| Display | Page White, 640 x 480 |
| Standard Ports | 1 parallel,1 serial, expansion bus, 640 x 480 VGA video, external drive |
| Keyboard | Full size, 79 keys |
| Co-Processor Socket | Yes |
| Clock/Calendar | Yes |
| Operating System | MS-DOS 3.3+ |
| Power Supply/Charger | 120/240 VAC, 50/60 Hz |
| Dimensions | 3" H x 12 1/4" W x 12 1/4" D |

# Save with Heath Computer Bundles

Heath makes it easy for you to purchase the computer that's right for you and save money at the same time. Choose your computer then add the hard drive you need plus a monochrome or color monitor (on page 16). Our friendly and knowledgeable computer sales staff will answer your questions, give you the best price and take your order. Just call 1-800-753-5454 Monday-Friday, 8:00 a.m.-4:30 p.m. E.T.

HS-5100-A 286 Desktop Computer
HWD-4011 40M Hard Drive

HS-5100-A 286 Desktop Computer
HWD-4011 40M Hard Drive
ZMM-149-P Monochrome Monitor

HS-5100-A 286 Desktop Computer
HWD-4011 40M Hard Drive
ZCM-1492 FTM Monitor

HS-5100-X 386SX Desktop Computer
HWD-4011 40M Hard Drive

HS-5100-X 386SX Desktop Computer
HWD-4011 40M Hard Drive
ZMM-149P Monochrome Monitor

HS-5100-X 386SX Desktop Computer
HWD-4011 40M Hard Drive
ZCM-1492 FTM Monitor

HS-3286-A 386SX Laptop Computer
HA-3286-2 20M Hard Drive

HS-3286-A 386SX Laptop Computer
HA-3286-4 40M Hard Drive

HS-3629-B 386 Desktop Computer
HWD-4028 40M Hard Drive

HS-3629-B 386 Desktop Computer
HWD-4028 40M Hard Drive
ZMM-149-P Monochrome Monitor

HS-3629-B 386 Desktop Computer
HWD-4028 40M Hard Drive
ZCM-1492 FTM Monitor

HS-3629-B 386 Desktop Computer
ZD-800 80M Hard Drive

HS-3629-B 386 Desktop Computer
ZD-800 80M Hard Drive
ZMM-149-P Monochrome Monitor

HS-3629-B 386 Desktop Computer
ZD-800 80M Hard Drive
ZCM-1492 FTM Monitor
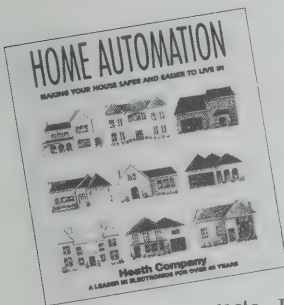
# Home Automation

## *Order your free subscription today.*

HOME AUTOMATION
MAKING YOUR HOUSE SAFER AND EASIER TO LIVE IN

Heath Company
A LEADER IN ELECTRONICS FOR OVER 60 YEARS

New from Heath! Home Automation, the exciting all-new catalog featuring the best in home control products. It's filled with ideas for simplifying your lifestyle. A whole house automation system, remote lighting and appliance controls, home security alarms, security lighting, video monitoring systems and more! Home Automation even takes you outside the house with convenience and safety systems for your lawn and car.

Every page is filled with innovative products and useful information. Even helpful notes that tell you more about home automation technology.

To make sure future Home Automation Catalogs arrive in your mailbox, simply fill in your name and address and return this card to us today. Home Automation. The catalog dedicated to making your house safer and easier to live in.

Name _____

Address _____ Apt. _____

City _____

State _____ Zip _____

494-014

# Heath Company

**Marketing Dept. 494-014**
**Benton Harbor, MI 49022**

*FREE HOME AUTOMATION CATALOG!*

Extensive software, which is included, makes this the easiest-to-use, most versatile speech synthesizer you can buy. Special terminal emulator software that enables you to add a voice to modem communications is also included. Or, for an amateur radio application, add a voice to sent and received RTTY messages using a TNC like our HK-232-B on page 34. The voice card will enable your computer to vocalize any ASCII text received through a serial port at baud rates from 150 to 38.4K. There's even an exception file for those special pronunciations.

The Computer Voice Card works on IBM PC/AT, PC/XT and compatibles. Included voice software lets you easily interface to DOS and high level languages. Speaker options can be enabled or disabled automatically at computer boot-up and/or as text is being spoken.

**Kit HV-2000** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . **$89.95**

* WordStar is a registered trademark of MicroPro International Corp.

Specifications: **SPEECH ATTRIBUTES: Modes:** 2, Immediate and Transitioned Inflection. **Number of Phonemes:** 64. **Phoneme Durations:** 4. **Speech Rates:** 16. **Inflection (Pitch) Levels:** 4096. **Transitioned Inflection Levels:** 32. **Transitioned Inflection Rates:** 8. **Musical Pitch Frequencies:** 49 (4 octaves). **Amplitude Settings:** 16. **Vocal Tract Filter Frequencies:** Over 250. **Articulation Rates:** 8. **UNIQUE WORD EXCEPTION FILE: Number of Words:** 100 Maximum. **Size of File:** 2048 bytes maximum. **ELECTRICAL: Computer Interface:** Standard 62-finger PC bus card. **Line Output:** 10k ohms. **Speaker Output:** Approximately 500 mW into 8 ohms. **Power:** 5 volts DC at 275 mA max., 12 volts DC at 10 mA (obtained from PC bus). **PHYSICAL: Size:** Half card.

## Add a voice to your computer

Give your computer a distinctive voice or voices with the Computer Voice Card. You can add vocal prompts to batch files or have your computer speak the contents of any text file, including WordStar®. The applications of this card are extensive. For example, it can make a computer easier to use for the visually impaired.

The Computer Voice Card plugs into an expansion slot and receives data off of the bus. That information is converted by a synthesizer into an audio signal and amplified. The signal is then reproduced by an included external speaker into words, sentences, sound effects or music.

## Heathkit AC Line Monitor shows what your line is doing

Keep track inexpensively of an important part of your system, the AC power line. With the Heathkit AC Line Monitor, you can monitor voltage sensitive equipment such as computers, communications gear and medical apparatus. Eight LED indicators show voltage from 95 to 130 VAC in five volt steps. Plus, a separate fault LED lights if the voltage falls below 90 VAC, and a separate spike LED lights if a voltage transient occurs. Dimensions are 3 5/8" H x 2 3/8" W x 1 1/4" D.

**Kit SK-211** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . **$29.95**
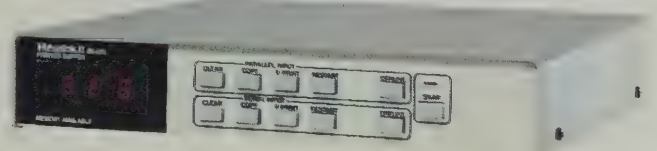
## Printer buffer saves computer time

The Heathkit Printer Buffer lets you use your computer while a document is printing. It accepts data as fast as your computer can send it with serial baud rates up to 38.4K and parallel rates to 100,000 CPS. Data is then stored in 64K of memory, equal to 21 typewritten pages and expandable to 512K. That's the equivalent of 168 typewritten pages.

Both serial and parallel ports allow you to connect more than one computer and printer. This means files can be accepted from both computers, then sent to separate printers at the same time. Or send files to your choice of printer. Priority print means you can interrupt printing, print a priority document, then reprint the interrupted document. Even print up to 99 copies of a particular file.

Through self diagnostics, the Printer Buffer checks its own memory each time you turn it on. And, to prevent memory overload, a front panel display shows remaining free memory. Operates on 108-132 VAC, 60 Hz. Dimensions are 1 1/2" H x 9 1/4" W x 8" D.

**Kit SK-203-H** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . **$169.95**
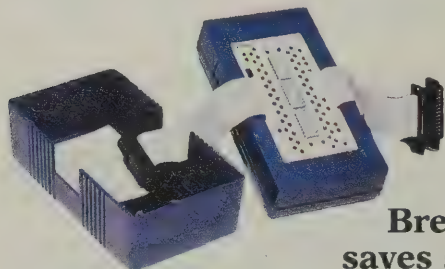
15

## Flat technology monitor makes conventional CRTs obsolete

An outstanding achievement in video display technology, the 14" Zenith Data Systems ZCM-1492 is a benchmark by which all other monitors should be judged. Its flat tension mask screen produces a brilliant image not found in conventional CRTs, and colors remain true even at high intensities. You'll enjoy dramatically improved contrast for jet blacks, more pronounced highlights and softer colors. In addition, the perfectly flat tube virtually eliminates glare, reducing eye strain. And because the screen is flat, you can take accurate measurements as well as high quality photographs directly off the screen. The ZCM-1492 is capable of resolutions up to 640 x 480 at a 31 kHz scan rate.

The monitor works with video from any computer with a 31KHz VGA video port or a HVB-550 video card. It can also display CGA, MDA/Hercules, EGA and Advanced EGA. Dimensions are 12 1/4" H x 14 3/4" W x 15" D. FCC Class B, UL and CSA approved. Uses 115/230 VAC, 50/60 Hz. Includes tilt/swivel base and cable.

**Assembled ZCM-1492** (45 lbs.) . . . . . . . . . . . . *Call for price!*

## 14"-diagonal monochrome monitor

Also from Zenith Data Systems comes this VGA compatible monochrome monitor. The page white phosphor CRT reduces eye strain commonly experienced with prolonged hours in front of a video monitor. Designed for use with any computer with a 31KHz VGA video port or a HVB-550 video card. Attached 15-pin D connector cable included. Uses 115 VAC, 60 Hz. Dimensions are 10" H x 12 3/8" W x 13" D.

**Assembled ZMM-149-P** (21 lbs.) . . . . . . . . . . . *Call for price!*

## Control a computer and peripherals from one power director

Add convenience and protection to your computer system with the Heathkit AC Conductor. Simply plug the AC line cords of your equipment into the conductor, then control the power to each from the conductor's front panel. Power switches are there in front of you, easy to control.

The AC Conductor filters line voltage and helps shield your equipment against power line spikes, thanks to a protective MOV device. A 15 amp fused line adds protection against excessive loads.
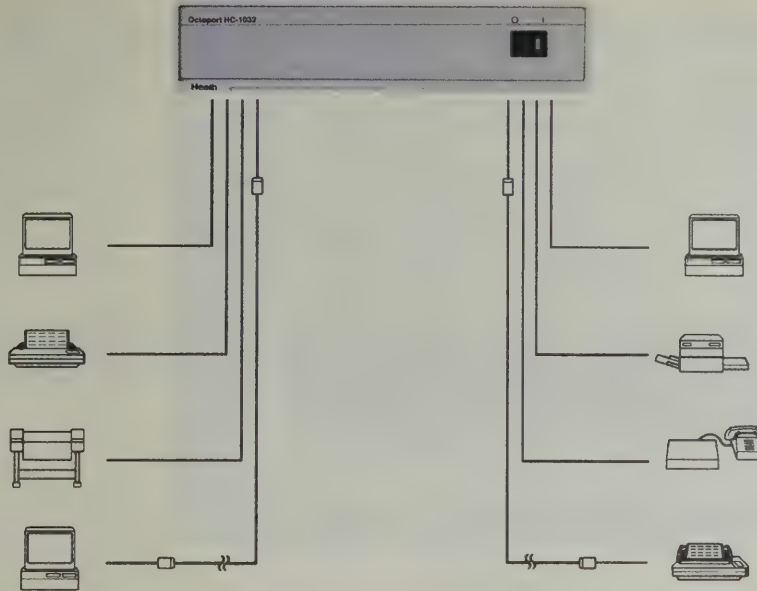
Plug up to five pieces of equipment into the conductor: computer, monitor, printer, modem, plus one more of your choice. A flip of the master switch and all five turn on. Or turn on each individually. Separate LEDs show you what's on and what's not.

An additional convenience is the turntable base. You can rotate your monitor to the most comfortable viewing angle, giving you convenience and protection without losing valuable desk space. Dimensions are 1 3/4" H x 13 1/2" W x 14" D.

**Kit SK-209** (11 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$49.95**

## Breakout box saves setup time

The Heathkit Breakout Box is a valuable time saver. It provides you with access to all 25 lines of RS-232C cable linking computer system devices. Twelve LEDs monitor key signal lines while 23 lines can be switch disabled, then cross connected. Built-in dual DTE and DCE gender connectors eliminate the need for adapter cables and connectors, and two AA batteries (not supplied) power the line monitoring LEDs, though they're not needed for the unit to operate. Five jumper wires are included. Dimensions are 2 3/8" H x 3 1/2" W x 6 1/4" L.

**Kit PMK-130-H** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$69.95**

Select the peripherals you want to use, or the computer you want to share files with, from your keyboard. Help or port configuration status information is just a keystoke away.

With Octoport's automatic parallel-to-serial, serial-to-parallel and baud rate conversion, computer and peripheral combinations are almost limitless.

Use Octoport with a DOS print spooler or printer buffer to automatically cue multiple print jobs on any connected printer.

Combine Octoport with HCA-1032-1 line extenders (sold separately below) to connect and use computers and peripherals up to 4000 ft. away!

# Octoport ends peripheral-cable swapping

**3.** Link and unlink computers and peripherals electronically with Octoport by Heath. Share a printer with others, connect your computer to a modem one minute and output to a laser printer the next, exchange files electronically between computers in your office.

This intelligent switch box makes it easy to connect and choose computer and peripheral combinations without ever flipping a switch or swapping a cable. You control and monitor Octoport completely from your computer keyboard.

Octoport has six RS-232 serial ports and two Centronics-compatible parallel ports (one output, one input or output) to integrate up to eight devices into an efficient, resource-sharing network. Peripheral combinations are almost unlimited, thanks to its automatic conversion of serial to parallel or parallel to serial, as well as baud rate conversion. With a DOS print spooler or printer buffer,

Octoport can automatically cue multiple print jobs.

An integral "mailbox" function allows users to share messages, while built-in battery-backed memory stores mailbox messages and configuration information when the unit is off or the power fails. Octoport even includes a terminal emulation program, ideal for transferring files between computers or over modems.

While it offers powerful peripheral-linking capabilities, Octoport has single-keystroke help functions that explain the use of each of its 19 built-in commands. And one-key commands let you check or save the configuration of its eight ports at any time.

Combine the Octoport with HCA-1032-1 Line Extenders (below) to use computers or peripherals up to 4000 ft. away. Dimensions are 2 1/2" H x 9 1/2" W x 8 3/4" D.

**Kit HC-1032** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . **$239.95**
**Assembled HCW-1032** (2 lbs.). . . . . . . . . . . . . . . . **$259.95**

# Line Extenders

Connect computers and peripherals over 4000 feet apart using 4 or 8-conductor wiring with Heath Line Extenders. Normally, RS-232 serial cables are limited in length to 50 ft. or less to avoid data loss. Heath Line Extenders break the 50 ft. barrier by converting data from RS-232 to RS-422 for transmission, then back to RS-232 at reception. By using differential signals, RS-422 provides much better immunity to noise than traditional RS-232 installation, extending data transmission capabilities. Two Line Extenders are required for operation. Wiring is not included.

**Assembled HCA-1032-1** (2 lbs.) . . . . . . . . . . . . *each* **$29.95**

Specifications: **Interfaces:** RS-232 and RS-422. **Baud Rates:** Up to 19,200. **Number of Circuits:** Four: 2 transmit, 2 receive. **Handshaking:** RTS/CTS or DTR/DSR; jumper selectable. **RS-232 Connector:** 9-pin D type. **RS-422 Connector:** 8-wire connector block. **Power:** 7 to 12 VDC with supplied wall cube.

SO-4552 25 MHz oscilloscope

Specifications for SO-4552 and SO-4554: **VERTICAL DEFLECTION: Deflection Factor:** 5 mV to 5 V/DIV; 10 steps in 1-2-5 sequence with variable control. **Magnification:** X5 times (1 mV to 1 V/DIV). **Accuracy (1 kHz):** ±3% at CAL'D; ±5% at CAL'D for X5 gain. **SO-4552 Bandwidth (referenced to 5 divisions at 50 kHz):** DC to 25 MHz (at -3dB). DC to 10 MHz (at -3dB) on 1 mV/DIV range. **SO-4552: Rise Time (referenced to 5 divisions):** Approx. 18 ns. **SO-4554: Bandwidth (referenced to 6 divisions at 1 MHz):** DC to 40 MHz (at -3dB), DC to 15 MHz (at -3dB) on 1 mV/DIV range. **Rise Time:** Approx. 9 ns. **Overshoot: (Referenced to 5 divisions).** Less than 5%. **Maximum Input:** 400 V (DC + AC peak). **Operating Modes:** CHA, CHB, DUAL (ALT or CHOP), and ADD. **HORIZONTAL DEFLECTION: Triggered Operation: Sweep Time:** .2s to .1μs/DIV; 20 steps in 1-2-5 sequence with variable control. **Magnification:** X10. **Accuracy:** ±3% for X1 and ±6% on X10. **X-Y Operation: Sensitivity:** Same as CHA and CHB deflection factor on corresponding axis. **Frequency Response:** SO-4552 DC to 1 MHz (at -3dB) SO-4554 DC to 2 MHz (at -3dB). **TRIGGER: Source:** CHA, CHB, LINE and EXT. **Coupling:** AUTO, NORM, TV-V, TV-H. **Slope:** "+"; pull TRIG LEVEL control knob for "–". **External Input:** Input Impedance: 1 MΩ, 30 pF. Maximum Input Voltage: 300 V (DC + AC peak). **GENERAL: Power:** 90-132 VAC or 198-264 VAC, 50/60 Hz, 40W. **Dimensions:** 5 1/4" H x 12 3/4" W x 17 1/4" D. **Weight:** 17.2 lbs.


SO-4554 40 MHz oscilloscope

# Deluxe dual trace scopes, 25 or 40 MHz

These deluxe instruments not only give you accurate measurements, they include extra features that save you time and make them a pleasure to own. Identical in most respects, they provide more performance per dollar than you'll find elsewhere.

You'll appreciate the 1-millivolt-per-division sensitivity that lets you measure signals too small for 5 millivolt instruments and the 10X horizontal magnifier that lets you expand signals twice as much as ordinary 5X magnifiers.

TV horizontal and vertical triggers let you look at TV waveforms that confuse less sophisticated trigger circuits, and the trigger holdoff function lets you achieve stable triggering on repetitive pulse trains. Use the A + B mode with B inverted to make differential measurements without ground reference and the X-Y mode for Lissajou patterns.

These scopes operate on 90-123/ 198-264 VAC, 50/60 Hz so they're at home anywhere in the world. Each includes a built-in component tester for in- and out-of-circuit current vs. voltage testing of many different types of components. And a beam finder saves you time by forcing off-screen traces back on screen.

The deluxe handle makes carrying easy and doubles as a tilt bail for adjusting the viewing angle. Graticule illumination simplifies taking measurements under low light conditions, almost a necessity if you expect to record measurements with an oscilloscope camera. And a built-in calibrator lets you check instrument accuracy and adjust the compensation of your probes. The SO-4554 even features 9kV accelerating potential for bright traces at higher sweep speeds.

These professional-looking instruments offer features you'll be proud to display at the center of your workbench. For our full assortment of optional probes see page 19.

**25 MHz Oscilloscope**
Assembled SO-4552 (22 lbs.) . **$399.95**
**40 MHz Oscilloscope**
Assembled SO-4554 (22 lbs.) . **$579.95**

*Your actual monthly payments may vary depending on your account balance.

sion graticule. On-screen menus show all scope functions. Automatically obtain readouts of voltage, time and frequency at any point on a waveform. Even store waveforms on a floppy disk for later comparison.

This versatile digital scope also enables you to upgrade a low-bandwidth, single-channel bench scope to a dual trace 50 MHz storage instrument. When used with a scope, the SD-4850's operations are controlled from the clearly marked front panel, and all settings are plainly identified by bright LED indicators. Your scope must have a 5 MHz or greater bandwidth, one vertical channel with 0.5V/divisions sensitivity, ability to trigger from a second source and triggered sweep (on the plus slope of a TTL level signal).

**Assembled SD-4850** (11 lbs.) . . . . . . . . . . . . . . . . **$495.00**

Specifications: **VERTICAL: Deflection Factor:** Sensitivity: 5 mV/div to 5 V/div; 10 steps in a 1-2-5 sequence. **Vertical Response:** 5 mV to 5 volts/div. Rise Time: 7 ns or less. Overshoot: Less than 5%. Maximum Input: 125 volts peak combined AC and DC. **HORIZONTAL: Time Bases Ranges:** 20 s/div to 10 ns/div in a 1-2-5 sequence. **Maximum Sampling Rate:** Real Time: 100 KS/S. Equivalent Time: 5 GHz. **GENERAL: Vertical Resolution:** 8 bits (1 part in 256). **Record Length:** 512 samples. **Interface:** RS-232C. **Baud Rate:** 110 to 9600 baud (selected by internal jumper). **Power:** 120 VAC, 60 Hz. **Dimensions:** 4 1/2" H x 10" W x 12 1/2" L.

## Digital memory scope

The SD-4850 turns your personal computer or scope into a dual trace 50 MHz digital storage scope capable of displaying fast digital pulses. The SD-4850's functions are controlled from the computer keyboard when attached to a PC and using a null-modem cable connected to the RS-232 port . Display one or two channels on a graphic 8 x 10 divi-

## Oscilloscope probe

This low-capacitance scope probe is useful for tracing waveforms in TV circuits without causing signal distortion. Use the 10X position for minimum capacitive loading of the circuit, switch to 1X for maximum sensitivity.
**Kit PK-1** (1 lb.). . . . . . . . . . . . . **$17.95**

### Match a probe to your scope's capability

| Scope Bandwidth | P-150 150 MHz | P-250-2 250 MHz | P-350-2 350 MHz | |
|---|---|---|---|---|
| 25 MHz | 24.7 | 24.9 | 24.9 | |
| 50 MHz | 47.4 | 49.0 | 49.5 | Approx. Bandwidth of Scope and Probe |
| 100 MHz | 83.2 | 92.8 | 96.2 | |
| 200 MHz | 120.0 | 156.2 | 173.6 | |

## 150 MHz probe with 10:1/1:1 ratios

Packed with features, our P-150 probe delivers premium performance at an affordable price. Advanced circuitry delivers quick pulse response and faster risetime – less than 1.5 ns.
**Assembled P-150** (1 lb.) . . . . . **$37.95**
**Assembled PS-150** Set of two P-150 probes. (2 lbs.) . . . . . . . . . . . . **$69.95**

## 250 MHz scope probes

A set of two modular 10X probes, switchable 1X/10X, with a bandwidth of 250 MHz. Packaged with accessory tips.
**Assembled P-250-2** (1 lb.) . . . **$99.95**

## All-in-one 40 kV probe

With this one probe you can measure voltages up to 40,000 with an accuracy of ±3% in any negative ground circuit. Measurements are read directly from a built-in meter.
CAUTION: We value you as a friend. Please follow all safety practices when measuring high voltages.
**Kit IM-5215** (2 lbs.) . . . . . . . . **$49.95**

## 350 MHz scope probes

A set of two modular 10X probes with a bandwidth of 350 MHz. Packaged with a full complement of accessory tips.
**Assembled P-350-2** (1 lb.) . . . **$79.95**

## Precision scope calibrator

Keep your scope up to specs at all times. The IG-4244 provides all the accuracy you'll need for making critical scope adjustments and calibrations.
**Kit IG-4244** (6 lbs.) ......................... **$199.95**

Specifications: **TIME SIGNAL: Range:** 0.5 s to 10 ns square wave in a 1-2-5 sequence. **Accuracy:** 0.015%. **Amplitude:** 0.5 s to 20 ns – 100 mV to 1 V peak. 10 ns – 100 mV to 0.5 V peak. **Rise Time:** <1 ns. **VOLTAGE SIGNAL: Ranges:** 1 mV to 100 V peak square wave in a 1-2-5 sequence. **Accuracy:** Within 1% into a ≥ 1 MΩ load when calibrated with an external voltmeter. **Rise Time:** <5 µs. **Frequency:** Approx. 1 kHz. **SINE WAVE SIGNAL: Frequency:** Approx. 1 kHz. **Amplitude:** Approx. 1 V peak-to-peak. **GENERAL: Power:** 120/240 VAC, 50/60 Hz. **Dimensions:** 3" H x 7 1/4" W x 9 1/2" D.

## BNC cable set simplifies connections

Our BNC connector set provides you with 10 handy coax cables for instrument and other connections. Mount the included rack on your workshop wall for easily accessible cable storage. Included are two 3 ft. BNC male/dual E-Z hook connectors, three 1 1/2 ft. BNC male/BNC male connectors, three 3 ft. BNC male/BNC male connectors and two 6 ft. BNC male/BNC male connectors.
**Assembled HCA-5002** (3 lbs.) ................. **$29.95**
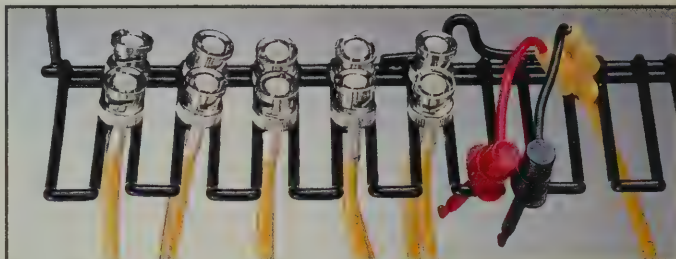


## Make almost any connection with our coax adapter cables

Solve frustrating coax connection problems with this convenient adapter cable assortment. Connect BNC to BNC, BNC female, UHF, mini UHF, N, TNC, F or hook clips. Connect RCA to RCA, F, BNC or UHF. Connect N to UHF, N or TNC. Connect UHF to UHF, mini UHF to mini UHF, F to F, BNC female to BNC female or TNC to TNC. Twenty cables in all help you make almost any connection. And, the cables come in high visibility yellow for easy identification. Two handy storage racks keep your cables neatly organized.
**Assembled HCA-5001** (3 lbs.) ................. **$69.95**
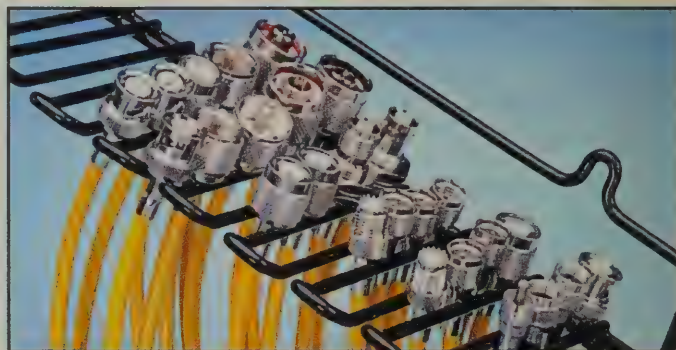




## Deluxe connector kit with handy F and RCA adapters

Make different types of coaxial connector adapters with gold plated pins and Teflon insulation. Just screw the required connector to one of the interfaces. No crimping or soldering is needed. In just seconds you'll have that special coaxial connection you require. Kit contains male and female N, F, RCA, BNC, UHF, SMA, TNC and mini UHF connectors. A handsome padded, zippered case is included with this deluxe kit to protect your connectors and to keep them looking new after years of service.
**Assembled HCA-3001** (2 lbs.) ................. **$79.95**

20

# Low cost 225 MHz frequency counter

An accurate and dependable benchtop counter, with the features most needed and a price that's sure to please. A 10 ppm time base provides ample accuracy for most common measurements, and an 8-digit display lets you resolve down to 1 Hz below 100 MHz, 10 Hz above 100 MHz. Use with Telescopic Antenna, sold at right.

**Kit IM-2410** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$149.95**

Specifications: **Frequency Range:** 10 Hz to 50 MHz. 20 MHz to 225 MHz. **Sensitivity:** 10 Hz to 50 MHz range: 25 mV RMS maximum (10 mV typical) from 10 Hz to 30 MHz and 50 mV RMS maximum from 30 MHz to 50 MHz. 20 MHz to 225 MHz range: 25 mV RMS maximum (10 mV typical). **Input Impedance:** 1 MΩ shunted by ≤24 pF. **Input Protection:** 150 VAC up to 100 kHz, derated to 5 VAC from 160 MHz to 225 MHz. **Internal Time Base Frequency:** 3.58 MHz. **Setability:** ±1 ppm. **Temperature Stability:** ±10 ppm from 0°C to 40°C. **Gate Time:** 1 second or .1 second, switch selectable. **Power Requirements:** 108 VAC to 132 VAC or 216 VAC to 264 VAC. 50 to 60 Hz. 25 watts maximum. **Dimensions:** 3 3/8" H x 7 1/4" W x 9 1/2" D.

# 512 MHz frequency counter

An ideal compact and portable frequency counter for checking mobile car, boat and airplane transmitter frequencies. A seven-digit LED display gives 10 Hz resolution in the low 50 Hz to 50 MHz range and a 100 Hz resolution in the high 40 MHz to 512 MHz range.

**Kit IM-2400** (3 lbs.) . . **$149.95**

Accessories:

**Telescopic Antenna**
Assembled SMA-2400-1
(1 lb.) . . . . . . . . . . . . . . . . . . **$9.95**
**120 VAC Battery Eliminator/ Charger** Assembled PS-2404
(1 lb.) . . . . . . . . . . . . . . . . . . . . **$7.95**

Specifications: **INPUTS: Sensitivity:** 25 mV RMS guaranteed (10 mV RMS typical). **Input Protection:** 150 V RMS to 100 kHz derated to 10 V RMS at 50 MHz on low range, 5 V RMS on high range. **GENERAL: Gate Time:** 1 second or 0.1 second (switch selected). **Power:** Five 1.2 volt nickel-cadmium batteries (included) or external battery-charger/ eliminator. **Dimensions:** 1 5/8" H x 3 3/8" W x 8 3/8"D.

# Our own PC logic analyzer

This versatile test instrument is another Heath exclusive. Use it to troubleshoot or verify the proper operation of a wide variety of circuits containing sequential and/or combinational logic. And with the included specific software, this analyzer is fully keyboard configurable and menu driven. The Logic Analyzer can check a 16-bit wide data bus or 16 separate logic test points in circuits with clock speeds up to 10 MHz. You can display acquired data on screen in state or timing displays including hex/octal and ASCII equivalents, an address relative to triggering and other information. Save this data to disk for later examination or comparison.

Software is included for use with PC compatible computers equipped with an RS-232 card, color graphics card, single 5.25" disk drive and 128K RAM minimum, a serial cable and MS-DOS Version 2.0 or later. The IC-1001 is also compatible with terminals or computers running terminal emulation software. Powered by an included 120 VAC wall cube. Dimensions of the PC Logic Analyzer are 1 3/4" H x 9 1/4" W x 8 1/2" D.
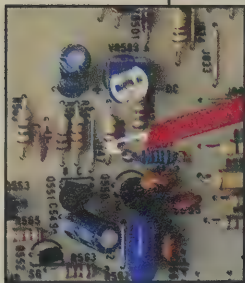
**Kit IC-1001** (4 lbs.) . . . . . . **$259.95**

21

## Premier test lead set

Your meter works fine, but your leads have seen better days. Sound familiar? Now you can replace those old leads with the industry's finest. Cables are silicone-rubber insulated making them extremely flexible and burn resistant. And, spring-loaded safety shields cover the banana plugs on both ends of the cables. This set includes 2 cables (1 red, 1 black), 2 standard probes, 2 alligator clips, and 2 retractable hook tips – just like expensive scope probes!

**Assembled P-5** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . **$29.95**

## Benchtop full-function DMM

This push-button ranging meter features diode and internal battery test, blanking, polarity and overrange indicators, built-in battery charger and auto decimal point location. Input protected, test leads included.

**Kit IM-2260** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$129.95**

Specifications: **VOLTAGE RANGES: DC** 2V, 20V, 200V, 1000V. **Basic Accuracy:** ±(0.5% of reading + 1 count). **AC:** 2V, 20V, 200V,750V. **Basic Accuracy:**±(1.0% of reading + 3 counts). **Frequency Response:** 40 Hz to 1 kHz, ±0.5%. **Input Impedance:** 10 megohms. **CURRENT RANGES:** 2 mA, 20 mA, 200 mA, 2000 mA, 10 A. **Basic Accuracy DC:** ±(1.5% of reading +1 count). **AC:** ±(2.0% of reading + 1 count). **OHMS RANGES:** 2 kΩ, 20 kΩ, 200 kΩ, 2000 kΩ, 20 MΩ. **BASIC ACCURACY:** ±(0.25% of reading + 1 count). **Power:** Heath PS-2404 120 VAC Adaptor (p. 21) or six 1.5 volt batteries. **Dimensions:** 3" H x 8 1/2" W x 11" D.

## Ruggedized autoranging DMM works under the toughest conditions

Housed in an industrial grade, safety-yellow case, our new Ruggedized Autoranging DMM is both shock- and water-resistant, perfect for those tough jobs. The LCD display features large 3 1/2 digit numerals and a 40-segment analog bar graph for easy nulling and peaking. The display also includes auto polarity, overrange indicator, measurement hold and visual unit display annunciators.

Measurement functions include AC and DC voltages and currents, resistance, normal and low power test voltages, memory, continuity and diode test. Current ranges are fuse protected. Deluxe test probes included.

Whether on the job or on your workbench, the Heath Ruggedized Autoranging DMM will provide years of reliable service.

**Assembled SM-2380** (2 lbs.) . . . . . . . . . . . . . . . . . . **$89.95**

Specifications: **VOLTS DC: Ranges:** (5) 200 mV-1000 V. **Accuracy:** ±(0.5% of reading + 1 digit). **Input Impedance:** 10 MΩ. **Resolution:** 100 μV to 1 V. **VOLTS AC: Ranges:** (4) 2 V-750 V. **Accuracy:** (40 - 500 Hz) ±(1.25% of reading + 5 digits). **Input Impedance:** 10 MΩ and <100 pF. **Resolution:** 1 mV to 1 V. **AMPS DC: Ranges:** (5) 200 μA, 20 mA, 200 mA, 2000 mA, 20 A. **Accuracy:** 2000 mA and 20 A Ranges: ±(1.5% of reading + 3 digits). Other Ranges: ±(0.75% of reading + 1 digit). **AMPS AC: Ranges:** (5) 200 μA, 20 mA, 200 mA, 2000 mA, 20 A. **Accuracy:** (40 Hz to 500 Hz) 2000 mA and 20 A Range: ±(2.5% of reading + 5 digits). Other Ranges: ±(1.25% of reading + 5 digits). **RESISTANCE/CONTINUITY: Ranges:** (6) 200 Ω, 2 kΩ, 20 kΩ, 200 kΩ, 2 MΩ, 2-20 MΩ. **Accuracy:** 2-20 MΩ Range: ±(1.5% of reading + 5 digits). Other Ranges: ±(0.75% of reading + 1 digit). **DIODE CHECK: Ranges:** (3) 0-200 mVDC, 0-2.0 VDC, 0-3.0 VDC nominal. **Accuracy:** ±(1.5% of reading + 5 digits). **GENERAL: Power:** 9 volt battery included. **Battery Life:** 500 hours. **Dimensions:** 1 1/8" H x 3 3/8" W x 6 7/8" L.

## Super DMM even measures frequency

Slip this versatile DMM into your pocket and take it with you wherever the job happens to be. You'll enjoy the features of a full test bench packed into a single handheld unit.

This portable DMM gives you 0.5% basic accuracy and an amazing list of features: AC frequency measurements as high as 20 MHz – and, to levels as low as 200 mV; resistance up to 2000 Megohms; capacitance, transistor hFE and LED tests. The SM-2372 even works as a logic probe up to 20 MHz. This valuable tool packs more measurement capability than any we've offered. Test leads included.

**Assembled SM-2372** (2 lbs.) .................. **$89.95**

Specifications: **VOLTS DC: Ranges:** (5) 200 mV-1000V. **Accuracy:** ±(0.5% rdg + 1 digit). **Input Impedance:** 10 MΩ. **Resolution:** 100 µV to 1V. **VOLTS AC: Ranges:** (5) 200 mV-750V. **Accuracy:** (50 -500 Hz) ±(1.0% rdg + 4 digits) except 1.5% rdg for 750V range. **AMPS DC: Ranges:** (5)200µA, 2mA, 20mA, 200mA, 10A. **Accuracy:** 10A range: ±(2.0% rdg + 3 digits), others: ±(1.0% rdg + 1 digit). **AMPS AC: Ranges:** (5)200µA, 2mA, 20mA, 200mA, 10A. **Accuracy:** 10A range: ±(1.2% rdg + 4 digits), others: ±(1.0% rdg + 4 digits). **RESISTANCE: Ranges:** (7) 200 Ω-2000 MΩ. **Accuracy:** 200 Ω range ±(1% + 3 dgt), 20 MΩ range ±(3% + 1 dgt), 2000 MΩ range ±(5% + 10 dgt) + 10 dgt, other ±(.8% + 2 dgt). **FREQUENCY: Ranges:** 2 kHz-20 MHz. **GENERAL: Power:** 9 volt alkaline battery included. **Battery Life:** 20-100 hours according to mode (alkaline battery). **Dimensions:** 1 1/4" H x 3" W x 6 1/3" L.

## Full function DMM with extra capabilities

**SKILL LEVEL 2.** This handy DMM gives you the capabilities you'll need for lab, workbench or portable jobs. The 3 1/2 digit display gives you readings to 1999 and automatic polarity indication.

Functions include resistance, capacitance, transistor DC gain and diode test. Current ranges – except for the 10A range – are fuse protected. Separate voltage and current inputs protect both the DMM and the circuitry you're testing, and a continuity function alerts to low resistance between the probes. Leads included.

**Kit IM-2311** (2 lbs.)............................ **$49.95**
**Assembled SM-2311** (1 lb.) .................. **$59.95**

Specifications: **VOLTS DC: Ranges:** (5) 200 mV-1000V. **Accuracy:** ±(0.5% rdg + 1 count). **Input Impedance:** 10 MΩ. **Resolution:** 100µV to 1V. **VOLTS AC: Ranges:** (5) 200 mV-750V. **Accuracy:** 200 mV to 200V: 50-1kHz ±(1.0% rdg + 4 counts), 750V: 50-400 Hz ±(1.5% rdg + 4 counts). **AMPS DC: Ranges:** (5)200 µA, 2 mA, 20 mA, 200 mA, 10 A. **Accuracy:** 200 µA to 200 mA: ±(1.0% rdg + 1 count), 10 A: ±(2.0% rdg + 3 counts). **AMPS AC: Ranges:** (5)200 µA, 2 mA, 20 mA, 200 mA, 10 A. **Accuracy:** 200 µA to 200 mA: ±(1.0% rdg + 1 count), 10 A: ±(2.0% rdg + 3 counts). **CAPACITANCE: Ranges:** (5) 2000pF-20 µF. **Accuracy:** ±(3% + 10 counts). **RESISTANCE: Ranges:** (6) 200 Ω-20 MΩ. **Accuracy:** 200 Ω range ±(1% rdg + 3 counts), 20 MΩ range ±(3% rdg + 1 count), other ±(.8% rdg + 1 count). **GENERAL: Power:** 9V battery included. **Battery Life:** 400 hours. **Dimensions:** 1 1/4" H x 2 2/3" W x 5" L.

## Protect your meter with a deluxe carrying case

Give your meter the protection it deserves with a durable hard or soft carrying case. Easy to open and close, both cases have enough room to store your test leads, and an extra battery and fuse. A convenient belt loop lets you keep your meter right at your side. Hard case dimensions are 1 5/8" H x 3 1/2" W x 7 1/2" L inside and 3 1/4" H x 3 3/4" W x 8" L outside. Soft case dimensions are 1 1/2" H x 3 3/4" W x 7 1/4" L inside and 2 1/4" H x 4 1/4" W x 7 3/4" L outside.

**Assembled SMA-2399-1** Hard Case (2 lbs.) ....... **$19.95**
**Assembled SMA-2399-2** Soft Case (1 lb.) .......... **$9.95**

## Smallest auto-ranging DMM made

You won't find a DMM smaller than this one. It fits in your shirt pocket with room to spare, and it's practically goof proof. The 3 1/2 digit display shows readings up to 1999. A handy extra meter that's affordable and accurate. Test leads included.

**Assembled SM-2300-A** (1 lb.) *Limited Quantities...* **$19.95**

Specifications: **DC VOLTS: Ranges (5):** 200 mV to 500 V (max.). **Input Resistance:** 11 MΩ (approx.). **Accuracy: (±4 digits):** 200 mV: ±2.0%; 2V: ±0.7%; 20V-500V: ±1.3%. **AC VOLTS: Ranges (4):** 2V to 500V (max.). **Input Resistance:** 11 MΩ (approx.). **Accuracy: (±8 digits):** 2V to 500V: ±2.3% (40-500 Hz). **RESISTANCE: Ranges (6):** 200Ω to 20MΩ. **GENERAL: Power:** Two LR or SR-44 batteries included. **Dimensions:** 3/8" H x 2 1/4"W x 4 1/4" L.

23

# Regulated power supply

Use this power supply to test new ideas and circuits in stereo vacuum tube amplifiers and amateur radio gear, or power any circuit up to 400 volts DC. Built in is a 0 to −100 volt DC tube bias supply. And, separate 6.3 and 12.6 VAC heater filament voltages are accessible from front panel binder posts.

**Kit IP-2717-A** (19 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$199.95**
**Assembled SP-2717-A** (20 lbs.) . . . . . . . . . . . . . . **$299.95**

Specifications: **B+ VOLTS: Voltage:** 0-400 VDC, regulated. **Current:** 0-100 mA continuous, 125 mA intermittent. **Regulation:** Output variation <1% from no load to full load. **Ripple:** <10 mV RMS. **C− VOLTS: Voltage:** 0 to −100 VDC at 1 mA. **FILAMENT VOLTS: Voltage:** 6.3 VAC at 4 amperes or 12.6 VAC at 2 amperes. **GENERAL: Power:** 120/240 VAC, 50/60 Hz. **Dimensions:** 5 1/2" H x 13 3/8" W x 11 1/4" D.

# 0-30 volt power supply offers top performance

Good, clean output, overload protection, constant voltage mode, constant current mode, plus meters for both current and voltage. Our SP-2762 power supply gives you all this at 0-30 volts and a full 3-amp output. Just what you need for your design bench, service shop or ham shack.

Also remarkable is a very affordable price tag. You'll find the SP-2762 one of the best performance-per-dollar power supplies on the market today.

**Assembled SP-2762** (14 lbs.) . . . . . . . . . . . . . . . . . **$169.95**

Specifications: **OUTPUT: Volts:** 0-30V. **Amps:** 0-3A. **Ripple:** <5 mV peak-to-peak. **Line Regulation:** 0.025% +2 mV. **Load Regulation:** 0.025% + 3 mV. **Power:** 120/240 VAC, 50/60 Hz. **Dimensions:** 6 1/2" H x 9" W x 11" D.

# Triple output DC supply

This supply furnishes the power you need for almost any application. A special built-in tracking circuit maintains the voltage difference between supplies when you're working with operational amplifier circuits.

**Kit IP-2718** (12 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$139.95**
**Assembled SP-2718** (12 lbs.) . . . . . . . . . . . . . . . . **$200.00**

Specifications: **Outputs:** 5 VDC +5% at 1.5 amps. Two outputs at 0-20 VDC at 0.5 amps, continuously adjustable. **LOAD Regulation:** <0.1% on 20 V supplies, <3% on 5 V supply. **Power:** 120/240 VAC, 50/60 Hz. **Dimensions:** 4 1/2" H x 10 3/4" W x 9" D.

# 5280-series DC supply

Simultaneously furnishes DC power to all our 5280-series instruments. The unit operates on 120 or 240 VAC. 6" H x 3 3/4" W x 3" D.

**Kit IPA-5280-1** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$39.95**

# Decade resistance kit

This accurate laboratory-type instrument supplies a wide range of resistance values for use in electrical measurements. Use it whenever you need an accurate variable multiplier or shunt, substitute resistor, or as an arm for DC and AC bridges. An easy-to-build kit that will supply any resistance value from 1 to 999,999Ω in 1Ω steps.

**Kit IN-3117** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$99.95**

Specifications: **Resistors:** Precision, 1/2% accuracy. 1 watt. **Max. Current:** X1 = 1000 mA, X10K = 300 mA, X100 = 100 mA, X1K = 30 mA, X10K = 10 mA, X100K = 3 mA. **Dimensions:** 5" H x 7 1/2" W x 6 5/8" D.
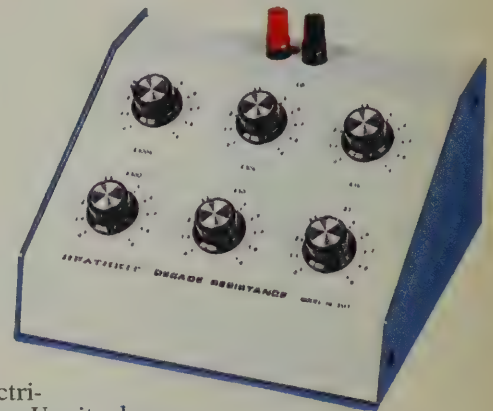
# Digital clamp-on meter

This compact, handheld AC current meter, with 1000-amp capability, is the ideal measurement tool for the electrician or service technician. AC/DC voltage, resistance and continuity measurements are standard features. Includes hard carrying case and leads.
**Assembled SM-2374** (2 lbs.) . . . . . . . . . . . . . . . . . . **$79.95**

Specifications: **DC VOLTAGE: Range:** 1000V. **Resolution:** 1V. **Accuracy:** ±(0.5% rdg + 1 count). **AC VOLTAGE: Range:** 750V. **Resolution:** 1V. **Accuracy:** ±(0.5% rdg + 1 count). **AC CURRENT: Range:** 200A, 1000A. **Resolution:** 100 mA, 1A. Accuracy ±[(2 % under 800 A, 3% over) +5 counts] **RESISTANCE: Range:** 200Ω, 20Ω. **Resolution:** 0.1Ω, 10Ω. **CONTINUITY: Range:** 200Ω. **GENERAL: Power:** 9V battery. **Dimensions:** 1 1/2" H x 2 1/2" W x 9" L.



# 500-volt insulation tester

This insulation tester lets your SM-2374 (at left) detect moisture in air conditioning coolant, check insulation resistance on motors and transformers, test for moisture or deterioration in wiring and cables, and test for carbon tracks in switches, breakers and relays. Leads and case included.
**Assembled SM-2376** (2 lbs.) . . . . . . . . . . . . . . . . . . **$49.95**

Specifications: **RESISTANCE: Range:** 20MΩ, 2000MΩ. **Measurement Range:** 100 kΩ to 19.99 MΩ, 10 MΩ to 1999 MΩ. **Accuracy:** ±(2% rdg + 2 counts), ±(4% rdg + 2 counts) for 500 MΩ and under; ±(5% rdg + 5 counts) for higher resistances. **GENERAL: Test Voltage:** 500 VDC approximate. **Power:** 4 AA batteries. **Dimensions:** 2" H x 2 2/3" W x 3 1/2" L.



# Handy signal tracer

An effective tool for quickly tracing signals in radio and TV receivers. Lets you check voltages and resistance by simply listening to an audible tone. Also lets you detect faulty RF or IF stages, even isolate faulty components.
**Kit IT-5283** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$59.95**

Specifications: **Speaker:** 3" permanent magnet, 16Ω. **Power:** Two 9V transistor batteries and/or IPA-5280-1 Power Supply (page 24). **Dimensions:** 5 3/4" H x 11" W x 7 3/4" D.



# Audio frequency signal generator

Use this generator's sine and square wave outputs as a signal source for harmonic distortion measurement, as an external modulator for RF generators or in test of audio amplifiers for gain or frequency response. You can also use the square wave output to trigger digital instruments. Sine and square wave levels are independently adjustable from 0-3 volts, although frequencies 10Hz-100KHz are identical.

Housed in a 5280 series instrument cabinet, the Audio Generator is stackable with other instruments in the 5280 line. Cabinet includes convenient storage compartment.
**Kit IG-5282** (5 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$79.95**

Specification: **Frequency Output:** 10 Hz to 100 kHz in four ranges. **Sine Wave Voltage:** 0 to 3 volts RMS. **Square Wave Voltage:** 0 to 3 volts peak. **Power:** Two 9V transistor batteries (not included) and/or IPA-5280-1 Power Supply (page 24). **Dimensions:** 11" H x 5 3/4" W x 7 3/4" D.

## Noise generator kit

To properly check out any stereo or sound system with a spectrum analyzer, you need a noise source with a nearly constant energy output. This easy-to-build Pink/White Noise Generator will do just that...and at a fraction of the cost of comparable noise generators.

**Kit AD-1309** (2 lbs.)........ **$39.95**

Specifications: **Frequency Response:** Pink Noise, ±1 dB from 20 Hz to 20 kHz. White Noise, ±3 dB from 20 Hz to 20 kHz. **Output Levels:** >350mV RMS, >1.5 V peak. **Power:** 9V battery (not included). **Dimensions:** 2 5/8" H x 4 1/8" W x 4 1/8" D.

## Portable video alignment generator goes where you need it

Whether you're a hobbyist wanting to fine-tune your own color TV picture or a service technician needing an alignment tool for the shop, our 5260 will certainly do the job.

You have a choice of six patterns – three crosshatch and three dot – for color convergence alignment and picture width, vertical linearity and height adjustments. And, battery operation gives you full portability. Includes modulated RF output for color convergence alignment of TV receivers and composite video output for color convergence alignment of monitors.

**Kit IG-5260** (2 lbs.) ........ **$69.95**
**Assembled SG-5260** (2 lbs.).. **$89.95**

Specifications: **Display:** Crosshatch and dots: 1 x 1, 7 x 11, 15 x 21 matrices. **RF Carrier:** Channel 3, 61.250 MHz ±.005%, crystal controlled. **RF Output:** 3000 µV minimum into 75 ohms. (Phono plug to type F adapter supplied). **Video Output:** 0.8 V peak-to-peak minimum into 75 ohms (available at phono plug). **Power Requirements:** 9V battery, not included. **Dimensions:** 1 1/8" H x 6 1/4" W x 3 1/4" D.

## 2 MHz swept function and pulse generator

This general purpose signal source offers a broad range of service, design, hobby and research applications. Outputs include sine, square, triangle, pulse and ramp signals. Frequency range extends from 0.02 Hz to 2 MHz in seven pushbutton ranges. Other features include variable and fixed attenuators, duty cycle control, variable DC offset control, signal inversion, internal and external sweep and TTL pulse outputs. Compact cabinet is stackable.

**Assembled SG-1274** (6 lbs.) ............ **$199.95**

Specifications: **Waveform:** Sine, Square, Triangle, Pulse. **Frequency:** 0.02 Hz -2 MHz in 7 ranges. **Scale Error:** ±5% of full scale. **Output Impedance:** 50 ohms ±10%. **Output:** 5mV P-P (min.) to 20V P-P (max.) continuously variable into an open circuit. **Attenuator:** 0 dB-20 dB. **DC Level:** +10V to –10V (open), continuously variable with zero offset SW. **Duty Cycle:** 20%-80% continuously variable with 50 – 50 calibrated SW. **Total Harmonic Distortion:** <1% from 10 Hz to 200 kHz (of sine wave). **Input Impedance:** 10Ω ±10%. **Square Wave Rise/Fall Time:** <100 ns. **Pulse:** >3V P-P (open). Rise/Fall Time <25 ns. Sink: 20 TTL. **VCF:** 0 to ±10V. Control frequency to 100: 1 min. Sweep. **SWEEP CHARACTERISTICS: Internal:** Linear. **Sweep Rate:** 0.5 Hz (2 sec. period) to 50 Hz (20 ms period, continuously variable). **Sweep Width:** Variable from 1:1 to 100:1. **Power:** 100/120/220/240 VAC (±10%), 50/60 Hz. **Dimensions:** 2 1/2" H x 9 1/2" W x 7 1/2" D.

## Experience the thrill of movie theater sound at home with the Heath surround sound decoder

You too can afford theater quality sound at home with our kit Dolby Surround Sound processor. Unlike other decoders in this price range, this unit provides six outputs of audio information – that's 40 percent more than the competition!

The Heath AD-2550 includes left front, center, right front, sub-woofer and two surround outputs. Our surround processor also has two stereo inputs, allowing you to connect your favorite audio source.

With a push of a button you can select between three different surround modes. There's Dolby Surround for listening to Dolby Stereo encoded programs, Music Surround for reproducing the depth lost in conventional 2-channel stereo playback, and Mono Enhance for synthesized stereo and surround effects. Plus, we've designed the unit with separate controls for audio time delay, null, surround volume and master volume.

You won't need a separate amplifier to drive your sur-

round channels, because this unit has its own 20-watt built-in amp. We recommend your surround sound speakers have an 8-16 ohm impedance and a power handling rating of at least 20 watts.

Other features include one-step adjustment, automatic Dolby B noise reduction, and an all-metal cabinet for reliability and durability. 2 3/4" H x 17" W x 8 1/2" D.

**Kit AD-2550** (12 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$199.95**

Specifications: **SEPARATION: Front Center to Surround:** 70 dB at 400 Hz referenced to 1 kHz Consumer Test Tape. **Output Power:** 20 watts total RMS power into 8 ohms. 25 watts into 4 ohms. **FREQUENCY RESPONSE: Front Channels:** ±.5 dB, 18Hz-40kHz. **Surround Channels:** ±.5 dB of Dolby Surround Specification. **TOTAL HARMONIC DISTORTION: Front Channels:** .05% 20Hz-20kHz. **Surround Channel:** .38% max. across full range. **OUTPUT NOISE, A-WEIGHTED: Front Channels:** –85 dB at 1V RMS, –95 dB from peak level. **Surround Channel:** –65 dB at 1 watt/8 ohms, –80 dB from peak level. **Input Level:** .1 to 2.8 VRMS. **Output Level:** 4 VRMS. **Input Balance Range:** 6.7 dB of correction. **Input Impedance:** 47k ohms. **Output Impedance:** 2.5k ohms max.



## Take control of video component monitoring, dubbing and recording with the AVS-10

Every time you add a component to your video system, managing all the cords and connections becomes more of a headache. Hook up a cable to record, swap cables to see what's coming over the receiver, pull everything apart just to use your video camera. It's enough to make you feel like an old-fashioned telephone operator! With so many things to untangle, just watching TV can become a challenge.

You can turn your separate video components into an easy-to-control, integrated video system with Heath's

AVS-10 Audio-Visual Selector. The AVS-10 offers flexible video monitoring, dubbing and recording capabilities in a compact unit. It's master control for up to five components.

Used in conjunction with your VCR, the selector lets you record any one of four attached sources, including VCRs, TV tuners, videodisc players, video cameras or video games. And at the same time, you can monitor any of the sources, even those not being recorded, with push-button ease. The AVS-10 also makes moni-

toring and dubbing easier for owners of two VCRs.

Three rear-panel inputs make it easy to keep patch cords for your most frequently used components out of the way. And, to allow quick hookup of video cameras and portable VCRs, the fourth input is conveniently located on the front panel. There's no need to pull everything apart just to connect an additional audio/video component.

S-VHS jacks (for compatible high-resolution video components) are provided for two inputs, dubbing output and monitor output. And to add even greater realism to your viewing, audio output jacks are included for easy connection to stereo systems.

Say goodbye to crawling around behind your audio/video components to make temporary connections. Select, monitor, dub and record with ease by adding the AVS-10 to your system. Dimensions are 2" H x 17" W x 9 1/4" D.

**Assembled AVS-10** (4 lbs.) . . . **$99.95**

Simulated TV picture
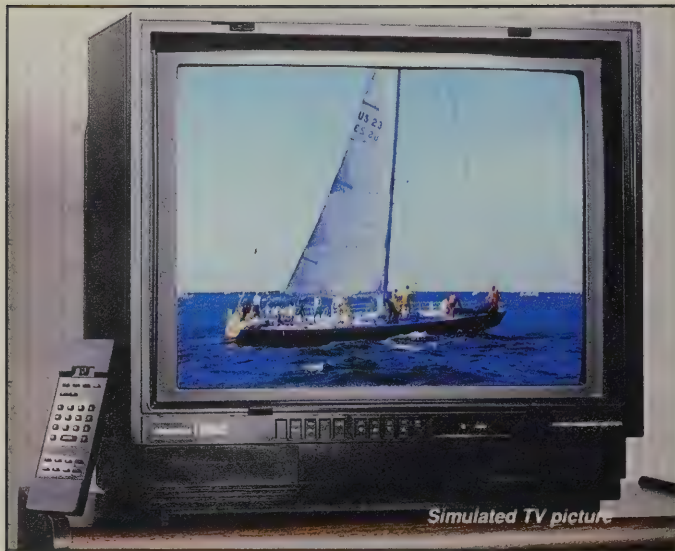
# New low price on high-technology Heath 20" stereo television

The remarkable picture quality and sound characteristics of the Heathkit 20"-diagonal stereo TV will bring new life to your television viewing. And, the contemporary styling of the Stardust Black finish cabinet gives the unit the good looks to blend in with any entertainment system.

The Chromacolor Contrast Picture Tube combines tinted phosphors and black matrix with reflection-absorbing glass. This gives you a more detailed picture with exceptional contrast and color fidelity. The picture is electronically sharpened by a comb filter that provides maximum resolution of the TV signal. A removable tinted glass panel further enhances picture contrast, and a computer brain maintains picture quality.

## MTS stereo reception

You'll enjoy rich stereo sound with the Multi-Channel Television Sound (MTS) system. Incoming stereo signals are decoded and sent to separate stereo amplifiers that drive two 3 1/2" oval front-firing speakers for powerful sound. The set even reproduces SAP (Second Audio Program) sound when broadcast.

No need to worry about drifting signals, because a quartz-controlled electronic tuner automatically locks onto the exact broadcast frequency. The 178 channel tuner permits reception of all VHF/UHF broadcast channels and up to 122 cable channels.

## Multi-Brand remote control

Take command of a variety of television features from the infrared remote control. Turn the TV on/off, activate the on-screen menu display, adjust TV functions and select channels. You'll scan favorite channels, adjust volume, mute sound, set time, even recall channel number and time, flash back and set the sleep timer. The remote is also programmable to operate most popular brands of TVs, VCRs and cable converters.

Get the most out of your video camera, video disc player or VCR, including S-VHS (providing over 400 lines of resolution), with the auxiliary jack panel. Audio/video input/output jacks, including a Y/C connector, allow direct hookup between video/audio sources and the TV for superior picture and sound.

Assembly is a snap, because all boards except one are preassembled and tested. In addition, a portable crosshatch generator is included for making color alignment adjustments that can exceed factory specifications! Uses 120 VAC, 60 Hz. Dimensions are 19 1/4" H x 20 1/2" W x 19" D.
**Kit GR-2033** (80 lbs.) . . . . . . . . *Was* $449.00 *Now* **$399.00**



Simulated TV picture

# Save on 9" color television

The GR-9009 9" diagonal color television is designed to go anywhere you go. It operates anywhere there's normal house current (AC) or from a 12-volt DC (negative ground) lighter socket in automobile electrical systems.

This easy-to-carry portable with all its advanced features provides you with excellent performance wherever you take it. The chromacolor contrast picture tube features reflection-absorbing glass for exceptional contrast and color fidelity. You get bright, true-to-life colors with its black matrix and tinted phosphors. Plus, the in-line electron gun produces remarkable picture detail and dramatically improved edge and corner sharpness. Quartz-controlled electronic tuning has 178 channel capability and makes channel selection convenient and exact – with no moving parts to wear out or cause picture problems. Once adjusted, the TV maintains accurate color, tint and contrast with the auto-control color system.

The GR-9009 portable is also easy to operate. Programmable up/down channel scanning lets you scan your favorite channels or all available channels. Or make instant channel changes simply by pressing *Enter* after you've selected the channel number.

Most circuit boards are preassembled to make building easier. And the GR-9009's built-in cross-hatch generator lets you adjust the set for optimum color alignment. Includes sun screen, earphone, built-in whip antenna, DC power cord and flush-mounted carrying handle. Dimensions are 10 1/4" H x 10 1/2" W x 11 7/8" D.
**Kit GR-9009** (25 lbs.) . . . . . . . . *Was* $269.95 *Now* **$249.95**

## Store photos on videotape with this handy converter

Organize your photographs quickly and efficiently with the Photo Converter. This simple device lets you transfer all your photo prints up to 4 by 6 inches onto videotape. A special macro lens and built-in balanced fluorescent illumination eliminate glare from the photographs, giving you excellent picture quality. You can view your family album on TV and even add music or other audio through your VCR. The Photo Converter mounts on its own tablepod for easy alignment with a video camera. Unit may be shipped with black or white casing. Color choice is not available.

**Assembled V-617** (6 lbs.) ..................... **$79.95**

Fuzzy
reproduction
without
CopyCam

Vivid
reproduction
with
CopyCam

## Economical slide and movie converter

Enjoy watching your slides and 8mm or 16mm home movies on TV without the bother of setting up a projector and screen. This converter makes it easy to transfer slides and movies to video. You can even add your own soundtrack using your VCR. Either narrate the occasion or add music. Making copies for family and friends is inexpensive, too. An adjustable tablepod mount allows for easy set up with your projector and video camera. Unit may be shipped with black or white casing. Color choice is not available.

**Assembled BV-612** (3 lbs.) .................... **$79.95**

**SAVER**
Save $30.00 on this video converter package. Includes BV-612 Slide and Movie Converter and V-617 Photo Converter.
**Assembled BVS-612** (9 lbs.) ............. **$129.95**

## Make video copies that rival first generation with CopyCam

You've invested top dollars in a first-rate camcorder, so you don't want to settle for second-rate copies. Enjoy the same sharp video you taped, transfer-to-transfer, with the CopyCam camcorder enhancer.

Most units adjust only video gain, leaving image accuracy and sharpness untouched. Only CopyCam makes true changes to the edge definition and detail of your second-generation video copies. The result is a picture clarity you'll swear is first generation.

CopyCam also has a unique AudioZoom feature that lets you selectively boost the audio signal by as much as 20 dB. You get improved sound clarity even from muddy originals. CopyCam also lets you split your camcorder's single audio channel into two channels for use with stereo VCRs.

CopyCam takes only minutes to install between your camcorder and VCR, but you'll enjoy its benefits for years to come. Improves VCR-to-VCR video transfers, too. Audio/video patch cable included. Small enough to fit in your camcorder case, CopyCam measures only 1 1/2" H x 6 1/2" W x 4 1/4" D.

**Assembled GD-3710** (2 lbs.) .................. **$59.95**

# Kit Skill Levels

**Skill level one** kits include relatively few components and require simple, if any, soldering. A few ordinary household tools such as pliers, blade and Phillips screwdrivers, wire strippers and a pencil soldering iron are all you need. Our kits on pages 2 and 3 and even our computers are examples of skill level one kits.

**Skill level two** kits, such as our 9-inch Color TV on page 28, have more components and require more complex solder connections. Building time also increases and a few additional tools, such as a nut driver, may be required.

**Skill level three** kits are the most challenging projects, with increased numbers of components and soldering connections. Our ID-5001 Weather Computer on page 8 is an example.

## Technical Consultation

Our specially trained technical consultants are available 8:00 a.m. to 4:30 p.m. Eastern Time, Monday through Friday. Experts in their product lines, they'll help you troubleshoot a kit building problem or answer your questions about a product. Their phone numbers are listed below, according to product category. Call or write them in care of Heath Company, Technical Consultation, Benton Harbor, Michigan, 49022.

## Assistance and Information

Weekdays 8:00 a.m. to 4:30 p.m. Eastern Time
**Replacement Parts Orders** (please have Heath part number available when you call) . . . . . . . . . . . 616-982-3571
**Overseas Orders** . . . . . . . . . . . . . . . . . . . . . . . . 616-982-3512
**General Office** (non-order calls) . . . . . . . . . . 616-982-3200

**Technical Assistance:**
• Amateur Radio . . . . . . . . . . . . . . . . . . . . . . . 616-982-3296
• Computer Hardware . . . . . . . . . . . . . . . . . . . . 616-982-3309
• Education . . . . . . . . . . . . . . . . . . . . . . . . . . . 616-982-3980
• Favorite Kits, Security, Lighting . . . . . . . . . . 616-982-3496
• Home Entertainment . . . . . . . . . . . . . . . . . . 616-982-3307
• Test Equipment, Weather, Clocks . . . . . . . . . 616-982-3315

## Manual Preview Offer

If you'd like to see how easy kit building really is, order one of our world famous assembly manuals first. Each manual is written by our own technical writers and includes step-by-step instructions and pictorials of key assembly steps that give even the novice electronic kit builder the tools necessary to succeed.

If after previewing the manual you buy the kit, we'll deduct the price of the manual from your purchase. Most of our manuals sell for $8.00. If the one you're interested in costs less than $8.00, we'll refund the overpayment. If it costs more than $8.00, we'll bill you for the balance. Please add 10% for shipping and handling for each manual you order. Send your request to Heath Company, Parts Department, Benton Harbor, Michigan, 49022.

Dear Friends,

**Heath**

Welcome to Home Automation. Our new catalog is filled with exciting high-tech products that are designed to add convenience to your home and protection for you and your loved ones.

Everything in this new catalog has been selected with this goal in mind: making home life the safest and most convenient possible. You'll find ways to take better advantage of your leisure time, ways to increase the security of your home both inside and out, new means of energy management, plus a complete Home Automation System that can be customized to manage any home environment.

The products we've chosen for Home Automation represent our commitment to quality and value. We're proud to introduce them to you, and we look forward to welcoming you as a Heath home automation shopper.

Sincerely,

William E. Johnson
President

Heath Company
Benton Harbor,
Michigan 49022
616 • 982 • 3200

## Heath Revolving Charge

Heath Revolving Charge (HRC) is a powerful buying tool when it comes to purchasing the latest in kit and assembled electronic products. It gives you a preferred customer status that lets you buy products now and extend payments over time. To open an HRC account, complete the credit application on the back of the order form and start enjoying the purchasing power of a Heath Revolving Charge.

## Our Guarantee

For over 40 years Heath Company has been committed to customer satisfaction. We want you to be happy with every item you purchase from us. We back all our products with a friendly customer support team who will make every effort to ensure your satisfaction.

If you're not completely satisfied with any item purchased from Heath Company, simply return it to us within six months from the date of purchase for a full refund or credit. At Heath Company your satisfaction is always guaranteed. It's that simple.

# HOME AUTOMATION

## MAKING YOUR HOUSE SAFER AND EASIER TO LIVE IN



## Heath Company

### A LEADER IN ELECTRONICS FOR OVER 40 YEARS.

# HOME AUTOMATION FROM HEATH

**H**eath, the premiere home automation source. Committed to bringing convenience, safety and security to your life.

You're driving home from work with your windshield wipers battling the downpour. Only a few blocks away, your automated home is ready to welcome you. The furnace has just come on, your favorite CD is ready to play and the chili is bubbling in the crockpot. As you pull into the driveway, motion sensing lighting greets you both outside and inside your house. Home at last.

This is just an example of how innovative home automation products can simplify your lifestyle. Many Heath home automation products work as silent assistants performing tasks like controlling lawn sprinklers or letting you in the front door if you've forgotten your keys.

Sleek, two-way video systems show you who's at the door, and motion-sensing switches turn on the basement lights automatically when you're carrying a load of laundry or an armful of tools.

Imagine calling home from your cellular phone (or any touch-tone telephone) to adjust the temperature, start an appliance or check in with your automated House Sitter to get a full security report. Or set up a complete security system in your apartment in less than an hour, without drilling any holes. Then take the system with you if you move. It's all possible with Heath home automation products.
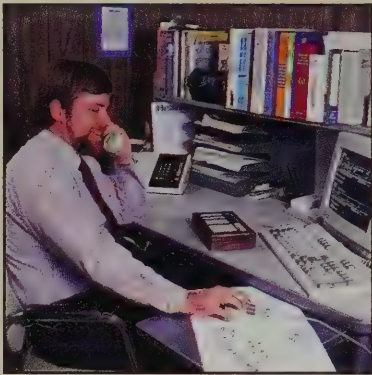


**H**eath has a long tradition of offering innovative products, from the best in test instruments to the finest in personal computers. For over 40 years we've satisfied hundreds of thousands of customers who have depended on Heath for excellence in electronics. Our reputation is built on quality. Just as our own designs go through a stringent quality control process, each product we purchase is fully inspected by our own engineers.

And you'll find our technical consultants are second to none when it comes to dedicated customer service both before and after the sale. Whether your questions are about choosing the right product or about installation or operation, you'll get personal attention and prompt courteous service from knowledgeable people.

In addition, we back everything we sell, regardless of the manufacturer's warranty, with our own **six month money back guarantee.** At Heath Company your satisfaction is always guaranteed. It's that simple.

## B ring video to any room in the house with the wireless, easy-to-connect Videocaster.

### Videocaster Wireless Video Broadcaster

Want to watch a movie on the living room VCR from the bedroom TV? Need to extend a cable TV hookup to another TV in the house? Interested in an easy way to use your security camera without a separate monitor? Now you can multiply your video viewing options with Videocaster, the affordable and easy-to-use video broadcaster.

Videocaster lets you send the picture and sound from a VCR, cable-ready TV, camcorder or security camera from one place to another without rewiring your house. In fact, Videocaster transmits a signal from almost any video source through walls, concrete, even metal beams, to another TV, VCR or monitor up to 120 ft. away.

Videocaster is easy to set up and use, too. Simply connect the video and audio outputs from one VCR (or other video equipment) to the Videocaster transmitter unit. Then connect the Videocaster receiver unit to a TV, second VCR or monitor tuned to channel 3 or 4. The signal is sent on a specially reserved UHF (Ultra High Frequency) broadcast band, which provides picture and sound as good as the original.

Although Videocaster is really a small television transmitter, no special operating license is required.

And it's fully FCC and UL approved.

There's simply no other video accessory with as many convenient uses and practical, well-engineered features as Videocaster. The compact 7 1/2 x 6 x 2 in. transmitter and receiver come with all necessary connecting cables and power supplies.

Extra receivers (sold separately below) allow you to transmit signals to more than one TV.

**VC-2000 Videocaster System ( 3 lbs.)** . . . . . . . . . . . . . . . . . . **$99.95**

**VC-1000 Additional Receiver (3 lbs.)** . . . . . . . . . . . . . . . . . . **$59.95**
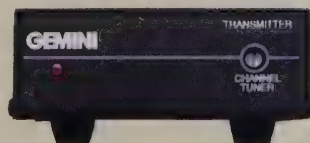
**Video Transmitter**

**Video Receiver**

# ENTERTAINMENT & CONVENIENCE

**S**imple controllers are the perfect way to bring sophisticated automation to your home without messy wiring.

## A. Whole House Controller

Far superior to most remote controllers, the One For All Whole House Controller has its own built-in computer brain that can operate virtually any infrared-controlled electronic product. Four simple keystrokes is all it takes to program each component – up to 13 total.

What makes this controller unique, however, is its ability to operate lights and appliances when used with the Command Center (this page) and home control modules (pages 22 and 23). Now from a single remote you can control your TV, VCR, stereo, lamps, fans, outdoor lights and more. You can even program special keys to perform several tasks in sequence. Just imagine, one press of a button and you can turn on your TV and VCR, start a videotape, dim the lights and pop the popcorn. The best part is you've done it all from your favorite chair. In no time you'll have your whole house under control.

**URC-5000**
**(1 lb.) ......$79.95**

## B. Command Center

The One For All Command Center is a powerful companion for the Whole House Controller. The Command Center works in conjunction with home control modules (pages 22 and 23), giving you the power to operate up to 16 groups of lights and appliances all from your single wireless remote control. Just point the Whole House Controller at the Command Center and press a button. It's that simple! You can even operate 8 groups of modules from the convenient buttons located on top of the Command Center. Plugs into standard 120-volt outlet. No special wiring needed.

**URC-3000 (2 lbs.) .......... $34.95**

## Whole House Package

Includes Whole House Controller and Command Center (this page), and BC-465 Lamp Control Module (on page 22).

**URS-6000 (4 lbs.) ......... $119.95**

## C. Sound Wedge Stereo Silencer

If you like listening to your stereo, it's annoying to jump up and turn down the volume whenever the phone rings. Sound Wedge automatically lowers the volume going to your external stereo speakers as soon as the phone rings, and keeps it low anytime the line is in use, even for outgoing calls.

Just connect Sound Wedge to your speaker outputs and plug in your telephone. You can set Sound Wedge to reduce the volume when any phone on the line is used, or when the phone attached to Sound Wedge is used. Or bypass it completely. Sound Wedge can be used at levels up to 50 watts music power per channel.

**GD-3740**
**(1 lb.) .................... $29.95**

4
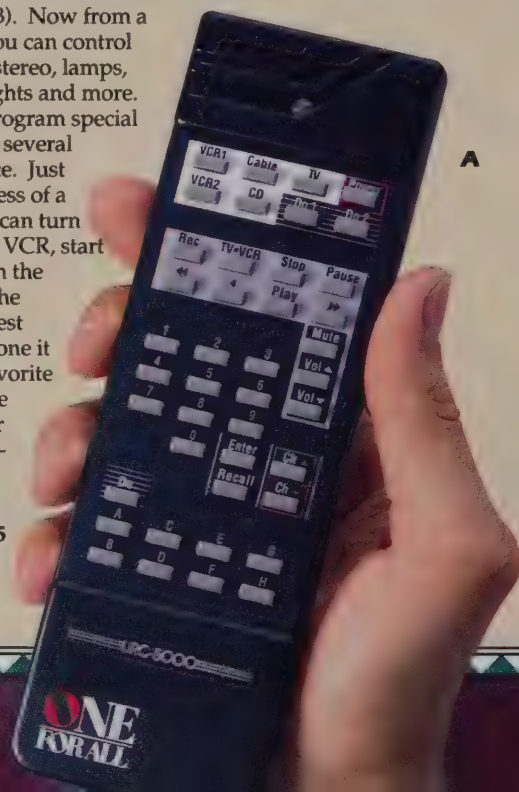
## D. Powermid Remote Control Extender

The problem with most infrared remote controls is they can't control something in another room. The Powermid wireless transmitter/receiver system extends the capabilities of your remote control by sending its signals by radio frequency from one room to another.

Just plug the Powermid transmitter into a household outlet in the room where you want to use the remote control. Then plug in the Powermid receiver in the room where the remote-controlled device is located. No wiring is necessary.

Use Powermid to control a remote controlled stereo from another room where extension speakers are installed. Control a device that may be just a little too far or hidden for your remote control to "see," even if it's in the same room. Or combine Powermid with the Videocaster (on page 3) to take command of a VCR (or other video device) that's transmitting from another room.

The Powermid system comes complete with one transmitter and receiver, ready to be used with your own remotely controlled equipment. To use Powermid in multiple rooms without moving the transmitter, order extra Powermid transmitters below.

**PM-5900 (2 lbs.)** . . . . . . . . . . . $49.99

**Additional Transmitter
ST-539 (1 lb.)** . . . . . . . . . . . . . $29.99

## E. Phonex Wireless Phone Extension

Add a phone extension anywhere in the house in just minutes! Instead of installing phone extension wires yourself (or paying a phone company to do it), just plug the Phonex base unit and extension unit into household electrical outlets. When you need phones somewhere else, Phonex base and extension units are as quick and easy to move as they are to install. No more cutting or drilling, hook-up fees or waiting for someone to hook up an extension.

Phonex is for more than just phones, though. Use Phonex with answering machines, fax machines, computer modems, even video phones. Phonex even helps extend a cordless phone's usefulness by letting you move the phone base closer to fringe areas.

Phonex transmits phone communications over the electrical wiring of your home. To ensure privacy, it works on any combination of electrical outlets from only your power meter or utility transformer. And you can leave an existing phone connected to the Phonex base unit, or just use the Phonex extension.

There's never been an easier way to install a telephone extension in your home.

**CH-140 (2 lbs)** . . . . . . . . . . . $129.95
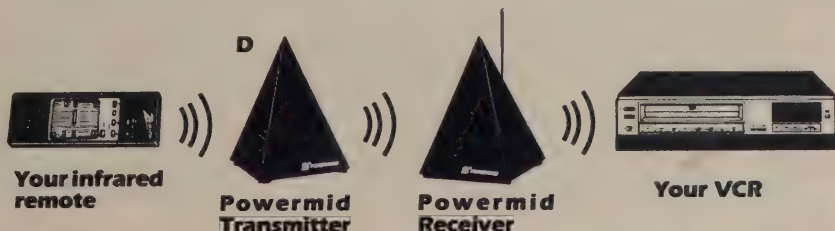
**Your infrared remote**   **Powermid Transmitter**   **Powermid Receiver**   **Your VCR**
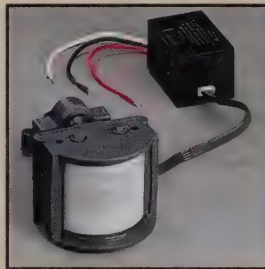
# MOTION SENSORS

**W**hen you install motion sensing lighting, you get more than just another light.

### Porch Light Adaptors

You'll never return to a dark house again. With these motion sensing adaptors, your outside lights turn on automatically, as soon as you approach. These adaptors have the advantage of working with the decorative porch lighting you already have. The Screw-In Adaptor requires no wiring, it simply screws into the socket of your porch light. The Wired Adaptor wires easily into the junction box behind your light fixture. The adjustable motion sensor mounts nearby.

Both adaptors operate by using passive infrared technology to detect someone approaching your house, and they feature pulse count technology (see **NOTES** below).

The adaptors include adjustable automatic shut-off and can be set for manual control.

**A. SL-5210 Wired Adaptor
(2 lbs.)** .................. $34.97

**B. SL-5211 Screw-In Adaptor
(1 lb.)** .................... $39.97

## NOTES

Passive-Infrared (PIR) technology has been used by the military for years and only recently has become affordable for home lighting. PIR technology uses motion sensors to detect heat from moving objects.

Whenever a person crosses through an area protected by a motion sensor, the lights automatically turn on. After an adjustable length of time, lights turn off again automatically.

The benefits are clear. Homeowners enjoy the convenience of automatic lighting when they arrive home after dark, while intruders are caught off guard by motion-sensing lighting.

Since motion sensors are susceptible to false triggering, Heath engineers went one step further. By developing pulse count technology, they reduced false triggering (often caused by blowing leaves or small pets) by up to 75%. Using this technology, the motion sensor actually counts the number of times it detects something moving in an area before it triggers the lights.

**C**

### C. Motion Sensor Light Control

Use this motion sensing light control over the garage, in the backyard or by your storage buildings. As soon as anyone comes within 60 ft. the control floods the area with light. Its pie-shaped detection area covers over 4,000 sq. ft., making it extremely difficult for an intruder to approach your property undetected.

This light control uses passive infrared and pulse count technology (see **NOTES** page 6). It features raintight housing, an adjustable shut-off delay to turn lights off automatically after you leave the protected area and a built-in photocell that deactivates the control during daylight hours. Manual override lets you turn lights on and off when you need them.

Compact and easy to install, this light control includes mounting plate and light fixture. Floodlights must be purchased separately.

**SL-5315-A  (3 lbs.)** . . . . . . . . . **$49.97**

### D. Security/Light/Chime Package

This money-saving safety and convenience package includes an outdoor light control, and a sensor chime and plug-in lamp module (both on page 22).

Whenever someone comes within 60 ft. of the light control, both the floodlights and an inside light (that's plugged into the lamp module) turn on. At the same time the sensor chime inside the house rings to alert you that someone is approaching. The light control features an adjustable shut-off, manual override, sensitivity adjustment and raintight housing. Includes mounting plate and light fixture. Purchase floodlights separately.

**SLS-5320-A (3 lbs.)** . . . . . . . . **$69.97**

**D**
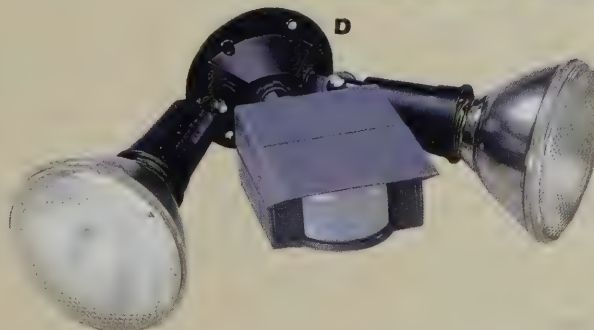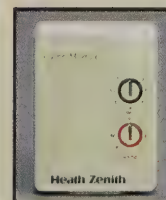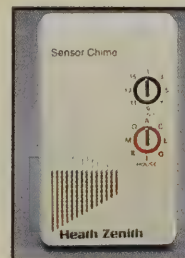
# SAFETY AND SECURITY

**M**eet your safety and security needs and prevent home disasters before they damage your house.

### A. House Sitter Security Monitor

Checking on the status of your primary residence or your vacation home can be as easy as making a phone call. From any phone in the world you can call the House Sitter and hear a voice report telling you the status of the AC electric power and room temperature. You can even listen to the sounds in the house through the unit's built-in microphone and hear a report on the House Sitter's battery backup condition.

If something goes wrong, the House Sitter will call you. The unit can be programmed to call up to four numbers, such as your office, a neighbor or friend's house, or your car phone. The message will indicate status of the AC power, temperature outside the limits you've programmed or a high noise level.

The House Sitter connects to any standard phone jack, works with both pulse dialing and touch tone systems and is compatible with most answering machines. A personal security code helps to prevent accidental or unauthorized reprogramming. Battery backup requires six AA batteries (not included).

**SD-6230 (1 lb.). . . . . . . . . . . . .$149.95**
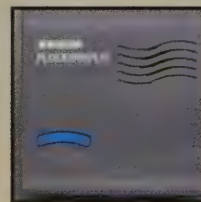
### B. Floodwatch

Everyone knows what a mess there is when the sump pump overflows, the washer or hot water heater leaks or the basement floods. Now you can avoid costly water damage and messy cleanup in your home by installing the Floodwatch water sensor/alarm. As soon as the sensor detects water, it triggers an alarm, warning you before damage occurs. The 85 dB alarm (the same intensity as most smoke alarms) sounds for up to 3 days.

Simply place the sensor unit on the floor, or attach it to a vertical surface to monitor the water level. The alarm unit can go on a table, shelf or be wall mounted using the hang-up key slot. You can replace the 6 ft. wire that connects the sensor and alarm with up to 50 ft. of wire, if needed.

A test button allows you to periodically check the alarm, and the unit beeps once every minute when the battery gets low. Operates on a 9-volt alkaline battery (not included).

**GD-3660 (1 lb.) . . . . . . . . . . . . $19.95**

**A** Listen to the House Sitter. For a recording of actual House Sitter messages, call 616-982-5960, anytime.

8

**Motion Alert Transmitter**

**Motion Alert Receiver**

C

### C. Motion Alert

Guard your pool area, backyard, even cabinets filled with dangerous materials with Motion Alert. Because you can't be everywhere at once, Motion Alert audibly warns you when a door, gate or your mailbox opens – or any object you want monitored moves.

For example, mount the transmitter on your pool gate. Whenever it opens, the transmitter sends a radio signal to the receiver inside the house triggering it to light up and buzz. You can continue your activities inside the house, worry-free, while the children play outdoors. Two separate receiver channels (A and B) allow you to monitor two different locations at the same time. Transmitters require a 9-volt battery (not included).

**GD-3670 (1 lb.) . . . . . . . . . . . $69.95**

**Extra Transmitter Channel A
GD-3670-A (1 lb.) . . . . . . . . . $29.95**

**Extra Transmitter Channel B
GD-3670-B (1 lb.) . . . . . . . . . $29.95**

### D. Ultrasonic Dog Dazer

Protect yourself from angry dogs with the ultrasonic Dazer. Now you can be in control when you walk, jog, run or ride your bike. Just point the pocket-size Dazer toward an approaching animal, push a button and watch it stop in its tracks.

The Dazer produces a discomforting, though harmless, high frequency sound that's audible to dogs but not to people. It's effective from a distance of up to 15 ft. Made of lightweight, high impact plastic, the Dazer includes a low battery indicator, belt clip and 9-volt battery. Since it's harmless, the Dazer is useful for training pets, too.

**GD-3650 (2 lbs.) . . . . . . . . . . . $29.95**

E

### E. Barking Dog Security Alarm

This novel solution to home security will guard your home for an evening or a week, never needing to be fed or taken for a walk. The Barking Dog is a simple motion sensor (see **NOTES** page 6) that uses reliable pulse count technology.

If someone approaches your home while you're away, they'll hear realistic barking from inside the house or garage. When you're at home, you can set the unit to its chime mode.

Installation is easy. Just mount the sensor outside your front door and plug the alarm box into a wall outlet. An included 15 ft. cable connects the two. The Barking Dog adjusts for volume.

**SD-6000 (3 lbs.) . . . . . . . . . . . $69.95**

D

# SAFETY & SECURITY

**P**rotect your home, family and personal belongings with dependable security products.

## A. Door Vision System

See and talk to visitors who come to your door, before you open it, with the Door Vision System. This system ensures your privacy and safety by giving you 2-way communication with anyone outside your door.

The Door Vision System is especially useful for apartment dwellers, in areas where personal safety is particularly important and in homes where an elderly or disabled person lives. You not only see who is at the door, you can talk with them before you decide to let them in.

The attractive receiver station holds a 4 in. black and white monitor, telephone intercom and handset. The station can be placed anywhere in your house that's convenient for you and your family.

The all solid state camera features a wide-angle lens with an 82° horizontal by 62° vertical angle of view. It operates effectively even after dark so you'll always have a clear view of who's at your door.

The Door Vision System comes with an AC/DC adaptor. It's easy to connect the door camera to the receiver station. Just use the same two-wire connection you use for your doorbell.

**CH-101 (5 lbs.) . . . . . . . . . . . .$999.95**

## B. TV Sentry

How often have you had to stop what you're doing to supervise the children in the yard or pool? With the TV Sentry, you can watch the kids playing outside, monitor the baby's room or see who's at the front door just by watching your own television screen. It's like being two places at once.

Mount the camera in the nursery, sick room, pool or play area, or outside the front door. Then turn your TV to channel 3 or 4. You'll have a

clear black and white picture of the monitored area.

The miniature $10\frac{1}{4}$ in. video camera is engineered with the most advanced security/surveillance technology. Built-in automatic light compensation ensures clear, sharp reception under virtually all lighting conditions. The camera features a fully adjustable mounting bracket that manually turns 360° horizontally and 90° vertically. It can be mounted to a wall, ceiling or table.

Install the camera in minutes with just four screws. Then connect the included 50 ft. plug-in cable that links the camera to your television set. Also ideal for offices and stores as a security system. Does not interfere with cable TV systems.

**CH-102 (13 lbs.) . . . . . . . . . $295.00**

B

A

**Door camera with doorbell**

**Receiver unit includes monitor and intercom**

### C. Electronic CosmoSafe™

Protect your valuable belongings from theft and fire with the reliable CosmoSafe. Open the safe using a six digit security code on an electronic keypad. You can change this code easily, as often as you want.

The roomy 10 x 10 x 10 in. compartment is surrounded by a shell of bonded steel, a layer of fire resistant Foamix, cement and a second layer of steel. The door fastens with internal relocks, deadbolts and double bolts of hardened steel.

The safe bolts to the floor or inside a cabinet and bolt heads break off when tightened, leaving a rounded surface so the safe can't be easily moved. CosmoSafe passes the Japanese Industrial Standard certification for a one hour fire resistant safe and weighs over 100 lbs. Requires four AA batteries (not included).

**CH-300(110 lbs.) . . . . . . . . . $149.95**

### Schlage KEY'N KEYLESS™ Electronic Lockset

No more searching for lost keys or hiding them under a mat. With Schlage KEY'N KEYLESS Electronic Lockset you can enter your house with or without your keys. Just enter your personal code by rotating the doorknob as you would a combination lock, then turn the knob and the door opens easily.

Numbered digits appear on an electronic display directly above the bell-shaped doorknob and are clearly visible day or night. You can change the access code as often as you like, or flip a switch to activate a temporary code. This way you can admit guests or service personnel without revealing your master code or coming home from work.

Although it's easy for you to enter your home with the electronic lockset, it becomes extremely difficult for intruders. An alarm is triggered in case of any tampering or attempts to break the code.

Also available as a lockset and deadbolt combination, the lower door lock communicates with the deadbolt lock through digital, infra-red signals. Once the correct access code is entered, signals are sent to the deadbolt allowing you to slide it with one easy turn. Without the correct code the deadbolt lock spins freely.

The high-quality deadbolt is anchored to the wall studs with heavy-duty 3 in. screws and Schlage's exclusive strikeplate reinforcer –making a forced entry almost impossible.

Requires four AAA batteries to operate lower lock and a 9-volt battery for the deadbolt. Lock indicates when batteries are low.

**D. Electronic Lockset** adjustable for 2 3/8" or 2 3/4" backset
**KN-51 (4 lbs.) . . . . . . . . . . . . $129.95**

**E. Electronic Lockset and Deadbolt** for 2 3/8" backset
**KN-150 (7 lbs.) . . . . . . . . . . . $199.95**

**Electronic Lockset and Deadbolt** for 2 3/4" backset
**KN-150-A (7 lbs.) . . . . . . . . . $199.95**

# SAFETY AND CONVENIENCE

**nnovative plug-in controls give you convenient new ways to solve old household problems.**

## A. Hour Off Control

You'll never again have to wonder if you've turned off the coffee maker, curling iron or lights. Simply plug your light or appliance into the Hour Off Control and press the start button. It will shut off by itself.

Three timer settings of 15, 30 and 60 minutes let you choose how long you want a light or appliance to operate. Press the start button again if you need more time, or press the stop button to shut the control off completely.

No installation is required. The Hour Off Control plugs into any wall outlet and safely handles up to 1650 watts. A red light indicates when the timer is on.

**CL-640-A (1 lb.) . . . . . . . . . $24.95**

## B. 3-in-1 Safety Light

The 3-in-1 Safety Light gives you a night light, safety light and flashlight all in one compact unit. You can use it as a soft neon night light in the children's room, or to light the way to the bathroom so you won't stumble in the dark.

During a power outage, the 3-in-1 Safety Light becomes even brighter automatically. Leave it plugged into the wall or unplug it and use it as a handheld flashlight. A light sensor ensures that it comes on only after dark, not during daylight hours.

Or, use this versatile light as a flashlight. You won't have to search for it in the dark and you'll be able to reach it without bumping or tripping. The battery constantly recharges when it's plugged in and lasts up to 2 hours without recharging.

No installation is required. Just plug in the 3-in-1 Safety Light and you'll have a versatile light for only pennies a year.

**CL-810-A (1 lb.) . . . . . . . . . $19.95**

A

B

## C. Call-In Control

The Call-In Control lets you turn on your lights, appliances or air conditioner from anywhere in the world by touch tone phone. It's ideal for hot days when you want to return from work to a cool house. Just pick up the phone, call home and turn your air conditioner on. Or use the Call-In Control to turn on a light before you get home in the evening.

No installation is required. Just plug the Call-In Control into a wall outlet, then plug the appliance and phone jack into the control. The control is answering machine compatible, and a security code limits access from other incoming calls. You can use the Call-In Control with any electrical device up to 1650 watts or 1/3 HP, 7 amp motor. 120 VAC operation only. Includes manual override.

**CL-800-A (2 lbs.) . . . . . . . . $49.95**

## D. Ceiling Fan and Light Controller

Because most ceiling fans are installed in locations where only lights existed before, most owners are presented with a problem. Either install another wall switch and run new wiring or operate the fan using only a pull chain. The Ceiling Fan and Light Controller solves this problem by allowing you to control both the ceiling fan and light from the same wall switch.

The controller installs easily in the decorative canopy of your ceiling fan. Your existing wall switch becomes a 3-stage switch, allowing you to turn on the lights only, the fan only or both at the same time (see **NOTES** this page).

**FL-101 (1 lb.) . . . . . . . . . . . $21.95**
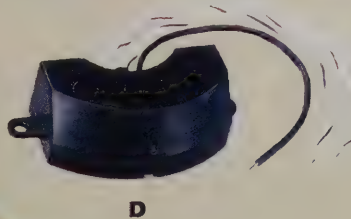
## NOTES

The 3-stage sequence below shows how easy it is to operate both your ceiling fan and lights from a single wall switch using the Ceiling Fan and Light Controller.

1. Switch ON to turn on lights only.

2. Switch OFF, then ON to turn on fan and lights.

3. Another OFF, then ON turns on fan only.

# TIME AND WEATHER

**P**recision instruments bring high-tech time and weather information into your home or office.

## Most Accurate Clock

Does it ever frustrate you when the clocks at work, at home, in the car and even your watch are all set at slightly different times and you have no clue as to which one is correct? Now you can know the exact time with the Heath Most Accurate Clock. This microprocessor-based time piece is synchronized with the National Bureau of Standards' cesium atomic clock for exceptional timing accuracy.

By automatically scanning for the National Bureau of Standards' shortwave broadcasts from station WWV in Fort Collins, CO, this precision instrument gives you the hour, minute, second and even tenth-of-a-second in local or Universal Coordinated Time. When locked onto these signals, the clock displays the time with an unbelievable accuracy of ±10 milliseconds or less. It even shows UTC 1 time that includes a correction for the wobble in the earth's rotation.

The clock features a highly visible 7-digit display so you can read the time from across the room. You'll see which frequency is being sampled, when "capture" of the time-encoded NBS carrier occurs, when data is being received and when the clock is at "hi spec" accuracy. It even includes a volume control so you can listen to the time announcements from WWV and confirm the accuracy of the display. And it can show any of the world's 24 time zones so you can set it for the zone you're interested in.

The Heath Most Accurate Clock comes with an outdoor antenna that mounts on a vertical mast or can be used in an attic, plus 50 ft. of transmission cable.

Use the included RS-232 computer interface to connect the exact time to your computer. Operates on 120/240 volts AC, 50/60 Hz,11-16 volts DC.

**GCS-1000-5 (10 lbs.)** . . . . . . . **$399.00**

**Interfacing Software** sets clock at power-up and generates a display of the GC-1000 on your PC.

**GCA-1000-3 (1 lb.)** . . . . . . . . **$49.95**

# QUESTIONS?

Our specially trained technical consultants are available 8:00 a.m. to 4:30 p.m. Eastern time, Monday through Friday. They'll answer your questions about a product or help you solve your whole-house security and home automation needs.

Call them at 616-982-3496 or write them in care of Heath Company, Technical Consultation, Benton Harbor, Michigan 49022.

## OUR GUARANTEE

For over 40 years Heath Company has been committed to customer satisfaction. We want you to be happy with every item you purchase from us. We back all our products with a friendly customer support team who will make every effort to ensure your satisfaction.

If you're not completely satisfied with any item purchased from Heath Company, simply return it to us within six months from the date of purchase for a full refund or credit. Your satisfaction is always guaranteed. It's that simple.

# YOUR BILLING RIGHTS

## KEEP THIS NOTICE FOR FUTURE USE

This notice contains important information about your rights and our responsibilities under the Fair Credit Billing Act.

### Notify Us in Case of Errors or Questions About Your Bill

If you think your bill is wrong, of if you need more information about a transaction on your bill, write us (on a separate sheet) at the address listed on your bill. Write to us as soon as possible. We must hear from you no later than 60 days after we sent you the first bill on which the error or problem appeared. You can telephone us, but doing so will not preserve your rights.

### In your letter, give us the following information:

- Your name and account number.
- The dollar amount of the suspected error.
- Describe the error and explain, if you can, why you believe there is an error. If you need more information, describe the item you are not sure about.

If you have authorized us to pay your credit card bill automatically from your savings or checking account, you can stop the payment on any amount you think is wrong. To stop the payment your letter must reach us three business days before the automatic payment is scheduled to occur.

### Your Rights and Our Responsibilities After We Receive Your Written Notice

We must acknowledge your letter within 30 days, unless we have corrected the error by then. Within 90 days, we must either correct the error or explain why we believe the bill was correct.

After we receive your letter, we cannot try to collect any amount you question, or report you as delinquent. We can continue to bill you for the amount you question, including finance charges, and we can apply any unpaid amount against your credit limit. We do not have to pay any questioned amount while we are investigating, but you are still obligated to pay the parts of your bill that are not in question.

If we find that we made a mistake on your bill, you will not have to pay any finance charges related to any questioned amount. If we didn't make a mistake, you may have to pay finance charges, and you will have to make up any missed payments on the questioned amount. In either case, we will send you a statement of the amount you owe and the date that if is due.

If you fail to pay the amount that we think you owe, we may report you as delinquent. However, if our explanation does not satisfy you and you write to us within ten days telling us that you still refuse to pay, we must tell anyone we report you to that you have a question about your bill. And, we must tell you the name of anyone we reported you to. We must tell anyone we report you to that the matter has been settled between us when it finally is.

If we don't follow these rules, we can't collect the first $50 of the questioned amount, even if your bill was correct.

### Special Rule for Credit Card Purchases

If you have a problem with the quality of property or services that you purchased with a credit card, and you have tried in good faith to correct the problem with the merchant, you may have the right not to pay the remaining amount due on the property or services. There are two limitations on this right:

(a) You must have made the purchase in your home state or, if not within your home state, within 100 miles of your current mailing address; and

(b) The purchase price must have been more than $50.

These limitations do not apply if we own or operate the merchant, or if we mailed you the advertisement for the property or services.

# ORDER BY PHONE: 1-800-253-0570

Use your Heath Revolving Charge, VISA, MasterCard or American Express. Our operators are ready to serve you 24 hours a day. For the most efficient handling of your order, please fill out your order form before you call.

# ORDER BY FAX: 1-616-982-5577

Anytime day or night. Just fax us a copy of your completed order form.

# ORDER THROUGH COMPUSERVE:

Enjoy the ease and convenience of shopping by computer. Just type **GO HTH** at any ! or OK prompt for instant access to the Heath Online Catalog, plus special offers for CompuServe subscribers.

FREE CONNECT TIME for Heath shoppers! Plan to make your purchases on the following days. The Heath Online Catalog is open to you free of charge December 29, 30, January 2, 5, 6, 9, 16, 23, 30.

# ORDER BY MAIL:

Please follow these steps when placing your order:

1. Give your full address, including apartment number if any.
2. Include quantity, model number, description, price and ship weight (listed in parentheses following each product) for each item you order. Figure shipping charges for your zone from the charts at right.
3. Please attach a separate sheet to order replacement parts and manuals, or for any correspondence.

# SHIPPING INFORMATION:

1. Find your zone number using the **ZONE CHART** at right.
2. Total the ship weights of all items ordered.
3. Determine the shipping charges for your total order from the **RATE CHART** at right.

For weights over 25 lbs. call 1-800-253-0570 for freight costs.

**Air freight shipments:** See rate chart for 2nd day air charges. Next day air may also be available to your area. Call 1-800-253-0570 8:00 a.m. to 4:30 p.m. Eastern time for information.

**APO/FPO shipments:** Military overseas shipments must weigh less than 70 lbs. and not exceed 107" length and girth combined. Use Zone A charges for West Coast, Zone B for East Coast and Miami shipments.

**Rural route and P.O. box addresses:** Use Zone A.

**Hawaii, Alaska, Puerto Rico addresses:** Use air freight service and cost. Add $10 surcharge.

# PAYMENT OPTIONS:

**Heath Revolving Charge.** You can open a new Heath account with a purchase as small as $100 with 10% down. Use the Heath Preferred Customer Credit application. Once your account is open, you may add to your existing balance in any amount within your credit limit.

**Major Credit Card Purchases.** We accept VISA, MasterCard and American Express.
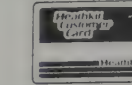
**Commercial and Educational Accounts.** Heath offers net 30-day terms to companies with rated credit and to Patterson-listed educational institutions. Call 616-982-3561 for details.

Note: All credit orders subject to Heath Credit Department approval.
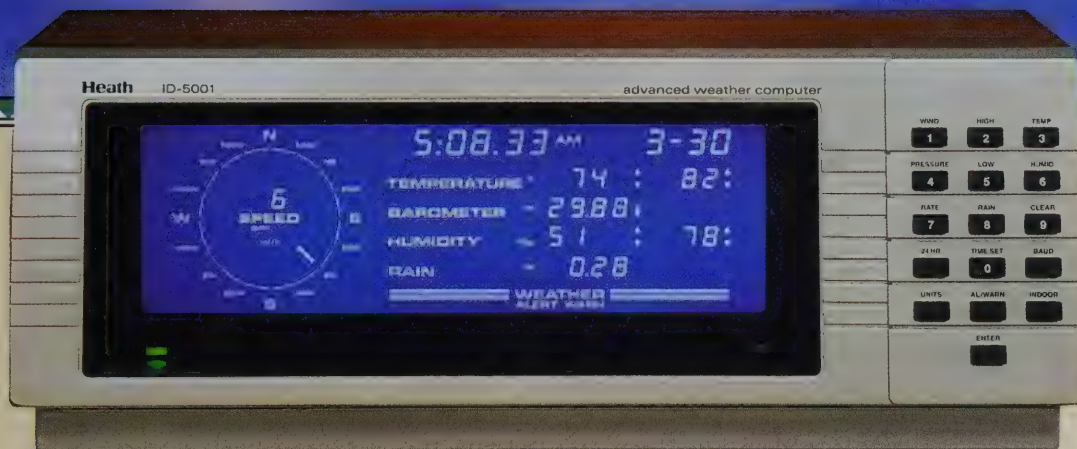
## ZONE CHART

Your zone is indicated by the first three digits of your ZIP code.

| Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone | Zip Code Prefixes | UPS Zone |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 004-005 | 5 | 200-232 | 4 | 342-346 | 5 | 470-472 | 3 | 600-609 | 2 | 820 | 5 |
| 010-069 | 5 | 233-237 | 4 | 349 | 6 | 473 | 2 | 610-619 | 3 | 821 | 6 |
| 070-083 | 4 | 238-259 | 4 | 350-353 | 4 | 474-475 | 3 | 620-623 | 4 | 822 | 5 |
| 084 | 5 | 260-261 | 4 | 354 | 5 | 476-477 | 4 | 624-628 | 3 | 823-826 | 6 |
| 085-089 | 4 | 262-278 | 4 | 355-359 | 4 | 478 | 3 | 629-668 | 4 | 827 | 5 |
| | | 279 | 5 | 360-361 | 5 | 479-496 | 2 | 669-679 | 5 | 828-832 | 6 |
| 100-104 | 4 | 280-283 | 4 | 362 | 4 | 497-499 | 3 | 680-687 | 4 | 833 | 7 |
| 105-108 | 5 | 284-285 | 5 | 363-369 | 5 | | | 688-699 | 5 | 834 | 6 |
| 109-113 | 4 | 286-289 | 4 | 370-386 | 4 | 500-516 | 4 | | | 835-838 | 7 |
| 114-115 | 5 | 290-292 | 5 | 387 | 5 | 520-524 | 3 | 700-722 | 5 | 840-847 | 6 |
| 116 | 4 | 293 | 4 | 388 | 5 | 525 | 4 | 723-727 | 4 | 850-864 | 7 |
| 117-119 | 5 | 294-295 | 5 | 389-397 | 5 | 526-528 | 3 | 728-732 | 5 | 865-885 | 6 |
| 120-123 | 4 | 296-297 | 4 | 399 | 5 | 530-534 | 2 | 733 | 6 | 889-898 | 7 |
| 124-126 | 5 | 298-299 | 5 | | | 535-539 | 3 | 734-768 | 5 | | |
| 127-128 | 4 | | | 400-406 | 4 | 540 | 4 | 769 | 6 | 900-921 | 8 |
| 129 | 5 | 300-303 | 4 | 407-409 | 4 | 541-546 | 3 | 770-778 | 5 | 922-925 | 7 |
| 130-149 | 4 | 304 | 5 | 410-412 | 3 | 547-548 | 4 | 779-789 | 6 | 926-934 | 8 |
| 150-153 | 3 | 305-307 | 4 | 413-426 | 4 | 549 | 3 | 790-792 | 5 | 935 | 7 |
| 154-160 | 4 | 308-310 | 5 | 427-432 | 3 | 550-566 | 4 | 793-799 | 6 | 936-960 | 8 |
| 161 | 3 | 311 | 4 | 433-436 | 2 | 567 | 5 | | | 961 | 7 |
| 162-163 | 4 | 312-329 | 5 | 437-457 | 3 | 570-572 | 4 | 800-802 | 5 | 970-976 | 8 |
| 164-165 | 3 | 330-334 | 6 | 458 | 4 | 573-588 | 5 | 803-805 | 6 | 977-984 | 7 |
| 166-199 | 4 | 335-338 | 5 | 459-462 | 3 | 590-597 | 6 | 806-807 | 5 | 985-986 | 8 |
| | | 339 | 6 | 463-469 | 2 | 598-599 | 7 | 808-816 | 6 | 988-994 | 7 |

## RATE CHART

| Shpg. wt. | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 6 | Zone 7 | Zone 8 | Zone A | Zone B | 2nd Day Air |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $1.63 | $1.77 | $1.93 | $2.01 | $2.09 | $2.19 | $2.28 | $2.40 | $2.40 | $6.00 |
| 2 | 1.64 | 1.78 | 2.16 | 2.28 | 2.46 | 2.62 | 2.81 | 2.40 | 2.40 | 6.00 |
| 3 | 1.72 | 1.93 | 2.34 | 2.53 | 2.77 | 3.03 | 3.28 | 3.45 | 4.32 | 6.00 |
| 4 | 1.81 | 2.08 | 2.53 | 2.72 | 3.00 | 3.33 | 3.69 | 4.13 | 5.33 | 6.00 |
| 5 | 1.90 | 2.17 | 2.62 | 2.85 | 3.23 | 3.61 | 4.01 | 4.86 | 6.37 | 6.50 |
| 6 | 1.99 | 2.21 | 2.68 | 2.93 | 3.33 | 3.77 | 4.23 | 5.71 | 7.66 | 7.50 |
| 7 | 2.07 | 2.23 | 2.73 | 3.01 | 3.47 | 3.97 | 4.47 | 5.39 | 8.67 | 8.50 |
| 8 | 2.16 | 2.27 | 2.81 | 3.21 | 3.74 | 4.29 | 4.87 | 7.07 | 9.68 | 9.50 |
| 9 | 2.27 | 2.38 | 2.96 | 3.39 | 4.00 | 4.61 | 5.27 | 7.76 | 10.69 | 10.50 |
| 10 | 2.35 | 2.47 | 3.09 | 3.56 | 4.23 | 4.93 | 5.64 | 8.44 | 11.70 | 11.50 |
| 11 | 2.45 | 2.60 | 3.23 | 3.78 | 4.48 | 5.27 | 6.08 | 9.12 | 12.71 | 12.50 |
| 12 | 2.56 | 2.74 | 3.40 | 3.99 | 4.79 | 5.62 | 6.50 | 9.81 | 13.72 | 13.50 |
| 13 | 2.63 | 2.86 | 3.58 | 4.21 | 5.08 | 5.99 | 6.93 | 10.49 | 14.73 | 14.50 |
| 14 | 2.67 | 2.99 | 3.77 | 4.42 | 5.36 | 6.33 | 7.36 | 11.17 | 15.74 | 15.50 |
| 15 | 2.74 | 3.11 | 3.93 | 4.65 | 5.64 | 6.70 | 7.79 | 11.86 | 16.75 | 16.50 |
| 16 | 2.81 | 3.24 | 4.10 | 4.88 | 5.94 | 7.05 | 8.22 | 12.54 | 17.75 | 17.50 |
| 17 | 2.88 | 3.37 | 4.27 | 5.09 | 6.22 | 7.40 | 8.65 | 13.22 | 18.76 | 18.50 |
| 18 | 2.95 | 3.49 | 4.44 | 5.31 | 6.51 | 7.76 | 9.07 | 13.90 | 19.77 | 19.50 |
| 19 | 3.06 | 3.64 | 4.62 | 5.52 | 6.80 | 8.12 | 9.50 | 14.59 | 20.78 | 20.50 |
| 20 | 3.18 | 3.77 | 4.79 | 5.75 | 7.08 | 8.46 | 9.93 | 15.27 | 21.79 | 21.50 |
| 21 | 3.30 | 3.90 | 4.97 | 5.98 | 7.36 | 8.83 | 10.36 | 15.95 | 22.80 | 22.50 |
| 22 | 3.40 | 4.03 | 5.14 | 6.19 | 7.65 | 9.18 | 10.79 | 16.64 | 23.81 | 23.50 |
| 23 | 3.50 | 4.15 | 5.31 | 6.41 | 7.94 | 9.53 | 11.21 | 17.32 | 24.82 | 24.50 |
| 24 | 3.60 | 4.28 | 5.48 | 6.63 | 8.23 | 9.89 | 11.65 | 18.00 | 25.50 | 25.50 |
| 25 | 3.70 | 4.40 | 5.65 | 6.85 | 8.50 | 10.25 | 12.07 | 18.69 | 26.84 | 26.50 |

Note: For weights over 25 lbs. call 1-800-253-0570 for rates.

# Heath Co.

P.O. Box 8589
Benton Harbor, MI 49022

223-402

WILLIAM BRINKMEYER
417 BOB COURT
NEWBURY PARK  CA 91320

Daytime Phone ( )
(in case we need to contact you concerning your order)

Ship to (if different than bill to):

Name _____
Address _____
                                              Apt. _____
City _____ State ___ Zip _____

If address is incorrect, please correct here.

Name _____
Address _____
                                              Apt. _____
City _____ State ___ Zip _____

Please do not write in this space

| QUAN. | MODEL NUMBER | DESCRIPTION | PRICE PER ITEM | TOTAL PRICE | SHIP WEIGHT |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| | | | |
|---|---|---|---|
| SUBTOTAL | | TOTAL SHIP WEIGHT | |
| Less allowance if any | – | | |
| Merchandise TOTAL | | | ___ lbs. |
| Add 4% sales tax for Michigan deliveries, add 6.25% sales tax for California deliveries | + | | |
| Ship Charges (see Rate Chart) | + | | |
| Handling, Packaging | + | 2.00 | |
| Plus amount due from previous order | + | | |
| TOTAL AMOUNT OF ORDER | | | |

**ORDER TOLL-FREE
24 HOURS A DAY
1-800-253-0570
OR FAX YOUR CREDIT
CARD ORDER: 616-982-5577**

**When ordering by phone**
please provide the operator with the six-digit code
that appears near your name and address.

For 2nd Day Air Service please check here. ☐
See Rate Chart for additional charges.

## METHOD OF PAYMENT

☐ **Cash** – Please send check or money order only.

☐ **Charge** – Check one

Acct. #

Exp. date: Month _____ Year _____

Signature _____
(Necessary for all charges)

☐ **Heath Revolving Charge** – To open a new account fill out the Heath Preferred Customer Credit Application and include a down payment of at least 10%. New accounts may be opened with purchases as small as $100. Add-ons to your account require no minimum.

Current customers please enter account number and sign below.

Signature _____

OB-175

## Advanced Weather Computer

A glance at the Heath Advanced Weather Computer and you know the exact weather conditions for your particular area. Up-to-date information is always at your fingertips with the Advanced Weather Computer. It's an essential instrument for your home or office.

A striking cobalt blue, the computer's backlit liquid crystal display shows wind speed in miles per hour, knots or kilometers per hour.
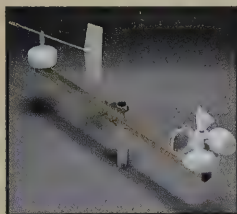


**Precision boom assembly includes wind vane and cups for measuring wind direction and speed.**

A compass with 32-point resolution shows wind direction. Indoor and outdoor temperatures are continuously displayed in Fahrenheit or Celsius, barometric pressure in inches of mercury or millibars. Arrows show rising and falling values and their rates.

A 6-digit 12- or 24-hour clock displays the day and date, and even gives you automatic leap year and daylight savings time correction. You don't need to worry about resetting the clock for time changes because it automatically corrects itself.

Additional displays include minimum and maximum readings of indoor and outdoor temperature, indoor and outdoor humidity, barometric pressure and windspeed — plus their time and date of occurrence.

Arrows show rate and direction of change, important for predicting the weather. Wind chill temperature and fog display are also included. In addition, audible and visual signals warn you of severe weather conditions.

A built-in RS-232 computer interface allows you to connect the Advanced Weather Computer to your IBM or compatible computer (software sold separately below). Please note that the included boom assembly requires one of the cables listed below. The Advanced Weather Computer measures a compact 5 3/4" H x 15 1/2" W x 8 3/4" D.

**IDW-5001 (20 lbs.) ........ $999.95**

**Rain Gauge Sensor IDA-5001-2
(3 lbs.) .................... $39.95**

**Advanced Weather Computer Software** gives you detailed weather conditions with highs and lows plus rate of change.

**IDA-5001-5 (2 lbs.) ......... $49.95**

**50 ft. Cable IDA-1290-1
(2 lbs.) .................... $12.95**

**100 ft. Cable IDA-1290-2
(4 lbs.) .................... $22.95**

**150 ft. Cable IDA-1290-3
(6 lbs.) .................... $32.95**

# OUTDOOR CONTROL

O utdoor controllers extend convenience and protection beyond the walls of your home.

## A. Automatic Water Controller

RainMatic 3000 is a sophisticated water controller that delivers all the features and flexibility of an underground, automatic watering system at a fraction of the cost.

As simple to use as a touch-tone phone, RainMatic 3000 can water your lawn up to eight times a day over a two week period with watering cycles ranging from just minutes, to more than 23 hours. The easy-to-read LCD display gives you a visual check of each entry and provides quick-scan review of your complete watering program. The unit even has manual override for special activities such as washing the car.

There's nothing else to buy, because RainMatic 3000 uses your existing hoses and sprinklers. Attaches to your outside faucet in seconds and locks to prevent theft. Operates all season on four C batteries (not included).

**RM-3000 (2 lbs.)** . . . . . . . . . . **$59.95**

## B. Automatic Watering-Zone Switcher

Hydro-Zoner II expands the capabilities of RainMatic 3000, giving you sophisticated control over different watering zones.

For example, you can designate your front yard as one zone and your backyard as another. Then, using Hydro-Zoner II and RainMatic 3000, you can automatically water your front yard in the morning and your backyard in the afternoon. No more dragging hoses around the yard!

Hydro-Zoner II gives you control over two separate zones and, best of all, it doesn't require any wiring or batteries. Whenever the unit senses the end of a watering cycle, it automatically switches to the next zone. When the next cycle begins, Hydro-Zoner II is already set to direct the water to the appropriate area.

**RM-150 (1 lb.)** . . . . . . . . . . . . **$29.95**

A

B

## Automobile Protection System

Protect your vehicle and its contents with this complete remote control alarm system you can install yourself. You'll have maximum protection from break-in at every vital entry point on your car.

You can arm and disarm your vehicle from up to 100 ft. away with the handy remote transmitter you carry with you. While you're away from your car, two separate sensors protect your vehicle. A shock sensor detects a sudden impact to the car's surface, such as someone trying to break a window. And a current sensor monitors the dome light inside the car. If the dome light comes on because someone has opened a door, the alarm will sound for a full two minutes before resetting. Special fail-safe circuitry prevents false alarms in cars with electric cooling fans.

The system includes a warning light that fits on your dash and shows when the system is armed, plus two remote key chain units that double as panic buttons – sounding your car's alarm if depressed for more than five seconds. A complete instruction manual is included.

**RA-6000 (3 lbs.)** ........... $99.95

**Door Lock Interface**
**DL-1 (1 lb.)** .............. $44.95

**Starter Interrupt**
**RK-1 (1 lb.)** .............. $17.95

**Parking Light Flasher**
**PL-1 (1 lb.)** .............. $29.95

**Hood/Trunk Light**
**HT-1 (1 lb.)** ............... $9.95

A. Siren Modules    B. Key Chain Units    C. Door Lock Interface    D. Hood/Trunk Light    E. Parking Light Flasher    F. Starter Interupt

# HOME CONTROLS

**O**perate lights and appliances from a distance, even from your car as you pull into the driveway.

### A. Remote Command System

Everyone is familiar with remote controls that operate TVs and VCRs, but haven't you ever wished you could find a remote that turns off the downstairs lights after you're in bed? Or one that turns on an inside light so you don't have to walk into a dark house at night? With the Remote Command System you can control lights and even appliances, anywhere inside or outside your house, from up to 150 ft. away.

The remote transmitter operates up to 16 groups of control modules (pages 22 and 23) from just about anywhere in your house. You can even brighten and dim lamps connected to the system.

The system operates using radio signals similar to those used by a cordless phone. Radio waves allow the remote signal to travel through walls and ceilings directly to the receiver module. You can even keep a remote in your car to turn on lights inside the house as you pull in the driveway at night.

System setup is a snap. Just plug the receiver module into any standard outlet and you're ready to go. Complete control of your house is now in the palm of your hand.

Transmitter requires four AAA batteries (not included).

**BC-5000 (1 lb.)** . . . . . . . . . . . . **$39.99**

**Additional Remote Transmitter**
**BC-504 (1 lb.)** . . . . . . . . . . . . . **$19.99**
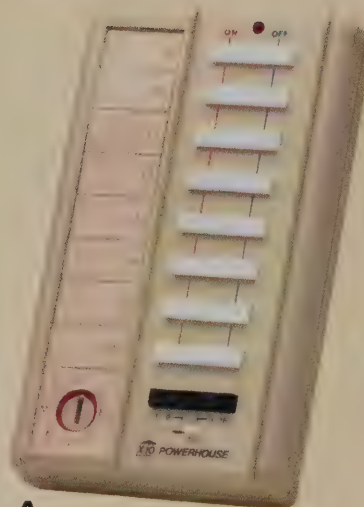
**A**
**Remote Transmitter**

**Receiver Module**

## NOTES

A line carrier operated control system gives you control of lights and appliances from anywhere in your house or apartment. The system works with a command center – either remote or plug-in – which sends digital signals over the existing power lines of your home. The signals are received by control modules that plug into the electrical outlets around your house. Any lamp or appliance plugged into one of these modules can then be operated from the remote command center.

Installation of a line carrier operated control system couldn't be easier. You simply plug the modules into the standard electrical outlets in your home.

From the command center you can then control lights, fans, air conditioners or almost anything else that plugs into an electrical outlet. One command center can activate as many as 16 groups of control modules located throughout the house. Switches on the module let you arrange your system with a unique code.

## B. Mini Command Center

This handy little controller puts you in command of up to eight groups of lights and appliances all from one convenient location. The Mini Command Center is a perfect addition to any room where you want one touch control.

The Mini Command Center uses simple rocker keys to control power to lights and appliances. To turn on a control module (pages 22 and 23), press the top of the rocker key. Press the bottom of the rocker key to turn it off. In addition, there are two special function rocker keys. One brightens or dims selected lights, the other turns all lights on or all lights and appliances off. Just plug the command center into any wall outlet and installation is complete.

**MC-460 (1 lb.)** . . . . . . . . . . . . . **$12.99**
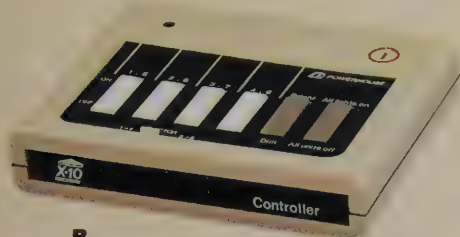
**B**

## C. Maxi Command Center

The Maxi Command Center expands the capabilities of the Mini Command Center giving you fingertip control of up to 16 groups of lights and appliances. A push of a button is all it takes to start coffee brewing in the kitchen or to turn on a porch light. Whole house control is now available from one convenient location.

The Maxi Command Center lets you turn on and off lights and appliances individually or in groups. You can also brighten and dim lights to your exact liking. Use the ALL LIGHTS ON button if you hear a suspicious noise during the night. Or press ALL UNITS OFF to turn off all lights and appliances from your bedside.

Installation is easy. Simply plug in the command center and it's ready for operation. Control modules are sold on pages 22 and 23.

**BC-503 (1 lb.)** . . . . . . . . . . . . . **$24.99**

**C**
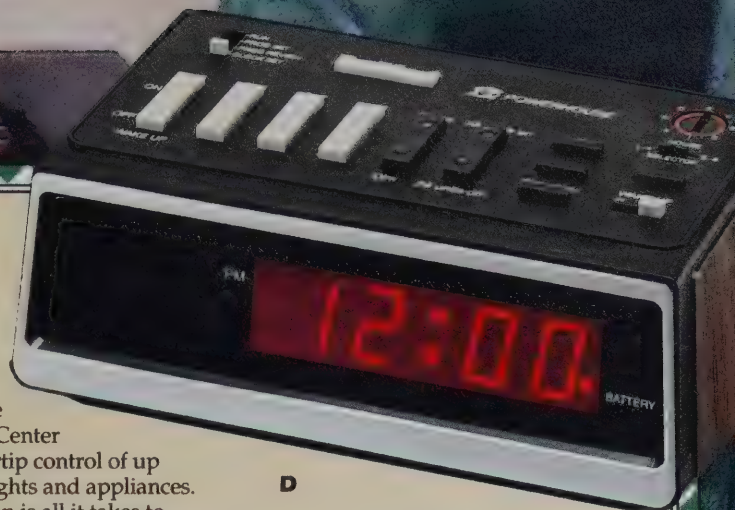
**D**

## D. Timer Command Center

With the Timer Command Center you get the features of a Mini Command Center (this page), a timer and an alarm clock in one sophisticated controller.

At the touch of a button this unit can turn on or off up to eight groups of control modules (pages 22 and 23) anywhere in your home. Or program it to control lights automatically so your house looks lived-in when you're away. You get automated control of up to four groups of control modules, with a maximum of two on and off times daily. A security mode will vary your programmed times each day so your house doesn't look like it's being controlled by a timer.

The Timer Command Center includes battery back-up so your programmed times are protected for up to 48 hours in case of a power outage. Requires a 9-volt battery (not included).

**MT-522 (3 lbs.)** . . . . . . . . . . . **$29.99**

# HOME CONTROLS

**C**ontrolling lights and appliances from your phone, computer or security system is easier than ever.

## A. Alarm Control Interface

Add the Alarm Control Interface to your existing burglar alarm system for even more protection. When your alarm system trips, the interface turns on all lights connected to control modules (pages 22 and 23), filling your home with light. You can even set the interface to flash all lights as an extra deterrent.

Installation is simple. Connect the output panel or central controller of your existing alarm system to the two screw terminals on the interface. Then plug the interface into any AC outlet and your system is set. Your alarm output can be either dry contact closure or low voltage (AC, DC or audio 6-18 volts).

**BC-284 (1 lb.) . . . . . . . . . . . . . $39.99**

## B. Telephone Responder

If you can't be there in person, just call the Telephone Responder. It will turn on the lights or even pre-heat or cool your home before you arrive. This compact remote controller carries out your commands when you call from a touch-tone phone — whether next door or around the world. When combined with control modules (pages 22 and 23), it controls lamps, appliances, even 110 or 220-volt window air conditioners.

Use it also as a tabletop controller and control up to ten groups of modules directly from the built-in keypad, complete with ALL LIGHTS ON and ALL LIGHTS OFF buttons. The Telephone Responder can be set to flash selected lights when the phone rings, making it useful for the hearing impaired. Plugs into any phone jack. No wiring is necessary. A simulated wood grain lid (not shown) covers the keypad when not in use.

**TR-551 (2 lbs.) . . . . . . . . . . . . $69.99**
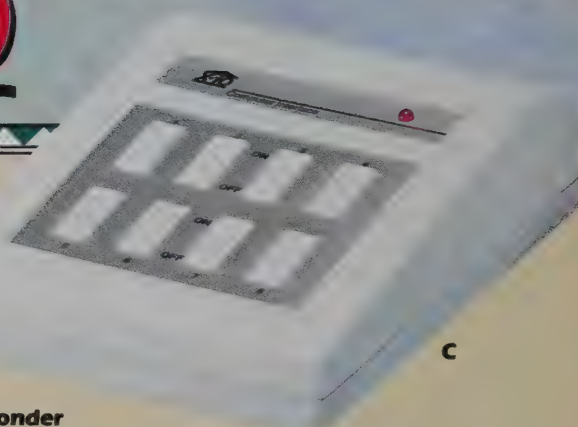
## C. Computer Control Interface

The Computer Control Interface and your personal computer combine for a powerful home automation package.

Able to communicate with up to 256 groups of control modules (pages 22 and 23), the interface can operate just about anything in your house. You can program modules to go on and off at various times on different days of the week and even dim lights to a specific brightness level.

Best of all, the interface doesn't tie up your computer. Just program your home control information and detach the interface. Battery backup protects your programming for up to 100 hours in the event of a power outage.

**BC-290-A** For Apple IIe/IIc.
**(3 lbs.) . . . . . . . . . . . . . . . . . . $59.99**

**BC-290-M** For Mac 128K, 512, Plus, II, SE and XL (cable adaptor required for Mac Plus, II, SE, XL).
**(2 lbs.) . . . . . . . . . . . . . . . . . . $59.99**

**BC-290-P** For IBM PCs and compatibles. **(2 lbs.) . . . . . . . . $59.99**

# GUIDE TO COMMAND CENTERS

| Page | Order Number | Product | Wireless Remote Control | Groups of Modules Controlled | All On All Off Control | Dims Lights | Flashes Lights | Program-mable | Price |
|---|---|---|---|---|---|---|---|---|---|
| 4 | URC-5000 | One For All Remote Control* | Yes | 16 | Yes | Yes | No | Yes | 79.95 |
| 4 | URC-3000 | One For All Command Center | No | 8 | Yes | Yes | No | No | 34.95 |
| 18 | BC-5000 | Remote Command System | Yes | 16 | No | Yes | No | No | 39.99 |
| 19 | MC-460 | Mini Command Center | No | 8 | Yes | Yes | No | No | 12.99 |
| 19 | BC-503 | Maxi Command Center | No | 16 | Yes | Yes | No | No | 24.99 |
| 19 | MT-522 | Timer Command Center | No | 8 | Yes | Yes | No | Yes | 29.99 |
| 20 | BC-290 | Computer Control Interface | No | 256 | Yes | Yes | No | Yes | 59.99 |
| 20 | TR-551 | Telephone Responder | By Phone | 8 | Yes | No | Yes | Yes | 79.99 |
| 20 | BC-284 | Burglar Alarm Interface | No | 16 | Yes | No | Yes | Yes | 39.99 |

\* When used with the URC-3000

# GUIDE TO CONTROL MODULES

| Page | Order Number | Product | Incandescent Lights | Appliances, Flourescent Lights | Dims Lights* | Capacity | Price |
|---|---|---|---|---|---|---|---|
| 22 | BC-465 | Lamp Control Module | Yes | No | Yes | 300 watts | 12.99 |
| 22 | BC-466 | Appliance Control Module | Yes | Yes | No | 120VAC 15 amps | 12.99 |
| 22 | BC-467 | Wall Switch Control Module | Yes | No | Yes | 500 watts | 12.99 |
| 22 | BC-4777 | 3-Way Switch Control Set | Yes | No | Yes | 500 watts | 19.99 |
| 23 | BC-277 | Wall Receptacle Control Module | Yes | Yes | No | 120VAC 15 amps | 19.99 |
| 23 | BC-245 | Heavy Duty Control Module | Yes | Yes | No | 240VAC 20 amps | 29.99 |
| 23 | UM-506 | Universal Control Interface | Yes | Yes | No | See p. 23 | 29.99 |

\* From command centers

**Important Note: All command centers work with all control modules**

# CONTROL MODULES

**C**ontrol modules give you convenient control of lights and appliances from anywhere in the house.

## A. Lamp Control Module

The Lamp Control Module is an easy-to-install device that gives you complete control over your existing incandescent lamps. Just plug the light you wish to control into the module and plug the module into any standard outlet. From any command center (pages 18 and 19), you can turn lights on and off, anywhere in the house. You can even brighten or dim lamps – up to 300 watts.

**BC-465 (1 lb.) . . . . . . . . . . . . . $12.99**

## B. Wall Switch Control Module

When it comes to security lighting, nothing's better than illuminating the exterior of your home. In most cases, exterior lights are controlled from an indoor wall switch. This module replaces that switch so you can turn porch lights on and off from a command center (pages 18 and 19) anywhere in the house. You can use the module to control important indoor lights, too.

The unit installs like an ordinary dimmer control or light switch and allows you to turn lights up to 500 watts maximum, 60 watts minimum on and off, and brighten and dim them as needed. Includes push button for manual control at the light switch.

**BC-467 (1 lb.) . . . . . . . . . . . . . $12.99**

## C. 3-Way Switch Control Set

Many times in stairways and halls there's a light that's controlled by two separate switches. And it's often these lights that are the most troublesome to find in the dark.

This set replaces your existing 3-way switches giving you on/off and bright/dim control over stairway and hall lights. Designed for use with incandescent lights, the system can handle just about any lighting situation with its generous 500 watts maximum and 60 watts minimum specification.

**BC-4777 (1 lb.) . . . . . . . . . . . . $19.99**

**Additional Companion Switch**
**CS-277 (1 lb.) . . . . . . . . . . . . . . $7.99**

## D. Sensor Chime

Now you can catch your family's attention even when they're in distant parts of the house. This plug-in chime works with any of the command centers on pages 18 and 19. Simply press a command center button and pleasant sounding chimes call them for you.

The Sensor Chime is an excellent aid for the handicapped or bedridden, too. **NOTES** on page 18 explain how command centers work with control modules.

**SL-5321 (1 lb.) . . . . . . . . . . . . $19.97**

A

B

C

D
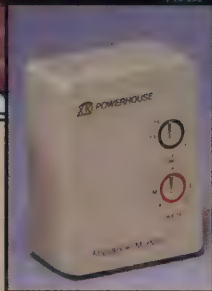
### Appliance Control Module

Now you can enjoy remote control of even an older TV set with the Appliance Control Module.

This handy module lets you turn on and off stereos, TVs and just about any other household appliance up to 15 amps, all from a conveniently located command center (pages 18 and 19). For instance, you can load the automatic coffee maker at night and turn it on by remote control in the morning. Or turn on fans and heaters from another room.

Just plug the appliance you want to control into the module and plug the module into a wall outlet. Installation is complete.

**BC-466 (1 lb.)** . . . . . . . . . . . . . **$12.99**
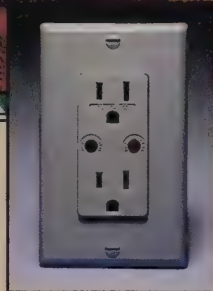
### Wall Receptacle Control Module

The Wall Receptacle Control Module gives you the convenience of the Appliance Control Module (this page) in an inconspicuous wall outlet. Just like a standard outlet, this unit features two receptacles. The top is controlled while the bottom continues to function normally. From a command center, you can control a fan or a coffee pot – any appliance up to 15 amps. Replace an outlet in the kitchen, the workshop or anywhere in the house. You'll have automated control of appliances without sacrificing the outlets you need for other purposes.

**BC-227 (1 lb.)** . . . . . . . . . . . . . **$19.99**

### Heavy Duty Control Module

Wouldn't it be nice on hot summer days to come home to a cool house without having to leave the air conditioner on all day? The Heavy Duty Control Module is specially designed to operate 220-volt appliances such as air conditioners, up to 20 amps. When you combine this module with the Timer Command Center (page 19), you get a powerful automated system that lets you activate just about any large appliance at times you specify. Simply plug the appliance into the module and the module into an outlet. No wiring is necessary. For single phase or split phase 220/240 VAC wiring only.

**BC-245 (1 lb.)** . . . . . . . . . . . . . **$29.99**

### Universal Control Interface

You can automate almost any device operated by low voltages with the Universal Control Interface. This unique controller acts as a switch, turning on and off items that operate on less than 120 volts, such as drapery controls, window openers and sprinkler systems. The unit also has a beeper you can set for a momentary or continuous tone. Use it as a wake-up alarm with the Timer Command Center on page 19, for example.

Simply wire the item you wish to switch on and off to the terminals on the module, then plug the module into a wall outlet. The contacts are rated for 15 amp resistive load at 120 VAC, 500 watts for incandescent lamp load, 1/3 h.p. inductive load (for motors), 5 amp at 24 VDC and 10 amp at 30 VAC.

**UM-506 (2 lbs.)** . . . . . . . . . . . . **$27.95**
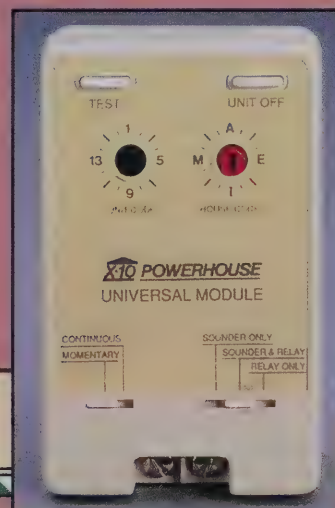
# EXPANDABLE SECURITY

**T**his versatile security system is perfect for protecting apartments and larger homes as well.

### Wireless Home Protection System

Today crime is a reality in large and small communities alike. Just pick up the newspaper any day of the week and read about homes that have been burglarized. Once, expensive, complex, professionally installed security systems were the only answer. But now a professional quality, easy-to-install, expandable system is available for under $100!

The Wireless Supervised Home Protection System offers features never before available in a do-it-yourself security system. It's supervised which means it checks itself to make sure all sensors are working properly. And, you can design your own system by expanding with accessories to cover up to 16 areas (or zones) in your home.

The system works by setting off a loud alarm when a protected door or window opens. At the same time, both indoor and outdoor lights flash on and off. (Connect indoor lamps to plug-in lamp control modules and outdoor lights to wall switch control modules, both on page 22.)

Additional features include battery backup, automatic code setting, entry and exit delays and intrusion point indicator lights. The basic system includes a plug-in control center, a remote control for arming and disarming the system and

turning lights on and off, a wireless door/window sensor, a plug-in lamp module and three window sticker warning labels. Comes with complete instruction manual.
Enhance your system with the 105 dB power siren (four times louder than most smoke detectors) and the wireless indoor motion sensor (sold separately below).

**SS-6100 (2 lbs.)** . . . . . . . . . . . **$99.97**

**Expansion Package** includes three wireless Door/Window Sensors with five sets of magnetic contacts, 12 ft. of extension wire and 2 additional warning labels.

**SSA-6100-9 (1 lb.)** . . . . . . . . . **$79.97**

**Whole House Package** includes the SS-6100 Security System, Expansion Pack (above) and Power Siren (below). Save $20.00!

**SSS-6100 (4 lbs.)** . . . . . . . . . . **$199.97**

**105 dB Power Siren**
**SSA-6100-4 (1 lb.)** . . . . . . . . . **$39.97**

**Wireless Indoor Motion Sensor**
**SSA-6100-1 (1 lb.)** . . . . . . . . . . **$64.97**

**Additional Wireless Door/Window Sensor SSA-6100-2**
**(1 lb.)** . . . . . **$29.97**

**Additional Set of Magnetic Contacts SSA-6100-12**
**(1 lb.)** . . . . . . **$5.99**

**Additional Remote Control SSA-6100-3**
**(1 lb.)** . . . . . **$24.97**
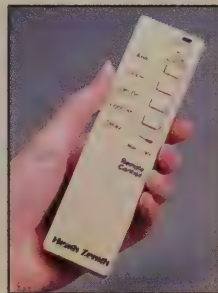
**A. Remote Control**

**B. Control Center**
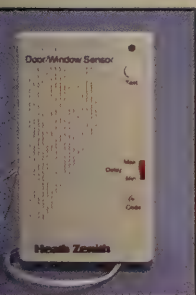
**Window Sensor**    **D. Lamp Module**    **E. Power Siren**
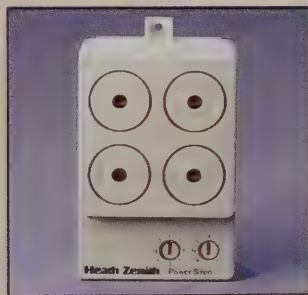
# HOME AUTOMATION

**T**he Home Automation System brings you whole house security, safety and convenience.

## Home Automation System

In the United States over 9 million homes are equipped with security systems and the number keeps growing every year. Homeowners often spend thousands of dollars for these systems that are strictly dedicated to security and that pay for themselves only by the peace of mind they deliver.

Now, with modern electronics and X-10 technology, you can enjoy sophisticated security for your family and possessions — plus complete control of lights, appliances, heating and air conditioning systems. The Home Automation System adds convenience, safety and energy savings to your home, quickly paying for itself and offering you the rewards of its sophistication for years to come.

### Advanced communications

From the main control console or from any touch-tone telephone in your home - or anywhere in the world for that matter - you can control lights and appliances, check to see if all doors and windows are closed, arm the security system and turn the heating up or down. And it's easy because the system guides you step by step over the phone in clear English. It can even give you a complete status report of all activities or irregularities including security, electrical and phone line problems that may have occurred.

### Advanced security

In any emergency situation, the Home Automation System is ready to act. Lights and sirens inside and outside your house turn on automatically. Lights you select flash to startle an intruder and help emergency personnel locate your home. In the event of fire, the central air conditioning fan even shuts off to prevent smoke from spreading throughout the house.

When an alarm does sound, all you need to do is pick up the phone to hear what caused it. You can also sound the alarm from your phone in a panic situation. All the latest tamper resistant technologies have been incorporated so it's virtually impossible to disarm the system without your access code.

### Versatility and convenience

The Home Automation System is preset to control security and lighting for a variety of common applications, but it can be easily programmed for your specific needs and concerns. You can program any combination of functions for on/off times, dawn/dusk activation and different operation on different days. You can even program it to react to security breaches in various ways.

Once you've divided your activities into HOME, AWAY and SLEEP modes, a single button will activate all perimeter security, motion sensors and lighting you've designated for that mode. Leave for work, and press a button. Come home at night and press another. It's that simple.
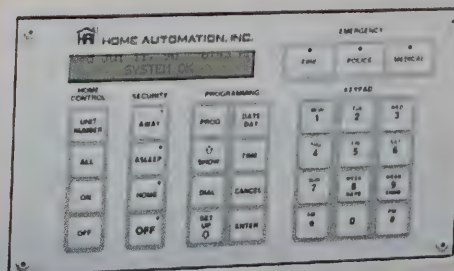
For additional information, call our Home Automation specialist, Bob Harris, Monday through Friday, 8:00 a.m. to 4:30 p.m., Eastern time at (616) 982-5950.

Wall-mount console,6" H x 9 7/8"W x1 3/4" D,table-top console, 5 1/2"H x9 1/4" W x 2 1/4" D.

**CHS-400-1** Includes Wall-Mount Keypad Console. **(30 lbs.)**    **$2995.00**

**CHS-400-2** Includes Table-Top Keypad Console. **(30 lbs.)**    **$2995.00**

**Control Center**

**Wall Mount Console**
(enlarged to show detail)

**Table-Top Console**

**Q** I want the convenience of home automation, but is this system so complicated I can't use it?

**A** The Home Automation System couldn't be easier to operate. You can control all operations from any touch-tone phone with the system guiding you in a clear English voice. Or make your selection from the control panel – it's just as simple to operate as your microwave.

**Q** My friends have an alarm system and every time they come home, they have to race to disarm it. Does the Home Automation System allow more flexibility?

**A** You can program the system for the length of time you need to disarm it — up to a minute and a half. You can also disarm it from your cellular phone or program it to disarm itself.

**Q** What do I get with the basic system?

**A** Besides the control center and the console of your choice, you get 10 door/window sensors, 500 ft. of wire, a battery backup, an energy saver module, a telephone connector block, an X-10 Powerline Interface, an X-10 Lamp Control Module and an X-10 Wall Switch Control Module.

**Q** What's the next step?

**A** Call our Home Automation Specialist, Bob Harris, at (616) 982-5950. He's available Monday through Friday, 8:00 a.m. to 4:30 p.m. Eastern Time. Bob will send additional information on the Home Automation System and discuss with you how the system will work in your home.

**G**ive your cat an exclusive entry and exit visa, while keeping other animals out, with this electronically controlled cat door.

### Electronic Cat Door

Let the cat in, let the cat out. Lock the door, unlock the door. Kitties like to come in and go out of the house when they're in the mood, and it may not always be when you're in the mood – or even there to open the door. And to your cat, waiting around is no more fun than it is for you.

Little doors for pets have been around for a long time, but the Staywell 21 Electronic Cat Door adds a new dimension of security and convenience to the concept. The swinging door releases only when a cat wearing a special electronic key is nearby, keeping other animals out. It's your cat's private entrance!

After you've installed the Electronic Cat Door in a desired location, just attach the supplied electronic key to your cat's collar. The Electronic Cat Door constantly monitors the area and releases its protective latch only when your cat approaches. You can set the door for two-way passage or one-way passage (in or out), or lock it altogether when needed.

The 8 3/4 in. square unit requires an opening of about 6 7/8 in. square and fits doors or walls up to 1 3/4 in. thick. It comes complete with mounting hardware and two collar keys. The low-power control circuit is completely safe and never comes in contact with your pet.

Now, even your kitty can benefit from the Heath home automation experience! Give your cat the freedom and safety it deserves with the Electronic Cat Door.

**CH-120(3 lbs.)** . . . . . . . . . . . **$149.95**





**Lightweight electronic collar fits snuggly on standard cat collars**

In standby mode, IntelliRotor's 40-character LCD display shows local day, date, time and current bearing.

Push one button and read selected country's latitude, longitude, grid square, bearing, time and distance.

View names and possible prefixes for any of over 400 countries in the permanent database

## Beam antenna rotation now automatic!

**SAVE**

**2.** You know the old routine. Find the location you want to work on a map or chart, calculate the bearing, rotate the beam, double-check the bearing. Want to work another location? Repeat the procedure all over again.

IntelliRotor puts an end to the hassle of rotating your beam antenna manually. With just a few keystrokes, IntelliRotor lets you choose from a permanent database of over 400 countries, including their coordinates and time zones, or lets you enter and store your own.

In its default mode, IntelliRotor's 40-character LCD display shows the current time, date, day of the week and bearing to 1°. Bearing is also displayed on a compass rose of 16 LEDs, with a resolution of 32 points, or 11.25 degrees. In addition, the display shows country names, a prefix list, target bearing, short/long path distance, latitude and longitude, grid square and the time in the target country.

Use the IntelliRotor's built-in QWERTY-style keyboard to enter any of these: the name of the country (or just the first few letters), a prefix (or partial prefix), latitude and longitude, grid square or the bearing in degrees. With a few keystrokes, IntelliRotor immediately starts rotating your antenna to the country you want.

Scan through the built-in database to obtain information before you rotate the antenna, or customize the list to



Compact controller fits almost anywhere – even mounts on a wall. Power supply (inset) can be placed out of sight, up to six ft. away.

make your beam selections even more convenient and precise. IntelliRotor lets you edit any entry or enter up to ten of your own named and detailed bearings for later use. Of course, you can always rotate the beam manually, with a constant visual update on the current angle. And sight-impaired users can choose to have IntelliRotor annunciate current bearings in Morse code at 20 WPM.

The IntelliRotor features superior rotor control with motor pulsing, automatic braking and initial back-rotating to protect the brake from locking due to wind-loading. IntelliRotor even monitors the rotator's duty cycle to make sure it can't overheat.*

Since the IntelliRotor's compact controller module is linked to a separate power unit that can be placed out of sight, you save valuable table or shelf space. Or, use the unit's serial port and included software (supplied on both 5.25" and 3.5" disks) to control the IntelliRotor from a PC-compatible computer, either as a transient program or pop-up. The program shows all the information from the controller's display and even more on your computer's screen.

Compatible with all Ham-M (series 3, 4, 5 and 6), Ham-II, Ham-III, Ham IV, T²X, CDE TR-44, CD-45 (series 2) and M2 rotators. Or order with cable and new rotator mechanism below.

**Kit HD-1780** (6 lbs.) . . . . . . . . . *Was $279.95* Now **$239.95**
**Assembled HDW-1780** (11 lbs.) . . . . . . . . . . . . . . **$349.95**
Configurations:
**HDS-1780-1** Kit IntelliRotor with TELEX Ham IV Rotator and 125 ft. of cable. (28 lbs.). . . . . . . . . . . . . . Now **$589.95**
**HDS-1780-2** Kit IntelliRotor with TELEX Ham IV Rotator and 200 ft. of cable. (29 lbs.). . . . . . . . . . . . . . Now **$679.95**
**HDS-1780-3** Fully assembled IntelliRotor with TELEX Ham IV Rotator and 125 ft. of cable. (33 lbs.) . . . . . **$699.95**
Accessories:
**125 ft. Standard Rotator Cable**
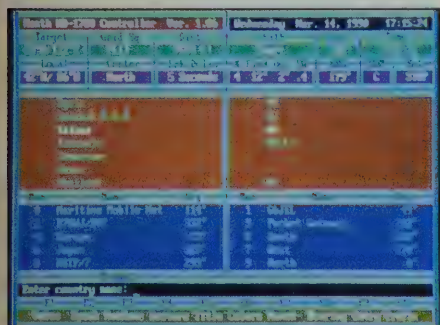Assembled HDA-1780-1 (4 lbs.). . . . . . . . . . . . . . **$69.95**
**200 ft. Heavy Duty Rotator Cable**
Assembled HDA-1780-2 (15 lbs.). . . . . . . . . . . . . **$129.95**
**Telex Ham IV Rotator,** manual and hardware (control box not included)
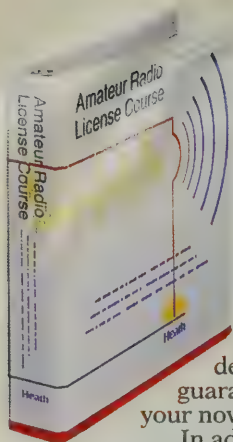Assembled HDA-1780-3 (18 lbs.). . . . . . . . . . . . . **$319.95**

*Note: Telex*/hy-gain* honors their rotator warranties when used with this product.



Included software lets you operate the controller from a PC-compatible computer, complete with screen displays.

Rugged Ham IV Rotator works great with the IntelliRotor.

## Revised novice course contains the latest rules

## The computerized assistant that locates former calls in moments

Designed to run on your IBM PC or compatible, Logbook is your personal amateur radio database manager, organizing call sign, name, frequency, emission type, signal quality, date/time, address and up to 100 lines of comments per record. Keep your contact information up to date and reestablish rapport with former calls quickly. Logbook stores main records in RAM for lightning-fast searching and sorting, prints address sheets or reports in a variety of formats. Requires 256K memory and a floppy disk drive.

**HRD-104** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$29.95**
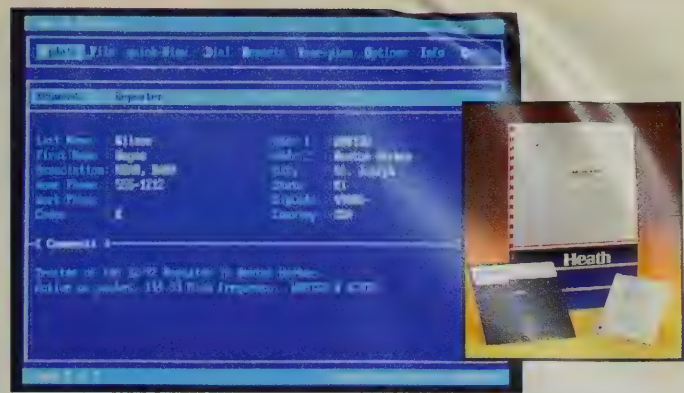


## Keep track of all your contacts with Ham Shack Pro

Organize all the details about your amateur radio contacts and retrieve important information in a moment with Ham Shack Pro, offered exclusively by Heath. Ham Shack Pro turns your IBM PC or compatible into a virtual information "gofer," complete with pop-up calendar for current month. It not only prints address sheets or reports in a variety of formats, but electronically dials any telephone number stored in the database you create. Requires 256K memory and a floppy disk drive.

**HRD-105** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$29.95**
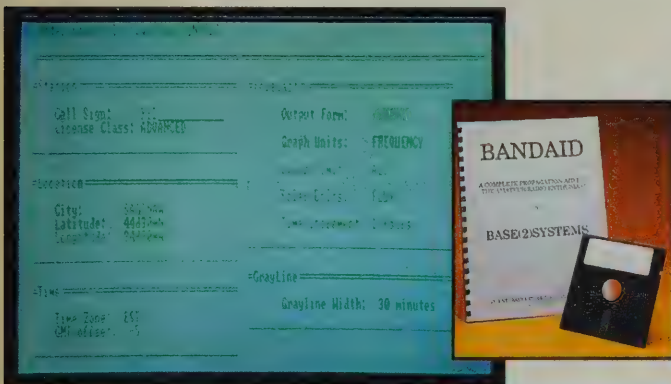


## Take the guesswork out of DXing with this propagation program

Written for IBM PC and compatible computers, BandAid is a menu-driven propagation program that determines the best time and band to work a particular country. In addition to calculating wave propagation, you can use BandAid to maintain a QSL logbook, make grayline predictions and generate MUF and LUF graphs and tables. The program is also perfect for finding world HF beacons, locating any station on a world map and determining operator-authorized frequencies. BandAid requires 256K RAM and a color graphics card.

**HRD-103** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$39.95**



## Worldwide propagation is only a keystroke away with MufMap

MufMap is an IBM compatible program that displays graphically, on a world map, the best possible frequency to use to work a particular country. Simultaneously displaying all 10-, 15- and 20-meter band openings, MufMap can project past, present and future RF wave propagation to any part of the world for any given time of day or time period. MufMap can also generate MufMovies, which show changing band conditions over a selected period of time. Great when preparing for DX contests! Requires 256K RAM and a color graphics card.

**HRD-101** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$39.95**

1" H x 2 1/2" W x 4 1/4" L

# Link up with our pocket packet TNC

Packet radio is the fastest-growing segment of amateur radio today. With our Pocket Packet TNC you get the latest and smallest TNC available, and it's TNC-2 compatible.

If your handheld transceiver, like most, uses a mini phone jack for speaker output and a sub-mini for microphone, you can connect your transceiver to the pocket packet unit with the two shielded cables supplied. In a matter of seconds! To connect the unit to your base or mobile transceiver, another cable is also supplied.

The HK-21 even includes a built-in mini bulletin board so you and your friends can leave messages for each other. They access your station with a *Connect* request and automatically get a sign-on message. Bulletin board commands include the following: *W(rite)* writes a message to a specific call; *R(ead)* reads a message sent to your call; *F(iles)* lists the last 10 – or all – messages in the system, plus the date each message was left; *M(ine)* lists only messages left for you. Additional commands are *H(elp)* or *?*, *K(ill)* and *B(ye)*.

The HK-21 requires a 9 to 13.8V supply @ 40 mA nominal current. Front panel switches disable RS-232 and turn off LEDs for maximum power savings when used as a remote site digi. You can connect the Pocket Packet to your station's 12 volt supply or order PS-2350 120 VAC Battery Eliminator. The optional HKA-21-1 battery pack fits inside the unit, powering it for hours. And it recharges from the 12 volt DC jack on the pocket packet unit.

**Assembled HK-21** (2 lbs.) .................... **$199.95**
Accessories:
**Optional Battery Pack**
Assembled HKA-21-1 (1 lb.) ................... **$17.95**
**Battery Eliminator**
Assembled PS-2350 (1 lb.) ..................... **$7.95**

34

# PackKit multi-mode TNC with free mailbox board

SAVE

*SKILL LEVEL 2* The Heathkit PackKit multi-mode TNC includes our mailbox board, a $49.95 value, absolutely free. This versatile board lets you operate your PackKit as a personal packet mailbox or local BBS. Feature packed, our TNC also lets you work CW at speeds you never dreamed of and gets you on AMTOR, ASCII, RTTY and NAVTEX. With the addition of a graphics printer, you can even print weather facsimile pictures.

A unique *Signal* command causes PackKit to determine correct RTTY, ASCII or AMTOR mode for the signal you're listening to and presets baud rate and mode. It even inverts the signal if necessary. Use the *Opmode* command to display full details of your current operating mode without having to change mode.

The unit supports all common baud rates for Baudot RTTY and ASCII, and CW from 5 to 99 WPM. Radio link rates are supported to 1200 baud (9600 with an external modem) and computer data rates to 9600 baud. What's more, no special software is needed. Use with any modem communication package made to run on your computer or order Ham-Pak software (below). You can use the HK-232-B with computers or terminals using an RS-232 industry standard serial port.

For flexibility, PackKit has two independent, selectable rear-panel connection ports that provide interchangeable HF or VHF operation. All you need to do is connect your radio's PTT line, speaker output and microphone input.

Includes manual with hookup connections for most popular HF and VHF radios. Operates on 12 VDC at 750-800 mA with 10% ripple or less. 2 1/2" H x 8 1/4" W x 11" D.
**Kit HK-232-B** (5 lbs.) ......... *Was $279.95 Now* **$249.95**

**SAVER** Save an additional $15.00 on this complete packet communications package. Includes Heathkit PackKit multi-mode TNC plus free Mailbox Board, and HKA-232-3 Technical Manual (below).
**HKS-232** (7 lbs.) ........................ **$259.90**

Accessories:
**Ham-Pak Communications Software Program**
Use with Heath/Zenith, IBM PCs and compatibles.
HKA-232-2 (1 lb.) ............................. **$19.95**
**Technical Manual** Includes alignment, troubleshooting, circuit board layout and detailed circuit description.
HKA-232-3 (2 lbs.) ............................ **$24.95**
**Power Supply 12V DC 1 Amp** Requires 120 VAC.
Assembled HKA-232-4 (4 lbs.)................... **$19.95**
**Mailbox Board** Turn your HK-232 or HK-232-A into a personal packet mailbox. Also makes a great local BBS.
Assembled HKA-232-5 (1 lb.) .................. **$49.95**

# FREE power supply with 100 watt HF all-mode transceiver!

Order the SB-1400 transceiver and get a FREE SB-1400-4 Speaker/Power Supply (sold separately below). This feature-packed transceiver delivers 100W of PEP output on all nine HF bands, with 100 kHz-30 MHz general coverage reception.

An SSB/CW/AM and optional FM transceiver, the SB-1400 features dual VFOs along with 20 memory channels. These channels can store mode and skip-scan status allowing for auto resume scanning of selectable memories, controlled from the microphone up/down keys. In addition, you can store independent transmit and receive frequencies on 18 of the memories for easy recall of split-frequency operations.

Behind the SB-1400's convenient front panel layout are many standard features including narrowband (500 Hz) CW and wideband (6 kHz) AM IF filters, a switchable 20dB receiver attenuator, a clarifier and a noise blanker for better reception under harsh conditions. Cooled by an internal fan, the transmitter power amplifier is enclosed in its own diecast aluminum heat-sink chamber, which allows for full power operation of FM and Packet, RTTY, AMTOR and SSTV.

Tuning is a snap with the user-selectable coarse and fine tuning steps provided in each mode: 25Hz and 2.5kHz for SSB and CW, 1kHz and 100Hz for AM, and 5 and 12.5kHz for FM with an optional FM Module.
**Assembled SBS-1400-1**
(9 lbs.). . . . . . . . . . . *Last Call!* **$799.95**

*Microphone not included*

**Speaker/Power Supply** Delivers full 20 amp output for 30 minutes on and 30 minutes off. Other features include thermally switched quiet cooling fan; high quality 3-watt, 4-ohm speaker; 13.5 VDC at 20 amps; and 117 VAC, 50/60 Hz operation. UL listed.
**Assembled SBA-1400-4** (17 lbs.)
*Last Call!* . .*Was $329.95* Now **$229.95**

Accessories:
**Mobile Bracket** Take your SB-1400 on the road with you. Bracket mounts above or below the dash.
Assembled SBA-1400-3 (1 lb.) . **$25.95**
**Switching Relay** Protect your rig from transient high voltage. Use if switching voltages are greater than 150 volts or current exceeds 1.5A. Features an outboard relay for non-QSK linear amplifiers. Maximum switching voltage is 250V.
Assembled SBA-1400-5 (1 lb.) . **$17.95**
**Interfacing Software** Operate your SB-1400 from an IBM or compatible computer with this easy-to-use software package. Screen layout is similar to transceiver display, and all memory contents are shown for easy review and selection. Features flexible QSY function, large frequency display, HV-2000 Voice Card (page 15) support and transient or memory-resident operation. Requires TTL to RS-232 interface cable sold below.
SBA-1400-7 (1 lb.) . . . . . . . . . . **$39.95**
**TTL to RS-232 Interface Cable** Allows connection of your SB-1400 to a computer with a standard RS-232 serial port. SBA-1400-8 (1 lb.) . **$49.95**

Specifications: **RECEIVER: Sensitivity:** SSB & CW: 0.25 µV above 1.5 MHz, 0.5 µV (500kHz-1.5MHz); AM: 1 µV above 1.5 MHz; FM: (option) 0.7 µV for 12dB SINAD above 28 MHz. **IF Frequency:** 47.055, 8.215 MHz (and 455 kHz FM triple conversion). **Image Rejection:** >70dB above 1.5 MHz. **IF Rejection:** >60dB above 1.5 MHz. **Selectivity:** SSB; CW(W); AM(N), 2.2 kHz at –6dB, 5 kHz at –60dB; CW(N), 500 Hz at –6dB, 1.8 kHz at –60dB. **TRANSMITTER: Amateur Bands:** 160m, 80m, 40m, 30m, 20m, 17m, 15m, 12m and 10m. **Output:** 100W PEP (SSB, CW and optional FM), 25 watt carrier (AM). **Harmonic and Spurious Output:** Exceeds FCC requirements. **RF Connector:** SO-239 type. **Supply Voltage:** 13.5 VDC 19 amps max. @ ±10%.

---

# Multi-mode active audio filter

**SKILL LEVEL 2** Solve overmodulation splatter, partially overlapped sideband signals and more with the Heathkit Active Audio Filter. The HD-1418 consists of five-pole (section) high-pass and low-pass filters, plus a two-pole notch/peak filter. You can move these filters through a 300 to 2500 Hz audio frequency band to help you select or reject certain frequency components of signals you tune in with your shortwave equipment.

Versatile power requirements make the Active Audio Filter usable almost anywhere. Just supply 7-13.5 volts AC or 9-18 volts DC. For AC power operation, purchase our 120 VAC Power Adapter Cube, PS-5012, sold below. Dimensions are 1 7/8" H x 8 7/8" W x 6 5/8" D.
**Kit HD-1418** (3 lbs.) . . . . . . . . . . . . *Was $89.95* Now **$69.95**
Accessory:
**120 VAC Power Adapter Cube**
Assembled PS-5012 (1 lb.) . . . . . . . . . . . . . . . . . . . . . $15.95

35

## Receive VHF and UHF simultaneously with the Heath Twin-Band HT

**new**

Our latest handheld transceiver, the HW-24-T, is a true twin-band HT that not only receives simultaneous VHF and UHF but also includes a built-in crossband repeater mode.

The receiver section of this terrific HT has an unbeatable sensitivity at 0.158 µV for 12 dB SINAD, plus superb out-of-band sensitivity and frequency coverage. You'll be able to receive from 130 MHz to 169.995 MHz on VHF and from 418 MHz to 469.995 MHz on UHF.*

Extremely efficient, the Heath Twin-Band requires less power on receive and far less power on transmit. As a result, battery life is substantially increased. At full 5 watts Tx output, the HW-24-T requires only 1100 mA VHF or 1300 mA UHF. Compare this with the major competitor's HT and notice the difference!

The HW-24-T is packed with 20 memory channels, expandable to 40, with up to 20 offsets and CTCSS tones. The large, easy-to-read twin display has one side for VHF and one for UHF. You can enter a new frequency directly from the keyboard or via a rotary frequency selector. The rotary selector also doubles as a channel changer in memory mode.

When it comes to scanning modes, nothing beats the Heath Twin-Band HT. You can scan the first 10 memory channels or last 10, scan all 20 memory channels or scan only selected channels. Use selected memory scan to temporarily block out a channel that you still want to keep in memory. Scan a 1 MHz segment of the band, all except 1 MHz, or scan the entire band. Now double the number of scanning modes, because in any mode you can select pause scan or busy scan. Pause scan stops on an active channel and resumes after a few seconds so you hear everything that's going on. Busy scan stops on an active channel and holds until the frequency goes clear. You can also monitor two frequencies at the same time with dual watch, that causes the HT to hold on the alternate channel as soon as it goes busy. It's great for listening to two repeaters at the same time so you won't miss any of the action.

The HW-24-T comes standard with DTMF encoded Code Squelch and Paging modes, both of which are becoming industry standards. These new modes allow selective calling or paging of a compatible HT or group of HTs. DTMF tones are sent automatically at the beginning of each transmission to unlock the desired receiver. Use this feature to call a friend at a busy hamfest or page through a repeater.

Another outstanding feature of this versatile handheld is its unique clone mode that allows you to quickly program a friend's new HW-24-T from your own. All memory contents including frequencies, offsets and CTCSS tones are copied over the air from one HT to the other in less than one minute!

Other features include 16-key DTMF pad, VHF/UHF full-duplex operation, dual LCD display, 6-16 VDC power requirement, auto-power off, PTT lockout, base loaded antenna, one button open squelch, 7.2V 700 mA/h battery (for 3 watts output) and a wall charger.

**Assembled HW-24-T** (2 lbs.) .................. **$469.95**

Accessories:

**CTCSS Encoder/Decoder**
Assembled HWA-502 (1 lb.) .................... **$59.95**

**Handheld Microphone Speaker**
Assembled HWA-180 (1 lb.) ................... **$34.95**



Heath Twin-Band HT with built-in crossband repeater mode

**Headset** With push-to-talk switch.
Assembled HWA-190 (1 lb.) .................... **$32.95**

**Compact NiCd Battery** 7.2 V, 400 mA/h.
Assembled HWA-305 (1 lb.) .................... **$64.95**

**Standard NiCd Battery** 7.2 V, 700 mA/h.
Assembled HWA-310 (1 lb.) .................... **$59.95**

**High-Power NiCd Battery** 12 V, 600 mA/h. For 5W output. Requires HWA-340 Quick Charger.
Assembled HWA-320 (1 lb.) .................... **$89.95**

**Long-Life NiCd Battery** 7.2 V, 1000 mA/h.
Assembled HWA-325 (1 lb.) .................... **$79.95**

**Wall Charger** Plugs directly into a wall outlet.
Assembled HWA-330 (1 lb.) .................... **$16.95**

**Automatic Peak-Detecting Quick Charger** Desktop unit charges battery in 1 hour then switches to trickle charge. Auto shut-off. Required for HWA-320 above.
Assembled HWA-340 (4 lbs.) ..... *Was* $119.95 *Now* **$99.95**

**Regular Case** For transceivers using the HWA-310 Battery Pack. Assembled HWA-550 (1 lb.) ................ **$16.95**

**Large Case** For transceivers using the HWA-320 or HWA-325 Battery Pack.
Assembled HWA-555 (1 lb.) .................... **$19.95**

Specifications: **GENERAL: Frequency Range Receive\*:** VHF: 130-174.995 MHz. UHF: 350-469.995 MHz (in 5 kHz steps). **Frequency Range Transmit\*:** VHF: 144-147.995 MHz. UHF: 438-449.995 MHz (in 5 kHz steps). **Operating Voltage:** 6-16 VDC. **Dimensions:** 6 3/16" H x 2 3/16" W x 1 1/8" D. **Weight:** 15.9 oz. (including supplied battery pack). **TRAMSMITTER: Output Power:** 5 W (hi), 2.5 W (med), 0.35 W (low) using 12 VDC battery. **Spurious Signal Ratio:** > –60 dB. **Max Deviation:** ±5 kHz. **Modulation:** Reactance. **RECEIVER: Sensitivity:** 0.158 µV for 12 dB SINAD. **Squelch Sensitivity:** –14 dB. Note: Specifications are within amateur band.

*May be modified for out-of-amateur-band operation for MARS, CAP and embassy operators.
Call 616-982-3296 for full information. Proof of participation required.

**AS LOW AS $40 PER MONTH ON YOUR HEATH REVOLVING CHARGE**

## Save $100 over January 1990 price on high performance Heathkit 1000W linear amplifier!

**SKILL LEVEL 2** You get unparalleled performance at an affordable price with the Heathkit Linear Amplifier. It's a completely self-contained, grounded grid linear amplifier designed to operate at 1000 watts PEP output on SSB or 850 watts output on CW and 500 watts RTTY. The SB-1000 covers 160, 80, 40, 20 and 15 meter amateur bands with tuned input filters your solid state rig will like. Plus, it will cover WARC and most MARS bands at 80% of rated output.

### Instant heat tube gets you on the air faster

The amplifier uses a single 3-500Z tube in a high efficiency circuit for top performance. And its high silicon steel E-I core transformer takes up less room, runs cooler and gives you more high performance power than other models.

Other selected features include door knob caps in critical RF circuits, adjustable ALC so your amplifier works with any rig, a stiff full-wave power supply with computer grade capacitors, a quiet computer-style fan, and plate and load controls with smooth vernier tuning. And, since the tube is an instant heating type, transmission can begin as soon as you turn on the amplifier after tune up.

### Special RF section delivers maximum efficiency

The High-Q tank circuit and superb layout and design of the RF section result in maximum efficiency and put the RF power out on your antenna where it belongs – instead of burning it up as heat in the tube. Even the path of air flow was considered important in the design of the SB-1000.

Intake is from the left side where the cool air flows over the power supply diodes, electrolytic caps and power transformer, then through the fan and into a completely separate RF compartment, where it is directed around the amplifier tube. Here temperature and smoke movement studies enabled the layout of an RF section which is both electrically and thermally efficient, where air turbulence could be maximized in order to efficiently remove heat from tank circuit components.

The result? A reliable, top-performing amplifier. In fact, seasoned amateurs who have used the SB-1000 talk about the first class "feel" of the amplifier, how nicely it tunes and how well it performs in the pileups.

### Continuously monitored grid current

Front panel meters are illuminated and grid current is continuously monitored for protection and long tube life. The amplifier may be operated from 120 VAC or 240 VAC (operation from a 240 volt AC line is recommended), 50/60 Hz power sources. Each side of the line cord is separately fused. Dimensions are 8 1/4" H x 14 1/2" W x 13 7/8" D.

**Kit SB-1000** (57 lbs.) ................. *Now* **$699.95**

Accessory:

**QSK Board** Includes parts for installation in SB-1000.
Assembled SBA-2001-1 (1 lb.) ........... *Now* **$149.95**

Specifications: **INPUT: Circuit type:** Pi-network. **Maximum VSWR at resonance:** 1.3:1 or less. **Minimum 2:1 VSWR bandwidth:** 20% or greater. **Maximum drive power permissible:** 100 W. **Typical drive for full power output:** 85 W. **OUTPUT: Circuit type:** Pi-L network. **1/2 hour continuous carrier:** 500 watts. **30 second continuous carrier:** 850 watts. **1/2 hour PEP two-tone test:** 850 watts. **30 second PEP two-tone test:** 1000 watts. **POWER SUPPLY: Circuit type:** Voltage doubler. **No load voltage:** 3000. **Full load voltage:** 2700. **Full load current:** 0.45 amp. **Regulation:** 10%. **Transformer:** 22 lbs., high silicon steel E-I core. **Maximum draw at rated output:** 12 amps at 120 V, 60 Hz. **TUBE: Type:** 3-500Z. **Continuous dissipation:** 500 W. **Warm-up time:** 10 seconds. **Estimated life:** 20,000 hours. **GENERAL: Metering:** Dual meters; plate volts, plate current, grid current, power output PEP. **ALC:** Adjustable, 0-20 V, negative going, phono jack. **MARS/WARC:** Yes, set to nearest amateur band. **Keying:** Requires contact closure or sink of +12 VDC at 100 mA, phono jack. **RF Connectors:** SO-239. **Line Connector:** NEMA 5-15P, standard 120 V three wire. **Frequency Coverage:** All amateur bands from 1.8 to 21 MHz, including WARC and most MARS. **Third Order IMD at Rated Output:** –35 dB.

*Your actual monthly payments may vary depending on your account balance.

HWS-2

HWS-4


**Handheld transceivers with accessories sold below**

# Save on HTs with FREE accessories, while they last!

Put more fun and enjoyment into portable communications with these compact 2 meter and 450 MHz transceivers. Besides power and easy one-handed operation, they offer many impressive features with options.

One of these features is the double-conversion super-heterodyne receiver section that's extremely sensitive at .158 µV for 12 dB SINAD within amateur bands. Plus thumb-wheel tuning, hi/low power operation, squelch, repeater ± offsets, and optional CTCSS and DTMF capabilities. Each model comes with a FREE HWA-110 Rechargeable Battery Pack, HWA-130 Wall Charger, HWA-220 CTCSS Unit and HWA-230 Touch Tone Encoder (all sold separately this page).

**Assembled HWS-2** 2 Meter Handheld Transceiver shown with optional Touch Tone Encoder.
(2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . *Now* **$189.95**

**Assembled HWS-4** 450 MHz Handheld Transceiver
(2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . *Now* **$199.95**

Accessories:
**120 VAC Wall Charger**
Assembled HWA-130 (1 lb.) . . . . . . . . . . . . . . . . . . . . . **$13.95**

**CTCSS Unit** Includes programmable dip switches for any tone frequency on the HWS-2 and HWS-4.
Assembled HWA-220
(1 lb.) . . . . . . . . . . . . . . . . . . . . *Was $52.95 Now* **$39.95**

**Touch Tone Encoder** Use with the remote control function on the HWS-2 and HWS-4.
Assembled HWA-230
(1 lb.) . . . . . . . . . . . . . . . . . . . . *Was $29.95 Now* **$14.95**

Specifications: **GENERAL: Frequency:** 2: 144-147.995 MHz. 4: 440-449.995 MHz. **Emission Type:** FM. **Microphone Input Impedance:** 600 ohm. **Speaker Impedance:** 8 ohm. **Operating Voltage:** 5.5-11 VDC. **Antenna Impedance:** 50 ohm. **Power Supply:** 9 VDC (nom.) **Dimensions:** 5.2"H x 2.4"W x 1.3"D. **Weight:** 14.3 ozs. **TRANSMITTER: Output Power:** 3 W (hi), 400 mW (lo). **Spurious Signal:** -60 dB. **Max. Deviation:** ±5 kHz. **Modulation:** Reactance. **Built-in Microphone:** Electret condenser type. **RECEIVER: Sensitivity:** 0.158 µV. **Squelch Sensitivity:** 0.1 µV. **Circuitry:** Double conversion superheterodyne. **Selectivity:** -60 dB. **Audio Output:** 400 mW at 8 ohms.

More accessories for handheld transceivers:
**120 VAC Desktop Quick-Charge Charger**
Assembled HWA-140
(2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$39.95**

**Mobile Car Battery Adapter** For charging battery during operation.
Assembled HWA-160
(1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$42.95**

**Microphone Speaker**
Assembled HWA-180 (1 lb.) . . . . . . . . . . . . . . . . . . . . **$34.95**

**Headphone** With push-to-talk switch.
Assembled HWA-190
(1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$32.95**

**Extended Life Rechargeable NiCd Battery Pack**
Assembled HWA-125 (1 lb.) . . . . . . . . . . . . . . . . . . . . **$72.95**

**Small Rechargeable NiCd Battery Pack** For normal wattage output operation.
Assembled HWA-110
(1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$49.95**

**Large Rechargeable NiCd Battery Pack** For higher wattage output operation on the HWS-24-HT only.
Assembled HWA-120
(1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$59.95**

*5 1/4" H x 2 3/16" W x 1 1/4" D*



*4 3/8" H x 2 1/4" W x 1 3/16" D*

## Save $200 over January 1990 price

Our 2 meter and 450 MHz mini-deluxe transceivers provide impressive capabilities in a compact size.

The HW-2-M and HW-4-M boast a highly sensitive receiver section at 0.158 µV for 12 dB SINAD. True broadband transceivers, the mini-deluxe HTs retain their excellent receiver sensitivity and power output even outside the amateur band.* You can actually achieve a full 5 watt output with the optional high-power battery pack.

Other features include 21 memory frequencies (20 + 1 call), rotary channel selector, hi/med/low power, Auto-Power Off, dual frequency watch, 43 mA RX squelched, 13 mA RX battery save, DTMF, LCD display, duplex operation, battery saver standby mode and PTT lockout. Both models include a 7.2V, 700 mA/h battery and charger.

**Assembled HW-2-M** 2 Meter HT (2 lbs.) .... *Now* **$249.95**
**Assembled HW-4-M** 450 MHz HT (2 lbs.) ... *Now* **$269.95**
Accessories:

**CTCSS Unit**
Assembled HWA-302 (1 lb.) ..................... **$64.95**
**Compact NiCd Battery** 7.2 V, 400 mA/h.
Assembled HWA-305 (1 lb.) ..................... **$64.95**
**Standard NiCd Battery** 7.2 V, 700 mA/h.
Assembled HWA-310 (1 lb.) ..................... **$59.95**
**High-Power NiCd Battery** 12 V, 600 mA/h.
Assembled HWA-320 (1 lb.) ..................... **$89.95**
**Long-Life NiCd Battery** 7.2 V, 1000 mA/h.
Assembled HWA-325 (1 lb.) ..................... **$79.95**
**Small Soft Case** Assembled HWA-345 (1 lb.) ...... **$14.95**
**Regular Case** Assembled HWA-350 (1 lb.) ........ **$16.95**
**Large Case** Assembled HWA-355 (1 lb.) .......... **$18.95**

Specifications: **GENERAL: Frequency\***: 2M/2P: 144-147.995 MHz. 4M/4P: 438-449.995 MHz. **Operating Voltage:** 2M/4M: 5-16 VDC. 2P/4P: 5.5-16 VDC. **Dimensions:** 2M/4M: 5 1/4" H x 2 3/16" W x 1 1/4" D. 2P/4P: 4 3/8" H x 2 1/4" W x 1 3/16" D. **Weight:** 2M/4M: 10.6 oz. 2P/4P: 12.3 oz. **TRANSMITTER: Output Power:** 5 W (hi), 2.5 W (med), 0.35 W (low) on 2M/4M, 0.3 W (low) on 2P/4P. **Spurious Signal Ratio:** –60 dB. **RECEIVER: Sensitivity:** 0.158 µV. **Squelch Sensitivity:** 2M/4M: 0.1 µV. 2P/4P: 0.125 µV. Note: Specifications are within amateur band.

## Save $170 over January 1990 price

Designed with the user in mind, our 2 meter and 450 MHz micro-deluxe transceivers use batteries that hinge onto the back of the units instead of adding to their length. This arrangement lets the HTs retain their same basic form even with the largest capacity batteries.

You'll appreciate the sensitive receiver section at 0.158 µV for 12 dB SINAD. The HW-2-P also features true broadband reception for sensitive out-of-band operation.* And with the optional high-power battery pack, a full 5 watt output is possible on both HTs.

Standard features include 21 memory channels (20 + 1 call), rotary channel selector, DTMF, LCD display, duplex operation, Auto-Power Off, Auto-On Timer, one button open squelch, PTT lockout, hi/med/lo power, 9-step battery saver, and a 7.2V, 700 mA/h battery and charger.

**Assembled HW-2-P** 2 Meter HT (2 lbs.) ..... *Now* **$259.95**
**Assembled HW-4-P** 450 MHz HT (2 lbs.).... *Now* **$279.95**
Accessories:

**CTCSS Unit** Assembled HWA-402 (1 lb.) ......... **$64.95**
**Compact NiCd Battery** 7.2 V, 400 mA/h.
Assembled HWA-405 (1 lb.) ..................... **$64.95**
**Standard NiCd Battery** 7.2 V, 700 mA/h.
Assembled HWA-410 (1 lb.) ..................... **$59.95**
**High-Power NiCd Battery** 12 V, 600 mA/h.
Assembled HWA-420 (1 lb.) ..................... **$89.95**
**Long-Life NiCd Battery** 7.2 V, 1200 mA/h.
Assembled HWA-425 (1 lb.) ..................... **$79.95**
**Carrying Case** Assembled HWA-450 (1 lb.) ....... **$17.95**

---

More accessories for Mini-Deluxe and Micro-Deluxe HTs:
**Handheld Microphone** Assembled HWA-180 (1 lb.) **$34.95**
**Headset** Assembled HWA-190 (1 lb.) ............. **$32.95**
**Wall Charger** Plugs directly into a wall outlet.
Assembled HWA-330 (1 lb.) ..................... **$16.95**
**Automatic Peak Detecting Quick Charger** Desktop unit charges battery in 1 hour then switches to trickle charge. Auto shut-off. Assembled HWA-340 (4 lbs.) ... *Now* **$99.95**

*May be modified for out-of-amateur-band operation for MARS, CAP and embassy operators.
Call 616-982-3296 for full information. Proof of participation required.

## FREE Band Pack with HW-9 purchase!

[SKILL LEVEL 3] The Heathkit HW-9 is a compact 80 through 10 meter HF transceiver created with the avid low-power CW operator in mind. Designed to cover the lower 250 kHz of the 80, 40, 20 and 15 meter amateur bands, the HW-9 can also cover the 30, 17 and 12 meter WARC bands and the lower 250 kHz of the 10 meter band with the included FREE HWA-9 Band Pack.

Broadband design means you no longer need to tune circuits within a band. Just turn the band switch and select the desired frequency. The wideband front end uses a double-balanced mixer and 4-pole crystal filter to handle wide dynamic range signals with ease and to eliminate the customary RF amplifier in the receiver section.

The HW-9 uses a single conversion in the main signal path to maintain superior image rejection. In addition, a balanced product detector followed by an active audio filter provides outstanding performance. And, Receiver Incremental Tuning (RIT) lets you tune the receiver 1 kHz above or below the transmit frequency.

Microelectronic circuits reduce transceiver weight, while providing a level of performance you wouldn't

expect at this price. Features continuously variable RF power output up to four watts, relative signal/power strength meter and AGC circuits.

Rugged and lightweight, the HW-9 is ideal for portable operation. Power with batteries, lighter socket, solar photovoltaic array or by 120 VAC with the PSA-9 Power Supply (sold separately below). Dimensions are 4 1/4" H x 9 1/4" W x 8 1/2" D.
**Kit HW-9** (8 lbs.) . . . . . . . . . **$249.95**
Accessories:
[SKILL LEVEL 2] **Band Pack** Expands HW-9 transmission and reception capabilities from 4 to 8 amateur bands. Provides full coverage on all amateur bands from 80 through 10 meters.
Kit HWA-9 (1 lb.) . . . . . . . *Now* **$29.95**
[SKILL LEVEL 1] **Power Supply** 12.6-volt, 1-amp, voltage regulated power source.
Kit PSA-9 (4 lbs.) . . . . . . . . . . **$39.95**

Specifications: **TRANSMITTER: RF Output Power:** 4 watts, except 3 watts on 10 meters. **Transmitter Frequency Offset:** App. 700 Hz. **Antenna Load Impedance:** At least 90% of rated power with less than 2:1 SWR. Protected against high SWR. **Harmonic & Spurious Radiation:** –35 dB & –40 dB maximum, at rated output. **T/R Operation:** CW, full break-in. **RECEIVER: Sensitivity:** 0.2 µV for readable signal; 0.5 µV or less for 10 dB S+N/N. **Selectivity:** Wide, 1 kHz max. @ 6 dB; Narrow, 250 Hz @ 6 dB. **Dynamic Range:** 85 dB. **Image & IF Rejection:** 60 dB, min. **Audio Hum Noise:** –60 dB. **Audio Output:** 1 watt into 8Ω.

## Accurate QRP wattmeter

[SKILL LEVEL 1] Your low-watt HF or VHF station will operate at peak power efficiency when you use this responsive watt meter. A reliable instrument for measuring RF power output and the SWR of an amateur radio station, the HM-9 with 3:1 SWR bridge simplifies continuous metering of exciter or amplified output level. Plus it gives you quick, exact SWR readout for fine-tuning your antenna system. Wire the HM-9 for monitoring in three different ranges: 1.8-30, 50-54 or 144-148 MHz. Full scale ranges from 0-5 watts and 0-50 watts with exceptional ±10% accuracy! Reads SWR from 1.1:1 to 3:1. Dimensions are 2 5/8" H x 5 3/8" W x 7" D.
[1] **Kit HM-9** (3 lbs.) . . . . . *Now* **$49.95**

## 100-watt antenna tuner with 4:1 balun

[SKILL LEVEL 1] Enjoy almost unlimited matching capabilities with the HFT-9-B. It provides matching to a wide range of output impedances with a built-in 4:1 ferrite balun. The HFT-9-B includes connectors for coaxial feed, balanced line and long-wire antennas. A large 12-tap, air-wound inductor, with silver-plated wire and tap switch, allows precise matching capability between 1.8 and 30 MHz. Adjustments are easy with continuously variable transmitter/antenna controls. The HFT-9-B's small size and easy assembly make it perfect for mobile HF operation and an outstanding addition to any amateur radio station. Dimensions are 2 5/8" H x 5 3/8" W x 7" D.
[2] **Kit HFT-9-B** (3 lbs.) . . *Now* **$49.95**

[SAVER] Save on this amateur radio package. Includes the HM-9 QRP Wattmeter and the HFT-9-B Antenna Tuner.
**QRS-9** (6 lbs.) . . . . . . . . . . **$89.95**



## Companion station speaker to HW-9

[SKILL LEVEL 1] The Heathkit Station Speaker is a 3" communications receiver speaker housed in a custom designed cabinet to match the HW-9 Transceiver, shown above. The 8-ohm speaker has a frequency response of 200 to 5000 Hz and can handle 1.5 watts RMS. Dimensions are 8" H x 4 1/2" W x 6 3/4" D.
**Kit SP-99** (3 lbs.) . . . . . . . *Now* **$19.95**

40

## Antenna noise bridge

**SKILL LEVEL 1** Reveal the cause of any mismatch between station transmitter and antenna with the Heathkit Antenna Noise Bridge. A tone-modulated broadband noise signal is generated in the bridge and coupled to an impedance bridge. Then, using your station receiver as an indicator, the impedance bridge measures the resistive and reactive components of your antennas. Use the noise bridge also to preset an antenna tuner for faster tune-ups, tune a quarter-wave transmission line and measure the value of unknown capacitors and inductors.

A front panel LED indicates power on, front panel controls give direct readout of resistive and reactive characteristics of the antenna being tested. The rear panel includes external power jack and coaxial connectors for receiver and unknown antenna connections. Requires 9V battery or PS-2350 Battery Eliminator, listed below. Dimensions are 2 1/4" H x 5 1/8" H x 5" D.
**Kit HD-1422-A** (2 lbs.) . . *Now* **$39.95**

Specifications: **Resistance:** approx. 0-200 Ω. **Capacitance:** ±60 pF. **Operating Range:** 1-30 MHz.
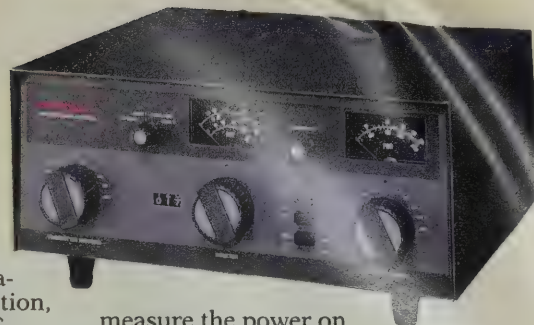
## Save $100 over January 1990 price on deluxe Heathkit antenna tuner

**SKILL LEVEL 2** Use the Deluxe Antenna Tuner to match an antenna to your transmitter at any frequency in the 160-10 meter HF spectrum. You get a first-rate antenna tuner with most of the features of a dual wattmeter. In addition, it covers the 160-meter and WARC amateur bands.

The tuner will effectively tune and match balanced or unbalanced feedlines and single-wire and ladder lines at the full legal power limit of your station. With its continuously variable inductor, you're guaranteed precise antenna matching from 1.8 to 30 MHz, including the MARS frequencies. A convenient front panel counter lets you quickly set the inductor to previously calibrated frequencies.

With a single switch you can select a dummy load or any of three permanently connected antennas, including a long-wire antenna. You'll never have to connect and disconnect feed lines to load your transmitter into the dummy load again!

Dual wattmeters read both forward and reflected average power, in two ranges, for more efficient low band operation. The wattmeter section of the antenna tuner installs directly into your transmission line to measure the power on all frequencies between 1.8 and 30 MHz. It measures output up to 200/2000 watts in the forward direction and up to 50/500 watts reflected. SWR indications on the reflected meter provide direct readings from 1:1 to 3:1.

The silver-plated straps and roller contact assembly minimize RF loss at high frequencies. And the large feedthrough insulators withstand highvoltage RF. Dimensions are 5 3/4" H x 14 1/2" W x 13 7/8" D.
**Kit SA-2060-A** (20 lbs.) *Now* **$299.95**

Specifications: **Frequency Range** (continuous tuning): 1.8 to 30 MHz. **INPUT POWER CAPABILITY: SSB:** 2000 watts (peak). **CW:** 1000 watts. **Input Impedance:** 50 ohms. **Output Impedance:** Wide range. **Balanced to Unbalanced Transformation:** 4:1 balun. **Meter Functions:** Forward and Reflected average power, and SWR. **METER RANGES: Forward** (2 ranges): Low: 0-200 watts. High: 0-2000 watts. **Reflected** (3 scales): Low: 0-50 watts. High: 0-500 watts. SWR: 1:1 to 3:1. **WATTMETER ACCURACY** (full scale): **200 W and 2000 W (FWD), 500 W (REF):** ±5% (AVG). **50 W (REF):** ±7.5% (AVG). **Insertion SWR:** Less than 1.1:1.

## Hear all the action with the active SWL antenna

**SKILL LEVEL 1** Perfect for portable use or locations where an outside antenna is not available, the Heathkit Active SWL Antenna allows you to receive radio signals from 300 kHz to 30 MHz. And it acts as a high frequency preamplifier when used with an external 50 ohm antenna. Use the HD-1424-A as a preselector for both indoor and outdoor antennas too. Includes built-in collapsible antenna and provisions for a 50 ohm antenna. Requires 9V battery or PS-2350 Battery Eliminator. Dimensions are 2 1/4" H x 5 1/8" W x 5" D.
**Kit HD-1424-A** (2 lbs.) *Last Call!* . . . . . . . . . . . . *Now* **$49.95**
Accessory:
**Battery Eliminator**
PS-2350 (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$7.95**

## VLF converter lets you tune in the world

**SKILL LEVEL 1** Listen to the U.S. Submarine Fleet, European broadcasts and other distant transmissions below the standard AM band. The VLF Converter installs in your receiver antenna line to let you listen to the 10 to 500 kHz band from 3.510 to 4.010 MHz on your CW receiver. The converter contains a local oscillator generating a 3.5 MHz signal that, when mixed with the incoming VLF frequencies on your antenna, produces an RF signal that can be heard on any CW receiver capable of tuning 3.510 to 4.010 MHz. Requires 9V battery, PS-2350 Battery Eliminator, listed at left, or any source of DC power, 8.5 to 14 volts. The VLF Converter measures only 5 1/8" H x 5 1/8" W x 2 1/4" D.
**Kit HD-1420** (2 lbs.) . . . . . . . . . . . . *Was $49.95 Now* **$39.95**

# 1.6-250 MHz
# dip meter

Use the multipurpose Dip Meter to find approximate resonant and operating frequencies of either energized or de-energized circuits. The HD-1250 helps adjust traps, detect parasitic oscillations and harmonics, measure unknown Q/L/C values, locate sources and frequencies of RF energy. Use too as a signal generator, relative field strength meter or receiver alignment tool. Requires 9V battery. Dimensions are 2" H x 2 1/4" W x 5 7/8" D.

**Kit HD-1250** (4 lbs.) . . . . . . . . . . . . . . . *Last Call!* **$129.95**

Specifications: **Controls:** Tuning capacitor, oscillator level, ON/OFF. **Meter Movement:** 150 μA. **Solid-State Circuits:** 1 NPN transistor oscillator, 1 dual-gate MOSFET amplifier, 2 diffused silicon hot carrier diode detectors.

# Save $30 on
# programmable
# μmatic memory
# keyer

Add programmable excellence to all your Morse code. Patented command strings let you store text in buffers; select speed, weight, spacing or message repeat count for each and link them together in any sequence. A special editing feature lets you correct programming errors. Enter text and send with any setting you wish. Text can be added into a buffer message being sent. CMOS memory with battery backup retains the buffer contents and last selected setting when the keyer is without power. Dimensions are 1 5/8" H x 4 1/8" W x 6" D.

**Kit SA-5010-A** (3 lbs.) . . . . . . . . . *Was $129.95 Now* **$99.95**

Accessory:
**120 VAC Power Adapter Cube**
Assembled PS-5012 (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$15.95**

Specifications: **Speed Range:** 1 to 99 wpm. **Character/Word Spacing:** Less than or equal to speed setting. **Number of Buffers:** 1 to 10. **Buffer Size:** 240 characters plus commands. **Weighting:** Normal plus 5 light and 5 heavy settings. **Auto Message Repeat:** 0 to 9 (sent 1 to 10 times). **Keyer Output:** Solid State: +250 volts @ 100 mA; –200 volts @ 40 mA. **Sidetone:** Approximately 300 to 1500 Hz, adjustable. **Power:** External transformer.

# Dual HF wattmeter

Achieve peak efficiency on low bands. The HM-2140-A monitors both forward and reflected power in your transmission line. A second scale on the reflected meter reads SWR directly from 1:1 to 3:1. Output is measured up to 200/2000 watts PEP (±5%) forward direction and up to 50/500 watts reflected. Pushbutton switch to high or low power ranges for precise readings. Dual-position switch lets you read PEP or average power. Requires 9V battery or use 120 VAC with the PS-2350 Battery Eliminator. Dimensions are 4 1/8" H x 7 1/2" W x 6 3/8" D.

**Kit HM-2140-A** (5 lbs.) . . . . . . . . *Was $129.95 Now* **$99.95**

Accessory:
**Battery Eliminator**
Assembled PS-2350 (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$7.95**

# Build up your code speed
# with the CW code oscillator

The CW Code Oscillator features a telegraph key with adjustable rebound, built-in speaker, headphone jack, volume and tone controls. And once you get your amateur radio license, your unit can serve as a side tone oscillator for any transmitter using negative-grid block keying. The HD-1416-H uses a 9V transistor battery (not included).

**Kit HD-1416-H** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . **$24.95**

42

# Heath cantenna dummy load

**SKILL LEVEL 1** Eliminate unnecessary QRM during tune-up and minimize mistakes while performing hot gear maintenance or alignment. Cantenna handles 1 kW of RF with VSWRs less than 1.5:1 up to 450 MHz. Requires 1 gallon mineral or transformer oil.

**Kit HN-31-A** (3 lbs.)
*Was $26.95 Now* **$19.95**

# Remote coax switch

**SKILL LEVEL 1** Switch antennas from inside your station with the Remote Coax Switch. Remote and indoor control units connect through your coax cable to eliminate multiconductor control cable. Tower- or mast-mounted remote operates up to four antennas. Handles 2000 watts PEP and has a VSWR of 1.15: or less. Frequency range is from 1.8 to 54 MHz with impedance of 50 to 70 ohms and loss at 54 MHz of less than 0.2 dB. Uses 120 VAC. Control: 2 5/8" H x 5 1/2" W x 7 1/2" D. Remote: 7 1/8" H x 8 3/8" W x 4 1/2" D.

**Kit HD-1481** (5 lbs.) . . . . . . . . . . . . *Was $79.95 Now* **$64.95**

# Closed-back headphones

Comfortable 8-ohm headphones feature 40 to 15,000 Hz frequency range, 2 1/4 in. speakers, individual volume controls and 10 ft. coiled cord. Easily adjustable for precise fit.

**Assembled HDP-1396** (2 lbs.)
*Was $19.95 Now* **$12.95**

# Personalized name plate

You've finished your kit and everything looks and works perfectly because you built it yourself. Indicate the special care and skill you've invested in your finished kit with an engraved name plate. Made of solid brass and brushed to a jeweler's finish, the name plate has a self-adhesive backing for easy, no-mess application.

**FILL IN THIS COUPON TO ORDER**

Please send _____ solid brass name plate(s) with name engraved. Enclosed is $_____ ($2.00 for one, $1.60 each for two or more) which covers first class postage & handling. **Please print your name in capital letters using no more than 14 characters (including spaces).**

Print name here

Name: _____

Address: _____

City: _____ State: _____

**GDP-1225**       Zip: _____

# Coaxial switch

**SKILL LEVEL 1** Manually route one RF source to any one of several antennas or loads, while grounding all outputs not in use. Switch from up to four antennas or pieces of interconnecting equipment. The unit handles 2 kW PEP with maximum 1.1:1 SWR to 250 MHz. Mounting brackets are built-in. Mount width: 4 1/4 in.

**Kit HD-1234** (1 lb.) . . . . . . . . . . . . *Was $29.95 Now* **$24.95**

43

# Four reasons why thousands have learned with Heathkit courses

**Reason #1:** Learn electronics for career advancement or personal enrichment. Courses are designed so you study at your own pace. **Reason #2:** With a score of 70% or better, you'll earn Continuing Education Units (CEUs) and a certificate of completion. Many organizations and employers recognize CEUs as evidence of personal achieve-ment and continued job training. **Reason #3:** Heathkit Educational Systems is licensed by the state of Michigan and accredited by the National Home Study Council. **Reason #4:** We offer a no-risk, money-back guarantee. If you are not completely satisfied with any course, we'll hap-pily refund your money or send another course in its place.
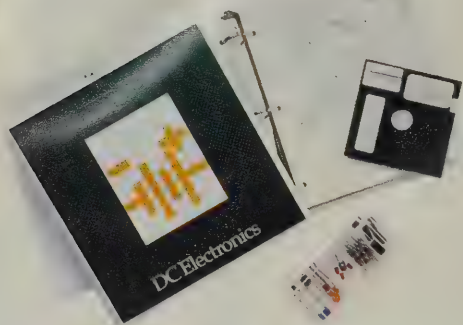
## DC electronics: the first step

• **Earn 2.0 CEUs**

If you're interested in learning about the fascinating world of electronics then this newly revised DC Electronics course is for you. No previous electronics background is necessary. You'll learn how to define and solve basic elec-tronics problems related to current, voltage, resistance and power. An entire chapter covers Ohm's law, the most impor-tant concept in electronics.

After you've gained a solid understanding of the basic material in the first half of the course, you'll learn about magnetism, electrical measurement, DC circuits and funda-mental network theorems, inductance and capacitance. You'll also learn about the construction, operation and pur-pose of electronic devices.

Twenty-one experiments give you hands-on experience constructing DC circuits, drawing schematic diagrams and more. Plus, you'll learn basic safety procedures designed to protect you and your test equipment. A complete parts pack, 5.25" and 3.5" MS-DOS course review disks are included.

**Material Required:** ET-3600 Analog Trainer (on page 46) and a multimeter.
**Prerequisites:** None.
**EE-3101-B** (7 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$49.95**

Save $30.00! Package includes the DC Electronics course and the ET-3600 Analog Trainer (on page 46).
**EES-3101-E** (13 lbs.) . . . . . . . . . . . . . . . . . . . . **$149.90**

Save $50.00! Package includes the ET-3600 Analog Trainer, DC Electronics, AC Electronics, Semiconduc-tor Devices and Electronic Circuits courses.
**EES-3101-H** (33 lbs.) . . . . . . . . . . . . . . . . . . . . **$314.75**

**DC Electronics Audiovisual Package** Contains two lecture audio tapes and an illustrated workbook.
EEA-3101-A (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

## AC electronics: a hands-on course

• **Earn 1.5 CEUs**

After completing DC Electronics, you're ready for the theory and application of alternating current. In this newly revised course you'll learn the difference between AC and DC and between reference ground and earth ground. You'll understand capacitance, inductance and how their related devices are formed.

Ten course experiments allow you to analyze both AC sine waves and a variety of AC circuits, determine trans-former turns ratios and and perform calculations involving impedance, current, voltage and power ratios. Includes parts pack, 5.25" and 3.5" MS-DOS course review disks.

**Material Required:** ET-3600 Analog Trainer (on page 46), a multimeter and oscilloscope.
**Prerequisites:** DC Electronics course or equivalent experience.
**EE-3102-B** (7 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$49.95**

**AC Electronics Audiovisual Package** Contains two lecture audio tapes and an illustrated workbook.
EEA-3102-A (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

## Display your success with this attractive frame

Now you can proudly display your hard-earned diploma in this high-quality frame. The frame is made of heavy simulated walnut board with a clear plastic covering to keep your diploma dust-free. An attractive addition to any room in your home or workplace. Holds an 8 1/2 in. x 11 in. certificate and hangs vertically or horizontally.
**EPP-1** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$13.95**
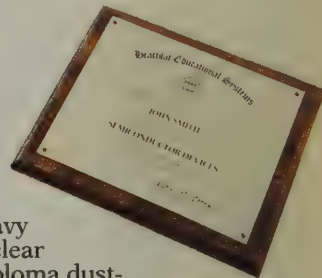
## Semiconductors explained

• **Earn 3.0 CEUs**

Build your knowledge of semiconductor devices with this recently revised course. You'll learn how to handle and test semiconductor devices, analyze DC circuits and use semiconductors in practical circuits.

In twelve course experiments you'll work with linear and digital components, semiconductor construction and semiconductor device operation, and observe firsthand the characteristics of a variety of amplifiers. Includes a complete parts pack, 5.25" and 3.5" MS-DOS course review disks.

**Material Required:** ET-3600 Analog Trainer (on page 46), a multimeter and oscilloscope.
**Prerequisites:** DC Electronics and AC Electronics courses or equivalent experience.
**EE-3103-B** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$64.95**

**Semiconductor Devices Audiovisual Package** Contains two lecture audio tapes and an illustrated workbook.
**EEA-3103-A** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

## Learn troubleshooting and repair

• **Earn 6.0 CEUs**

Electronic Test Equipment is designed for the person who wants to become proficient with bench and field equipment. It teaches you to take measurements using digital and analog meters, voltmeters, ammeters and ohmmeters. Plus, you'll study in depth the oscilloscope,
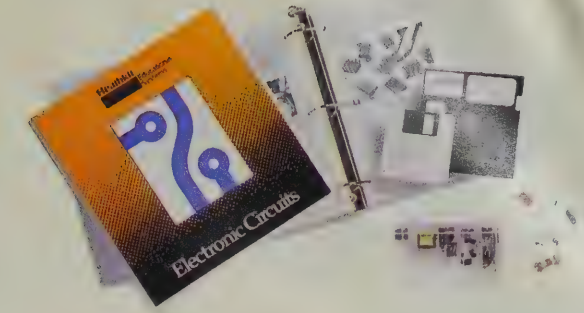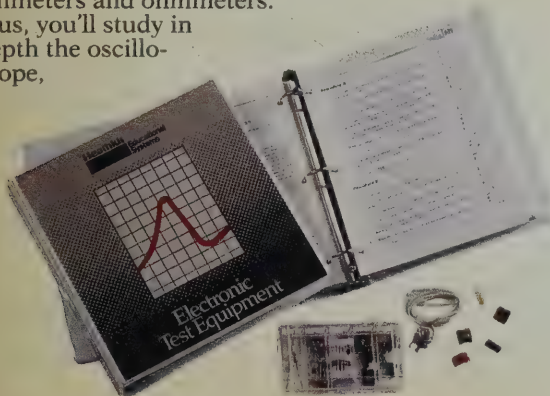
## Electronic circuits in use

• **Earn 4.0 CEUs**

Electronic Circuits, also newly revised, gives you a new way to look at the electronic devices you use everyday. You'll learn about bias, oscillation, amplitude and frequency modulation, and their relation to amplifiers, comparators, active filters and pulse shapers.

Nineteen course experiments give you the chance to analyze simple electronic circuits and advance into circuit construction. You'll build transistor and integrated circuit amplifiers, oscillators, active filters and more. Includes a complete parts pack, 5.25" and 3.5" MS-DOS course review disks.

**Material Required:** ET-3600 Analog Trainer (on page 46), a multimeter and oscilloscope.
**Prerequisites:** DC Electronics, AC Electronics and Semiconductor Devices courses or equivalent experience.
**EE-3104-B** (7 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$69.95**

**Electronic Circuits Audiovisual Package** Contains two lecture audio tapes and an illustrated workbook.
**EEA-3104-A** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

cathode ray tube and concepts such as sensitivity, delayed sweep and dual trace. You'll also gain a solid understanding of the curve tracer, basic spectrum analyzer, logic tester, digital logic probe, transistor tester, audio, RF and function generators.

Fifteen course experiments teach you to recognize sources of error in electronic counter readings, increase the frequency range of electronic counters, design and construct RF impedance matching pads and much more. A complete parts pack is included.

**Material Required:** ET-3600 Analog Trainer (on page 46), digital multimeter, analog meter, oscilloscope, function generator and frequency counter.
**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices and Electronic Circuits courses, plus Digital Techniques (on page 51) or equivalent experience.
**EE-3105-A** (9 lbs). . . . . . . . . . . . . . . . . . . . . . . . . . . . **$69.95**

**Electronic Test Equipment Audiovisual Package** Contains two lecture audio tapes and an illustrated workbook.
**EEA-3105-A** (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**

## Hands-on learning with the Analog Trainer

The powerful and versatile ET-3600 lets you learn by working with real electronic circuits. Use it with the experiments in our basic electronics courses (on pages 44 and 45). This trainer features a removable solderless breadboard that accepts up to #20 solid wire and the leads of almost any standard electronic component for easy circuit building.

The ET-3600 includes variable, regulated positive and negative 15 VDC power supplies with short-circuit and overload protection, 15 and 30 VAC sources, and a 200 Hz to 20 kHz frequency generator with sine wave and square wave outputs. Operates on 120/220 VAC, 50/60 Hz. Dimensions are 4 1/2" H x 12" W x 11 3/8" D.

**Kit ET-3600** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . **$129.95**
**Assembled ETW-3600** (6 lbs.) . . . . . . . . . . . . . . . . **$199.95**

Accessory:
**Extra Breadboard Block** (not shown)
Assembled ETA-3600-1 (1 lb.) . . . . . . . . . . . . . . . . . . **$19.95**

Save $59.90 on this trainer package. Includes the ET-3600 Analog Trainer, and the ET-3567 Accessory Backpack and ETB-3300 Breadboard Experiment Module (both described at right).
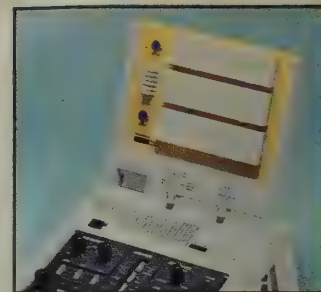**ETS-3600** (14 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$299.95**

## Accessory backpack with built-in multimeter

The Accessory Backpack will give you years of reliable performance for bench testing, experimenting and learning with Heathkit trainers and courses. Mount it directly onto the ET-3600, ET-3700, ETW-3800 and ETW-5000 trainers. The backpack includes programmable positive and negative 1.2-15 VDC power supplies for powering analog, linear and CMOS circuits, in addition to a 5 VDC power supply for TTL logic circuits. A 3 1/2 digit digital voltmeter allows AC and DC voltage measurements up to 500 volts, DC current measurements up to 200 mA and resistance measurements up to 2 meg. Plus, fused, high-impedance voltmeter input gives maximum circuit protection and minimum circuit loading. Includes a quality loudspeaker and connectors for accepting experiment modules from Heathkit courses.

*Shown with Breadboard Experiment Module, sold below.*

**Kit ET-3567** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$129.95**
**Assembled ETW-3567** (6 lbs.) . . . . . . . . . . . . . . . . . **$199.95**

## Breadboard experiment module

The breadboard experiment module (shown above) slides into the Accessory Backpack to add more breadboarding capabilities to your trainer. It's ideal for designing and experimenting with prototype circuits that extend beyond the physical capacities of the ET-3600, ET-3700, ETW-3800 and ETW-5000 trainers. The solderless sockets in the three large 640-hole breadboards accept solid wire up to #20, along with the leads of most common electronic components. The ETB-3300 also gives you access to +5 VDC power supplies, variable positive and negative 1.2-12 VDC power supplies and the internal trainer speaker.
**Assembled ETB-3300** (2 lbs.) . . . . . . . . . . . . . . . . . . **$99.95**

## Electronic Fundamentals, handy reference or complete course

Our first hardbound text, Electronic Fundamentals, combines the material contained in our basic electronics courses (on pages 44 and 45) into a single volume. The text is extremely readable, even for the beginner to electronics. Used alone, it's an excellent reference guide. Used with the student workbook and parts package (sold below), it becomes a complete course.

Four sections cover DC and AC electronics, semiconductors and electronic circuits. Each chapter begins with clearly stated objectives and ends with a self test to check your understanding. Useful appendixes provide information on scientific notation and trigonometry, answers to odd-numbered test questions and a handy glossary.
**Material Required:** ETW-3600 Analog Trainer (above left), an oscilloscope, multimeter and common hand tools.
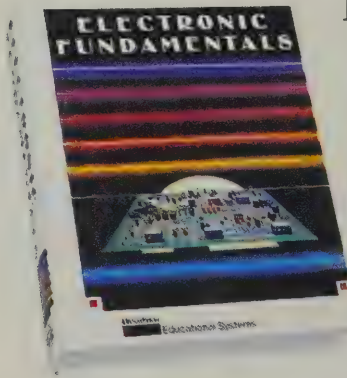**Prerequisites:** None.
**EB-200** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$39.95**

Accessories:
**Student Workbook** Contains 40 hands-on experiments.
EB-200-40 (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$21.95**
**Experiment Parts Package**
EB-200-30 (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$59.95**

## Reserve your free copy of HomeWorks by Heathkit

Explore the exciting world of electronics with the new home-study catalog, HomeWorks by Heathkit. Whether you want to upgrade your skills to advance your career or just learn for the fun of it, HomeWorks by Heathkit offers a wide variety of courses for the beginner and professional alike.

Step-by-step learning, exciting experiments, electronic trainers for immediate, hands-on experience. Plus a full, money-back guarantee on all course materials.

To reserve your **FREE** copy simply fill in your name and address below and return this card to us.
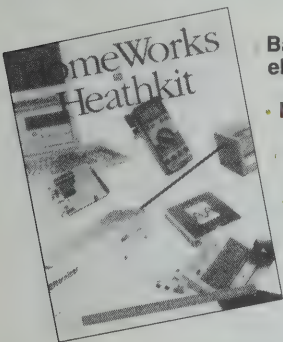
**Basic and advanced electronics**

· **Laser technology**

· **Digital processing**

· **Intuitive IC electronics**

· **And much more!**

Name _____
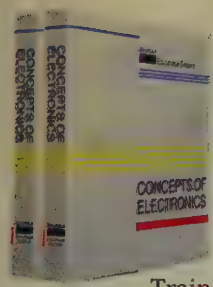
Address _____

City _____

State _____

5 9 4 - 0 1 4

# Heath Company

**Marketing Dept. 594-014**
**Benton Harbor, MI 49022**

*FREE HOMEWORKS CATALOG!*

# Beginning electronics

## course • Earn 4.0 CEUs

This two-volume course teaches the properties of electricity, the operation of various electronic devices and circuits, and includes two full chapters on digital electronics. Plus you'll learn with hands-on experiments. Includes complete parts pack.
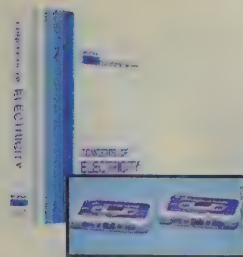**Material Required:** ET-3600 Analog Trainer (on page 46), a multimeter and oscilloscope. **Prerequisites:** None.
EE-3140-A (9 lbs.) .............................. **$59.95**

# Beginning electricity

## course • Earn 1.0 CEU

Learn the principles of electricity, concepts of direct and alternating current, circuit theory and electro-mechanical systems with this introductory course. You'll learn about electrical devices and how to solve basic problems in electricity, too.
Includes two audio cassette tapes and MS-DOS review disk.
**Material Required:** None. **Prerequisites:** None.
EE-3100 (5 lbs.) .............................. **$34.95**

# Digital test set course

This course teaches you to diagnose, isolate and repair defective digital equipment. You'll learn how to use a logic pulser and probe to test and troubleshoot digital circuits quickly, easily and safely. Also troubleshoot using a DMM, VOM and oscilloscope. Includes a pulser/probe set and four spring-loaded IC clips with gold-plated pins.
**Material Required:** None. **Prerequisites:** None.
ETI-7510 (2 lbs.) .............................. **$79.95**

# Complete soldering course

Learn professional soldering techniques at home. Everything you need to know about soldering, including proper soldering iron size and cleaning and tinning of the iron. Includes complete parts pack.
**Material Required:** Soldering iron (on page 7).
**Prerequisites:** None.
EI-3133 (3 lbs.) .............................. **$21.95**
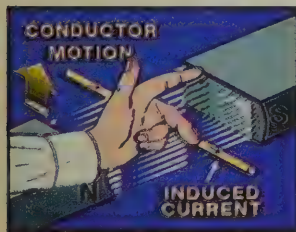
# DC electronics video

Watch electronic principles come to life on video. DC Electronics explains electron movement, plus the troubleshooting and repair of a simple electronic circuit. You're introduced to DC current and voltage, resistance, inductance, capacitance, Ohm's law, magnetism and DC electrical measurement. You'll even learn the correct use of ammeters, voltmeters and ohmmeters.
**Prerequisites:** None.
EV-3101-A (2 lbs.) .............................. **$39.95**

# AC electronics video

The AC Electronics video explains the principles of AC current and voltage, and AC electrical measurement. You're introduced to the AC applications of capacitance, inductance and transformers. Other topics include sinusoidal and non-sinusoidal waveform generation, waveform analysis, motors, generators and various test instrument meter movements.
**Prerequisites:** EV-3101-A video or equivalent experience.
EV-3102-A (2 lbs.) .............................. **$39.95**
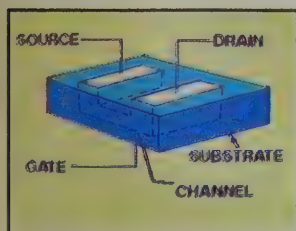
# Semiconductors video

Learn semiconductor fundamentals, the principles of discrete device, integrated circuits and optoelectronic devices. You'll see how semiconductor devices are made, what a PN junction is and its role in electronic theory, plus the principles of diode, bi-polar, unijunction and more.
**Prerequisites:** EV-3101-A and EV-3102-A videos or equivalent experience.
EV-3103-A (2 lbs.) .............................. **$39.95**
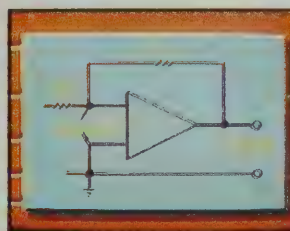
# Electronic circuits video

This colorful video explains amplifier configurations, biasing, coupling, audio amplifiers, video and operational amplifiers and closed-loop vs. open-loop operation. You'll also learn about differential amplifiers, rectifier circuits, voltage regulation, oscillator fundamentals and more.
**Prerequisites:** EV-3101-A, EV-3102-A and EV-3103-A videos or equivalent experience.
EV-3104-A (2 lbs.) .............................. **$39.95**
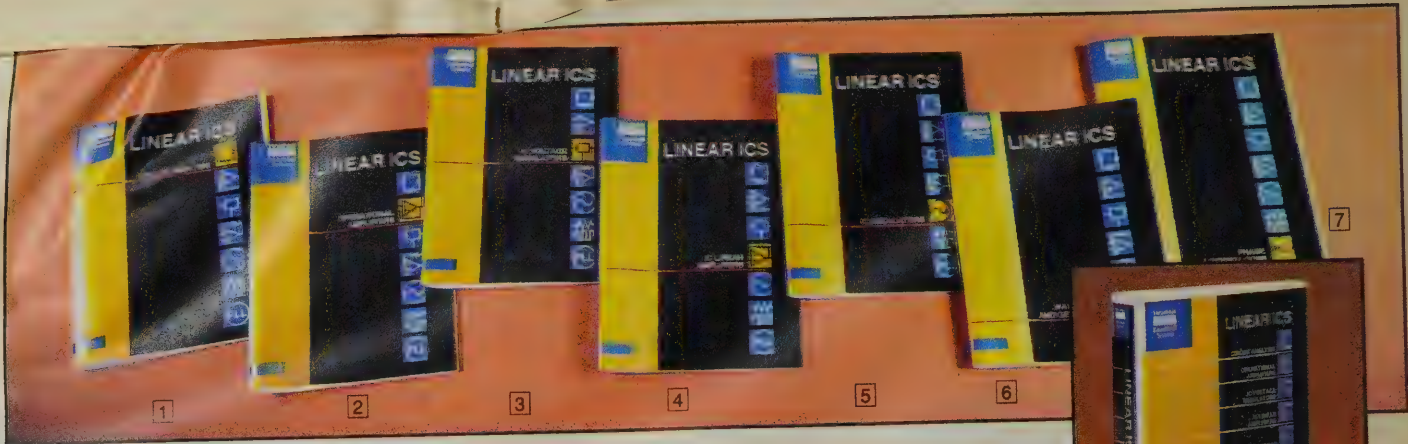
# Linear IC electronics: a hands-on approach
# Save by ordering the entire series

This series of electronics courses lets you study in depth the areas that interest you. Whether you're a hobbyist or a professional, you can choose a single course or the whole series for a thorough grounding in advanced electronics.

Each course includes an activity guide and frequent self-test questions that reinforce the text material. Answers are provided. You'll also find exercises and experiments that give you practice with the circuits you're studying, and a final examination that tests your overall learning. A complete parts package comes with each course.

**Material Required:** ET-3600 Analog Trainer (on page 46), a VOM and oscilloscope.
**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices, Electronic Circuits and Electronic Test Equipment courses (on pages 44 and 45), or equivalent experience.

## Fundamentals of Circuit Analysis

Learn the concepts of input and output impedance, voltage sources, current sources and gain. Review analysis techniques of Thevenin and Norton equivalent circuits. The Z parameter analysis technique is also included.

[1] **EE-115-1** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## Operational Amplifiers

The operational amplifier is one of the most versatile integrated circuits ever created. You'll learn the fundamental properties and features of an operational amplifier, the circuit diagram, the physical packaging and connections.

[2] **EE-115-2** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## IC Voltage Regulators

Observe closely the IC chip that can take the place of several discreet components. You'll learn about the operation of components in an unregulated power supply, the causes of load voltage variations in an unregulated supply and the methods of power supply regulation.

[3] **EE-115-3** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## IC Linear Amplifiers

Learn how linear amplifiers work and how to use them. Take an in-depth look at various amplifier configurations. Areas covered include basic amplifiers, low frequency, high frequency, wideband and special amplifier circuits.

[4] **EE-115-4** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## IC Oscillators

This course takes you inside IC oscillators and shows you how to work with them. You'll learn basic oscillator theory plus various methods of oscillation. And you'll study LC, RC, voltage controlled and crystal oscillators in detail.

[5] **EE-115-5** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## Wave Shapes and Generators

Get a thorough understanding of these circuits that can enhance or change the shape of existing waves. You'll learn about signal generators, basic filter circuits, differentiators, integrators, logarithmic and exponential amplifiers.

[6] **EE-115-6** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## Phase Locked Loops

This specialized chip is now widely used to sense differences or changes in some parameters and provide a means of correcting the change. You'll learn about the components and basic operation of a phase-locked loop. You'll also learn about the operation of digital and analog phase detectors and the VCO in a phase locked loop.

[7] **EE-115-7** (1 lb.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## Series Binder

Keeps your courses neat and accessible.

[8] **EE-115-8** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$9.95**

**SAVER** Save almost $15.00 on the complete IC Electronics Series. Includes the seven courses described above plus the series binder.
**EES-115** (10 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$99.95**

# An introduction to modern communications technology

• Earn 4.0 CEUs

This informative course gives you an in-depth look at modern communications technologies. You'll learn how radio, TV, data transmissions and FAX are all made possible.

Plus, you'll examine the technologies of transmitters and antennas, frequency and time division multiplexing, transmission lines, electromagnetic radiation and propagation. And learn how everything links together to form communications systems.

In seven course experiments, you'll build an AM transmitter, a balanced modulator, an AM detector, an FM transmitter and an FM receiver. A complete parts pack is included.

**Material Required:** ET-3600 Analog Trainer (on page 46), a multimeter and an oscilloscope.
**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices, Electronic Circuits and Electronic Test Equipment courses (on pages 44 and 45) or equivalent experience.
**EE-3106-A** (7 lbs.) . . . . . . . . . . $69.95

**Electronic Communications Audio-visual Package** Contains two lecture audio tapes and an illustrated workbook.
**EEA-3106-A** (2 lbs.) . . . . . . . . $21.95

# Experiment with operational amplifers • Earn 3.0 CEUs

Acquire the knowledge and skills you need to work with one of today's most widely used integrated circuits. Operational Amplifiers investigates op-amp parameters, basic op-amp linear circuits, integrator and differentiator circuits and more.

You'll learn about the design and operation of linear amplifiers, current/voltage and voltage/current converters, generators, comparators and rectifiers. Plus, you'll learn more about oscillators, active filters, bipolar FET op-amps, single supply operation and nonlinear signal processing circuits.

Thirty-six course experiments give you hands-on experience working with circuits and help you apply basic principles taught in the course. A complete parts pack is included.

**Material Required:** ET-3600 Analog Trainer, with the ET-3567 Accessory Backpack and ETB-3300 Experiment Module (all on page 46), an oscilloscope, multimeter and function generator.
**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices courses (on pages 44 and 45) or equivalent experience.
**EE-101** (5 lbs.) . . . . . . . . . . . . $54.95
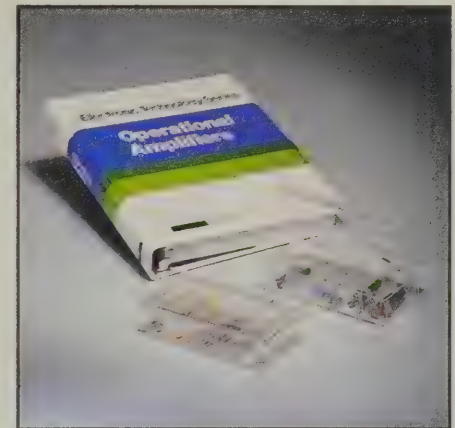
# Fiber optics technology • Earn 3.0 CEUs

Explore the exciting world of fiber optics, from the basics to today's latest breakthroughs, with our fascinating Fiber Optics course. You'll begin by studying the nature of light and principles of light as a transmission medium. Then you'll learn about the active devices used to generate, detect and process optically transmitted data. You'll learn about laser emissions and principles associated with the injection laser diode used in fiber optic circuits.

After you've completed the course, you'll be thoroughly familiar with the electromagnetic spectrum. And you'll understand fiber optic interconnection devices and how to compare them in cost and performance.

Four course experiments help you apply what you learn by giving you hands-on experience constructing a modulated source driver circuit, a fiber optic receiver circuit and an actual operational fiber optic link. A complete parts pack is included.

**Material Required:** ET-3700 Digital Trainer (on page 51), an oscilloscope, multimeter and common hand tools.
**Prerequisites:** DC Electronics and AC Electronics (on page 44) or equivalent experience.
**EE-4201** (6 lbs.) . . . . . . . . . . . $99.95

**49**
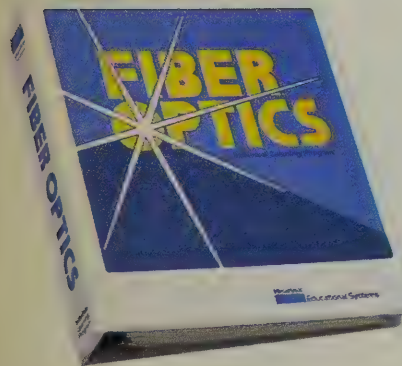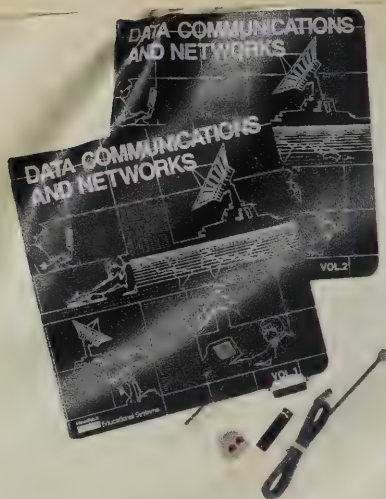
# Build your communications knowledge

- **Earn 7.0 CEUs**

This two-volume course gives you an understanding of the concepts, terminology, equipment and techniques that make up today's data communications systems. You'll learn digital and analog signaling techniques, terminals and codes, modulation and multiplexing, transmission media telephone networks and how data networks are used by the consumer.

You'll study transmission errors and see how they're corrected, analyze major security issues and more. Practice what you learn with eleven experiments. Includes complete parts pack.

**Material Required:** ET-1000 Circuit Design Trainer (on page 51), a multimeter and a dual trace oscilloscope.
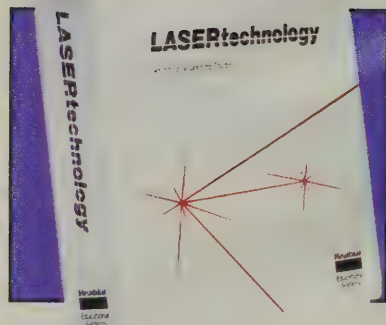**Prerequisites:** DC Electronics and AC Electronics courses (on page 44), and Digital Techniques course (on page 51), or equivalent experience.
**EE-8090** (11 lbs.) . . . . . . . . . . . **$99.95**

Save $50.00! Package includes Data Communications and Networks course, and the ET-1000 Circuit Design Trainer.
**EES-8090** (25 lbs.) . . . **$279.90**

# Laser principles and applications • Earn 3.0 CEUs

We've designed this course to give students a thorough understanding of laser basics, plus an opportunity to practice the technology. Laser Technology covers topics such as how laser light is generated and modulated, characteristics it has in common with ordinary light and how each component contributes to the operation of the laser. You'll learn the effects and potential hazards of laser light and study the effects of infrared radiation.

Fifteen course experiments allow you to practice transmitting and reproducing sound over a laser beam and measuring radiometric light.

You'll experiment with irradiance, diffraction and interference, beam diameter, critical angle and focal length, Fresnel Reflection, polarization, and light and data transmission. Includes complete parts pack.

**Material Required:** ETS-4200 Laser Training System (below).
**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices and Electronic Circuits courses (on pages 44 and 45) or equivalent experience, and a basic knowledge of algebra .
**EE-110** (7 lbs.) . . . . . . . . . . . . **$99.95**

# Hands-on laser training system

Discover the fun of owning a professional grade laser you can build yourself. Learn about the technology with the Laser Technology course (above), then create your own high-tech experiments and explore exciting applications.

The trainer features a helium neon (HeNe) gas laser that generates an intense, easy-to-see red light with a 632.8 nM wavelength and output power of 0.4-0.9 mW. Beam diameter is 1/ePTS 0.49 mm with divergence of 1.64 mrad and random polarization. You can modulate the beam up to 10% for voice experiments.

The system includes a receiver/monitor for receiving the beam and measuring the relative signal power, and a built-in detector, audio amplifier and speaker. Includes a tripod mount and signal input jacks. UL and CSA listed, requires 120 VAC, 60 Hz, 15 watts power.

**Kit ETS-4200** (12 lbs.) . . . . . . . . . . . . . . . . . . . . . **$304.95**
**Assembled EWS-4200-A** (5 lbs.) . . . . . . . . . . . . . . **$425.00**

Save $40.00 on this laser training package. Includes the ETS-4200 Laser Training System and EE-110 Laser Technology course (above).
**EES-110** (19 lbs.) . . . . . . . . . . . . . . . . . . . . . . . **$364.90**

**CAUTION**

LASER RADIATION
DO NOT STARE INTO BEAM

HELIUM-NEON LASER
1.0 mW MAX. OUTPUT
CLASS II LASER PRODUCT

*Receiver*          *Trainer*
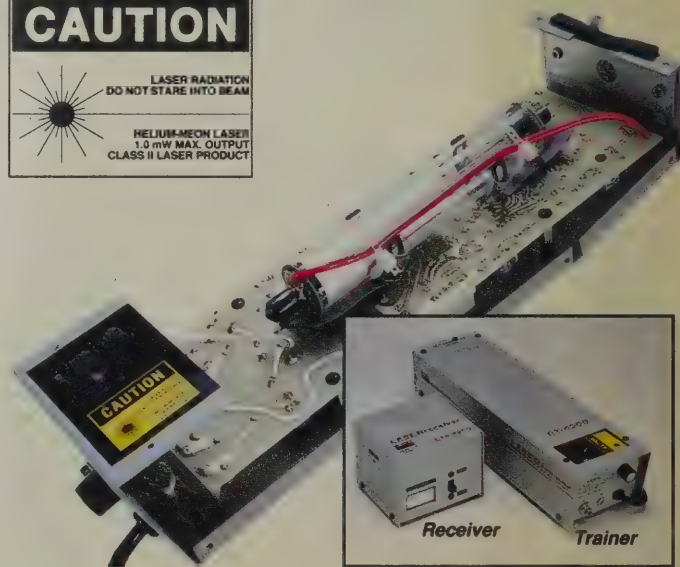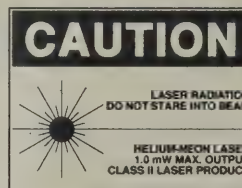
# Analog/digital circuit design trainer

**SKILL LEVEL 2.** Our solderless double breadboard trainer is a regular minilab for learning basic techniques of circuit design. You'll get practical hands-on experience designing, building and testing prototype circuits. Plus, you can perform experiments in passive, transistor, analog and digital circuit design.

The ET-1000 features double breadboards with solderless sockets for quick, easy circuit assembly and testing, and connector blocks that allow solderless connections between parts and wires. It also has variable and regulated positive and negative DC power supplies. And it includes a built-in function generator for producing sine, square, triangle and pulse waveforms from 1 Hz to 100 kHz in five switch-selectable ranges. A logic probe detects and indicates low and high logic levels.

Other features include two "no bounce" logic switches, variable 1K and 100K ohm resistors, eight switches for selecting logic lows or highs, and eight LED logic-state indicators. UL and CSA listed. Uses 105-130 volts or 210-260 volts RMS at 50/60 Hz. 4 3/4" H x 5 3/4" W x 10 3/4" D.

**Kit ET-1000**
(14 lbs.) . . . . . . . . . . . . . **$229.95**
**Assembled ETW-1000**
(13 lbs.) . . . . . . . . . . . . . **$299.95**

Accessory:
**Extra Removable Breadboard**
ET-1000-1 (1 lb.). . . . . . . . . . . **$29.95**

# Explore digital techniques • Earn 4.0 CEUs

Learn the fundamentals and theory of digital logic, including number systems, the design and application of modern digital circuitry and the skills necessary for designing combinational and sequential logic circuits.

Twenty-six course experiments give you experience building a wide variety of digital circuits. Includes a complete parts pack plus 5.25" and 3.5" MS-DOS course review disks.

**Material Required:** ET-3700 Digital Trainer (below), a multimeter and oscilloscope.

**Prerequisites:** DC Electronics, AC Electronics, Semiconductor Devices, Electronic Circuits and Electronic Test Equipment courses (on pages 44 and 45).
**EE-3201-A** (7 lbs.) . . . . . . . . . . **$99.95**

**SAVER** Save $50.00 on this digital package. Includes Digital Techniques course and the ET-3700 Digital Trainer (below).
**EES-3201-C** (17 lbs.). . . **$179.90**

**Audiovisual Package** Contains two audio cassette tapes and illustrated workbook.
**EEA-3201-A** (2 lbs.) . . . . . . . . **$21.95**

# A trainer for digital techniques

**SKILL LEVEL 2.** The versatile Digital Trainer speeds and simplifies digital circuit design and experimentation, and gives you the opportunity to practice what you're learning.

The trainer features three built-in, regulated power supplies which furnish positive and negative 12 VDC and positive 5 VDC voltages to power both digital and linear circuits. In addition, it supplies a line-frequency square wave (60 or 50 Hz); complementary clock signals of 1 Hz, 1 kHz and 100 kHz; logic and data switches to control input levels and four LED logic-state indicators to visually monitor logic states and transitions.

The Digital Trainer has a removable solderless breadboard that accepts up to #20 solid wire and leads of almost any standard electronic component. The trainer is designed to accept the ET-3567 Accessory Backpack (on page 46), which expands its experimentation capabilities.

**Kit ET-3700** (6 lbs.). . . . . . . **$129.95**
**Assembled ETW-3700**
(6 lbs.) . . . . . . . . . . . . . . . . . **$199.95**

**SAVER** Save $59.90! Package includes the ET-3700 Digital Trainer, ET-3567 Accessory Backpack and ETB-3300 Breadboard Experiment Module (both on page 46).
**ETS-3700** (16 lbs.) . . . . **$299.95**
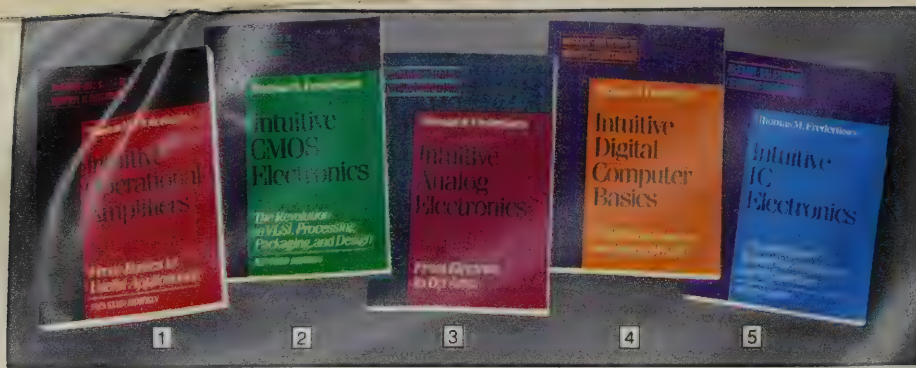
## McGraw Hill course series in intuitive IC electronics

This exciting series gives you an intuitive understanding of electronics and computers. You'll get an inside look at devices and circuits from the electron level on up. Each course is filled with frequent illustrations and math is kept to a minimum. The series is written by Thomas M. Frederiksen, a renowned and practicing expert in the field.
**Prerequisites:** None.

### Intuitive Operational Amplifiers

This course gives designers, technicians, managers and general readers a straightforward, plain English explanation of op amp circuits and applications. It includes numerous illustrations of op amp circuits, models and successful applications.
1 **EBM-1** (2 lbs.) . . . . . . . . . . **$19.95**

### Intuitive CMOS Electronics

This look at intuitive CMOS (complementary metal oxide semiconductor) electronics tracks the evolution of the technology, explores the many new developments and discusses practical applications and much more. An excellent resource for anyone who designs, produces, purchases and works with CMOS technology.
2 **EBM-2** (2 lbs.) . . . . . . . . . . **$19.95**

### Intuitive Analog Electronics

Here's a straightforward explanation of basic electronics and analog systems at a level most readers can understand. This course takes a hands-on, non-mathematical approach to how and why analog circuits work. Experiments require only an inexpensive digital multimeter.
3 **EBM-3** (2 lbs.) . . . . . . . . . . **$21.95**

### Intuitive Digital Computer Basics

Written for the non-electronics professional as well as electronics engineers and managers, Intuitive Digital Computer Basics gives you an understanding of the technical principles behind digital electronics. A detailed description of the basics plus a look at what the future holds, written in easy-to-understand language.
4 **EBM-4** (2 lbs.) . . . . . . . . . . **$24.95**

### Intuitive IC Electronics

Learn all about integrated circuits in this clear, highly readable text. You'll get an inside look at modern semiconductor devices, from the simplest to the most sophisticated. You don't need any prior electronics knowledge and math is kept to a minimum. Covers most important recent advances in IC electronics.
5 **EBM-5** (2 lbs.) . . . . . . . . . . **$19.95**

## Surface mount technology course teaches fundamentals of miniaturized electronics

• **Earn 3.0 CEUs**

This hands-on course familiarizes you with every aspect of surface mount technology (SMT). When you complete the course, you'll understand the basics of planning, designing, assembling and soldering surface mount boards. You'll be able to desolder and replace surface mount components. And you'll have practical experience in assembling working surface mount circuits.

The projects give you the chance to work with surface mount resistors, capacitors, light-emitting diodes and integrated circuits.
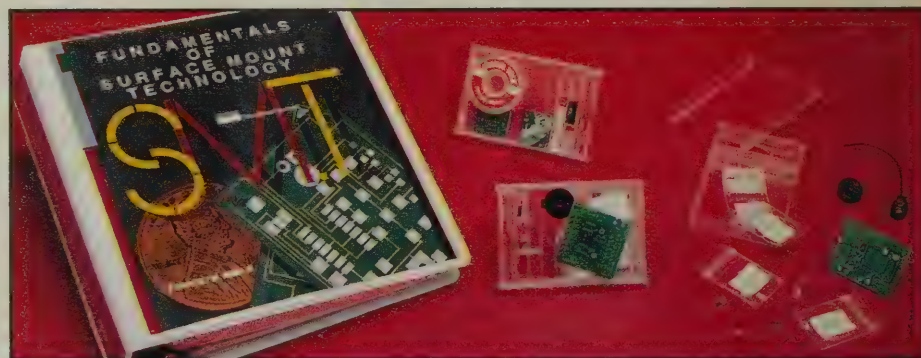


You'll practice several methods of soldering and desoldering surface mount components (SMCs) to a practice circuit board. You'll assemble an audio frequency oscillator from SMCs and experiment with it. And you'll even build a more complex 8-element

LED bar graph. A complete parts pack is included.

**Material Required:** A 15-watt soldering iron.
**Prerequisites:** Requires a basic knowledge of electronic principles.
**EI-3135** (5 lbs.) . . . . . . . . . . **$99.95**

# Microprocessor fundamentals • Earn 8.0 CEUs

Winner of an international award from the Society for Technical Communication, this first course in our traditional microprocessing series teaches the fundamentals of 8-bit microprocessors, microcomputers and machine level programming.

This two-volume course begins with a review of computer number systems and codes, and continues with terms and conventions, programming instructions, writing and executing programs and computer arithmetic. Your study includes valuable details about the 6800/6808 microprocessors, architecture, instruction sets, addressing modes, stack operations and much more. This course includes programming and hardware interfacing experiments and a complete parts pack.

**Material Required:** ET-3400-A Microprocessor Trainer (on page 54) a multimeter and oscilloscope.
**Prerequisites:** EE-3201-A Digital Techniques course (on page 51).
**EE-3401-A** (10 lbs.) . . . . . . . . . **$99.95**

Save $60.00! Package includes EE-3401-A Microprocessors course and the ET-3400-A Microprocessor Trainer.
**EES-3401-A** (17 lbs.) . . **$319.90**

## Microprocessor interfacing techniques

• **Earn 7.0 CEUs**

Once you've learned microprocessor fundamentals, you're ready to move on to interfacing techniques and advanced microprocessors. This two-volume microprocessor interfacing course covers the 6800 family, including the powerful 6809, and continues to the 68000 processor. You'll explore topics such as advanced peripheral interfacing (PIA), analog conversion, serial data communications, memory devices and programmable timers.

Ten course experiments give you hands-on experience with display multiplexing, I/O control and handshaking using the PIA, analog-to-digital conversion and interfacing. You'll perform parallel-to-parallel conversion using the 6850 asynchronous communications interface adaptor (ACIA), serial standard conversion, 2716 EPROM programming and ROM/EPROM interfacing. And you'll have actual experience with 6840 programmable timer module (PTM) input and output, as well as 6809 software operation. A complete parts pack is included.

**Material Required:** ET-3400-A Microprocessor Trainer (on page 54), a multimeter and oscilloscope.
**Prerequisites:** EE-3401-A Microprocessors course (above) or equivalent experience.
**EE-3402** (11 lbs.) . . . . . . . . . . **$99.95**

## Master advanced microprocessor principles

• **Earn 8.0 CEUs**

Microprocessor Applications is designed to give advanced students an understanding of how a digital microprocessor can control events in an analog world. This two-volume course covers microprocessor applications in the consumer market and in business and industry, plus it looks into changes the future may bring in microprocessor applications.

You'll study about microprocessor sensors and transducers, temperature, light, position, motion, force, pressure and flow. The course also covers microprocessor control of devices and circuits, digital-to-analog conversion techniques and analog signal conditioning.

Thirteen experiments give you experience constructing a microprocessor-controlled digital mulitmeter and a thermometer, plus a microprocessor/stepper motor interface with a control circuit and a programmable digital frequency synthesizer. Includes a complete parts pack.

**Material Required:** ET-3400-A Microprocessor Trainer (on page 54), a multimeter and oscilloscope.
**Prerequisites:** EE-3401-A Microprocessors and EE-3402 Microprocessor Interfacing courses (both above) or equivalent experience.
**EE-3405** (10 lbs.) . . . . . . . . . . **$99.95**

## 8-bit microprocessor trainer for hands-on experience

**(SKILL LEVEL 3)** Our versatile, low cost Microprocessor Trainer is designed to give you hands-on experience with microprocessor operation, programming and applications. This flexible, general-purpose training unit and microprocessor breadboard can also be used as a design aid for developing special interface circuitry, or as a miniature digital computer for experiments in our microprocessor course series (on page 53).

Built around the popular 6808 microprocessor unit, the Microprocessor Trainer includes 512 user-accessible RAM and a 1K monitor ROM. The large, solderless breadboard gives you the opportunity to build prototype logic circuitry. The 17-key hexadecimal-based keypad and six 7-segment LED display digits make entering and troubleshooting experimental programs easy.

Built-in +5 VDC at 1.5 amps and ±12 VDC at 50 mA power supplies furnish power to the internal circuitry and breadboard area with sufficient reserve to power related course experiments. Requires 120 VAC, 50/60 Hz at 30 watts maximum power. 3 1/2" H x 12 1/8" W x 11 3/4" D.

**Kit ET-3400-A** (7 lbs.) . . . . . . **$279.95**
**Assembled ETW-3400-A**
(6 lbs.) . . . . . . . . . . . . . . . . . . **$399.95**

## Learn fundamentals with the 8085 microprocessor programming course • Earn 4.0 CEUs

This Heathkit course gives you the chance to master the 8085 microprocessor, used today in many consumer and industrial applications.

In it you'll explore the main components of a microprocessor system and learn their uses, applications and functions. In nineteen course experiments you'll learn to write, edit and debug programs in assembly language, to analyze programming problems and develop flowcharts to help solve them. Plus, you'll find out how to program a microprocessor-based system in both machine and assembly language. When you complete the course, you'll be ready to move on to 16-bit microprocessors. Includes a complete parts pack.

**Material Required:** ETW-3800 Microprocessor Trainer with the ETC-8085 CPU Module (found in the EWS-8085 package on page 55).
**Prerequisites:** EE-3201-A Digital Techniques course on page 51 or equivalent knowledge.
**EE-8085** (7 lbs.) . . . . . . . . . . . **$99.95**



## Further your knowledge of the 8085 microprocessor

**• Earn 8.0 CEUs**

Learn more about microprocessor programming and interfacing with this challenging course. It furthers your knowledge by teaching state-of-the-art interfacing and applications concepts. You'll learn how to interface with memory for program storage and I/O devices for system communication. You'll also discover how to apply the microprocessor to real-world tasks by understanding analog/digital conversion, signal conditioning, sensors, motor speed measurement, control devices and more. With this knowledge, you'll discover endless ways to apply microprocessor technology.

In addition, the final chapter includes eighteen exciting course experiments which help you understand and learn the principles taught in the text. Plus, you're given the tools and encouraged to try some of your own original interfacing ideas. A complete parts pack is included.

**Material Required:** ETW-3800 Microprocessor Trainer with the ETC-8085 CPU Module (found in the EWS-8085 package on page 55).
**Prerequisites:** EE-8085 Microprocessor Programming course (above).
**EEI-8085** (7 lbs.) . . . . . . . . . . **$129.95**
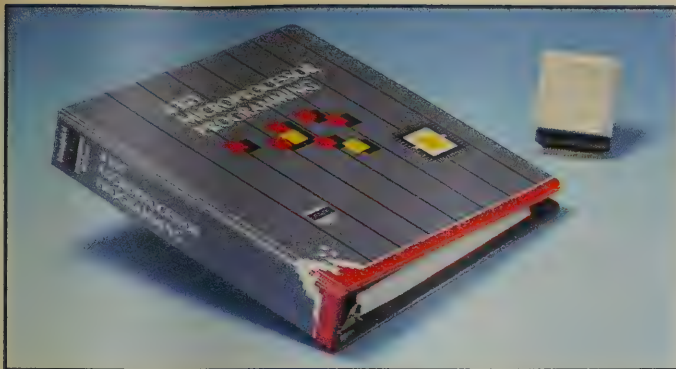
# 8-bit microprocessor programming course teaches fundamentals

**• Earn 6.0 CEUs**

Written expressly for the beginner in 8-bit microprocessor programming, this comprehensive course focuses on programming the MC6811 as representative of the Motorola 6800 family. You'll write, edit and debug elementary programs in assembly language. And you'll gain a solid foundation for further applications by working on more than a dozen experiments. Includes a complete parts pack.

**Material Required:** ETW-3800 Trainer, the ETC-6811 CPU Module, and ETC-128 Memory Module (below).
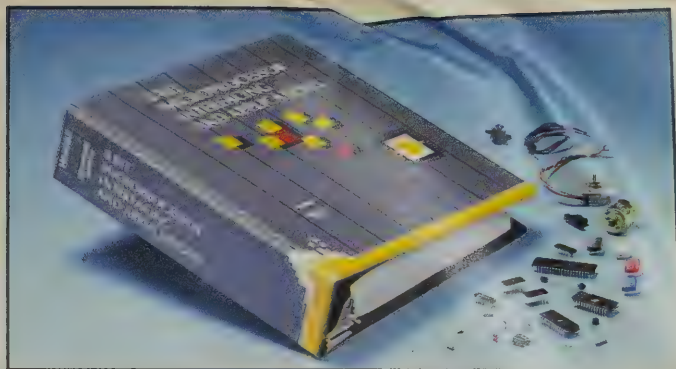**Prerequisites:** Digital Techniques course (on page 51) or equivalent experience.
**EE-3810** (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$99.95**

Save over $45.00 on this microprocessing package. Includes the EE-3810 8-Bit Microprocessor Programming course, the ETW-3800 Microprocessor Trainer and ETC-6811 CPU Module (both below).
**EES-3810** (11 lbs.) . . . . . . . . . . . . . . . . . . . . . . **$749.00**

# 8-bit microprocessor interfacing and applications course

**• Earn 8.0 CEUs**

8-Bit Microprocessor Interfacing and Applications picks up where 8-Bit Microprocessor Programming leaves off. Like its companion course, this material reflects the latest in microprocessor technology. You'll work step by step to the point where you can actually interface a microprocessor to the outside world. The course includes chapters on serial and data communications, memory, temperature and optical sensing, control devices and circuits, and microprocessor applications. Includes nineteen activity-packed experiments and a complete parts pack.

**Material Required:** Microprocessor Trainer, ETC-6811 CPU Module, and ETC-128 Memory Module (below), a multimeter and oscilloscope.
**Prerequisites:** Digital Techniques course (on page 51) and 8-Bit Microprocessor Programming (at left) or equivalent experience.
**EE-3820** (7 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$99.95**



CPU module
Memory module
Trainer
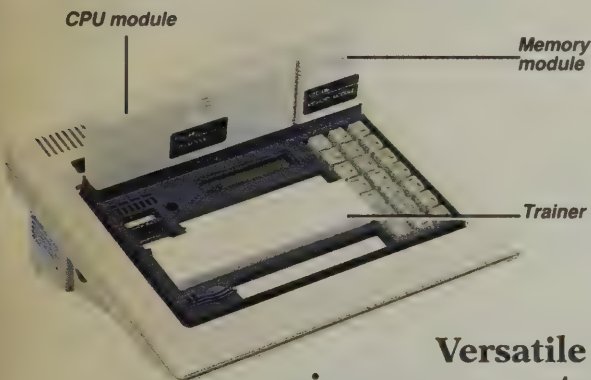
## Versatile 8-bit microprocessor trainer

You can use this rugged trainer with many of the latest 8-bit microprocessors, simply by switching plug-in modules. Plug in the ETC-6811 CPU Module and use it with the courses shown above. Or plug in the ETC-8085 CPU Module and use it with the 8085 microprocessor courses on page 54. Either way, this flexible trainer is the perfect tool for learning programming, interfacing and applications.

With recessed connector blocks, built-in short circuit protection and data-saving circuitry, the ETW-3800 is built to withstand rigorous use. And, its fully integrated firmware leads you through the complexities of 8-bit technology in clear, understandable steps.

An RS-232 interface allows you to use the trainer with a terminal and even download HEX files from a computer. And a built-in sonic logic probe lets you check high, low or pulse signals, both visually and audibly.

The ETC-6811 CPU Module comes with 26K user available RAM, 16K ROM and operates at a clock frequency of 921 kHz. The ETC-8085 CPU Module comes with 24K RAM, 24K ROM and operates at a clock frequency of 1.8 MHz. Requires 120 VAC, 60 Hz.

**Assembled EWS-6811** Includes the ETW-3800 Microprocessor Trainer and ETC-6811 CPU Module.
(8 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$695.00**

**Assembled EWS-8085** Includes the ETW-3800 Microprocessor Trainer and ETC-8085 CPU Module.
(7 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$695.00**

Accessories:
**CPU Module** ETC-6811 (2 lbs.) . . . . . . . . . . . . . . . . **$199.95**
**CPU Module** ETC-8085 (1 lb.) . . . . . . . . . . . . . . . . . **$199.95**
**Memory Module** Stores lengthy MPU programs for future use.
ETC-128 (2 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$59.00**

# Computer courses and software

Advance into the computer world with exciting and informative Heathkit Educational Systems computer-based courses. They're designed and written by our expert writers to help you understand computer basics and more advanced programs. Each self-instructional course includes disk-based exercises, unit tests and a final exam. Plus, you'll earn valuable Continuing Education Units upon successful completion of each course.

## Micro-computer professor tutorial • Earn 2.0 CEUs

Become your own computer consultant with this thorough tutorial on personal computer systems. You'll learn to make informed purchasing decisions to address your particular needs.

You'll also learn to do a computer needs assessment and to relate these decisions to selecting software and hardware, choosing the proper location for your computer system, identifying and troubleshooting hardware and software problems, and performing routine preventative maintenance.

Included are an MS-DOS Version 3.0 Quick Reference Guide, 3.5" and 5.25" experiment disks, two needs assessment worksheets and two sets of 10 disk labels.

**Material Required:** Heath/Zenith, IBM or compatible PC using the MS-DOS operating system.
**Prerequisites:** None.
**EC-1123** (5 lbs.) . . . . . . . . . . . . **$34.95**

## CAD/CAM course

### • Earn 6.0 CEUs

With this exciting computer-aided design (CAD) and computer-aided manufacturing (CAM) course you'll gain valuable information about the advancement in tools and techniques in the manufacturing environment.

You'll study the workshop concept, hardware and software, cost parameters associated with CAD/CAM, numerically controlled machinery, data communications and intelligent machines. Plus, you'll learn about robotics, factory management, manufacturers' automated protocol, advanced CAM systems, local area networks, process planning and material requirements planning.

We've included AutoCAD software for the seven on-disk experiments. With it you'll be able to make and modify CAD drawings, create symbols, zoom in to show microscopic detail and zoom out for a macroscopic overview. The perfect way to develop skills in computer-aided design.
**Material Required:** Heath/Zenith or IBM compatible PC equipped with 256K RAM, two 5.25" disk drives and CGA or Hercules video capability. Please note that the software will not operate with EGA or VGA video.
**Prerequisites:** None.
**EES-109** (12 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$54.95**

## Artificial intelligence and expert systems course

### • Earn 6.0 CEUs

This comprehensive course gives you all the information you need to stay on top of the artificial intelligence (AI) explosion. How AI differs from conventional computing, advantages of AI, and how it applies to problem solving are a few of the topics covered.

You'll learn the benefits of expert systems; how they're applied in control, diagnosis and planning; plus the 10 steps to creating an expert system. You'll also gain a practical understanding of how AI is applied to robotics and an overview of AI programming.

In addition, Artificial Intelligence gives you an understanding of natural language processing and voice recognition, how natural language processing systems work and how they apply to real world situations - from natural language interfaces and language translation to grammar analysis and abstracting. You'll also learn how speech recognizers and how speech recognition systems work.

Includes thirteen course experiments on two 5.25" floppies and a two-disk demonstration of Texas Instrument's PC Easy Expert Systems program.
**Material Required:** Heath/Zenith or IBM compatible PC with one disk drive and 512K RAM.
**Prerequisites:** A general knowledge of a programming language such as Basic or C.
**EC-1126** (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . . . . **$74.95**

## MS-DOS* course • Earn 4.0 CEUs

Learn your computer's operating system so you can take full advantage of its capabilities. This comprehensive course starts at the beginner's level and works up to the advanced use of the MS-DOS Debug command.

You'll discover how to copy programs from existing diskettes, configure your system for virtually any peripheral, troubleshoot and more.

You'll learn to recover from common disk errors, create and use subdirectories to organize data, and use batch files. Plus, you'll learn to use the Edlin editor, develop an understand-

ing of input/output redirection, plan and use a hard disk system, and examine and change files and disk data with Debug.
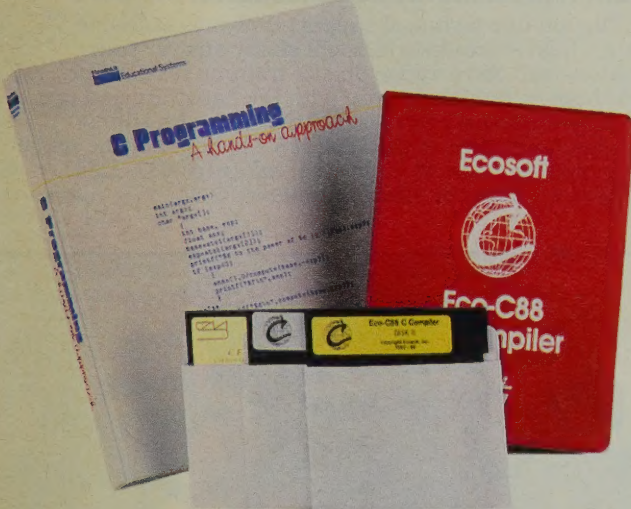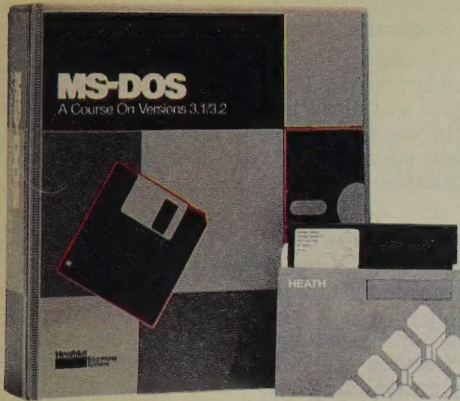
The course includes a 5.25" and 3.5" experiment disk with thirty-three hands-on experiments that give you the opportunity to apply and master each topic you study.

**Material Required:** MS-DOS-based PC with a minimum 256K memory and two floppy disk drives.
**Prerequisites:** None.
EC-1121-A (6 lbs.) . . . . . . . . . . $69.95
*MS-DOS is a registered trademark of Microsoft Corp.

## C Programming course

• Earn 3.0 CEUs

In this carefully paced course written for the novice programmer, you'll become familiar with the powerful language of C. The course concentrates primarily on C's structure and syntax, leaving system programming theory to more advanced courses.

More intricate in syntax and capabilities than languages such as BASIC, FORTRAN, Pascal and COBOL, C is quickly becoming the preferred language of computer scientists, electrical engineers and others who work closely with computer operating systems. Included is Ecosoft's C Compiler and CED Editor software, a $59.95 value - FREE!

**Material Required:** Heath/Zenith or IBM compatible PC with 384K RAM, PC or MS-DOS version 2.0 or later, and two 5.25" floppy disk drives or a 5.25" floppy drive and a hard drive less than 32M. Please note that the course does not operate with MS-DOS and PC-DOS 4.0 or higher.
**Prerequisites:** You should be familiar with one or more high-level programming languages and have a feel for structured or modular programming principles.
EC-1124 (3 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . $99.95
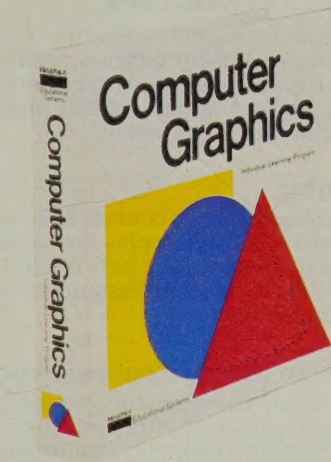
## High resolution graphics course

• Earn 6.0 CEUs

Give your imagination free rein as you create your own high resolution graphics. This exciting course presents a broad overview of the amazing world of computer graphics and gives you the skills you need to create your own unique programs.

You'll learn to draw lines and figures using pixels, use advanced color graphics commands and merge text with graphics. You'll even discover how to animate graphics and how to photograph graphics on-screen using ordinary camera equipment! Programming experiments are included on a 5.25" floppy and are written in Microsoft BASIC.

**Material Required:** Heath/Zenith PC or Advanced 100 series computer equipped with a color graphics card to perform the experiments. You'll also need Microsoft BASIC or BASICA for an IBM PC. Sketching worksheets with acetate overlays are provided.
**Prerequisites:** To get the most from this course you should first have a working knowledge of Microsoft BASIC, an understanding of simple algebra and a familiarity with your computer's operating system.
EC-3000 (6 lbs.) . . . . . . . . . . . . . . . . . . . . . . . . $39.95
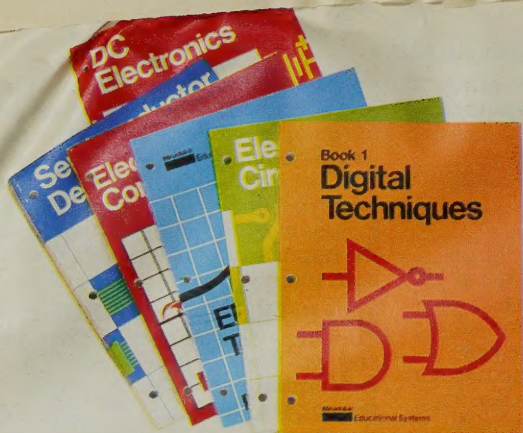
include removeable breadboards so students can connect electrical components without any soldering.

## Courses and hardware are thoroughly tested

All Heathkit Educational Systems courses and hardware are thoroughly tested before they're sold. The prototype hardware and text materials are used by students to help determine what works – and what doesn't. They are then fine-tuned to make sure you get the finest quality learning materials available.

## Complete instructors' guides

With Heath's instructors' guides most of your preparation is already done for you. Each course is completely mapped out, and the formats have been proven successful in the classroom. You'll get a course outline as well as supplementary review questions and answers, so you can concentrate more on teaching and less on preparation.

## Heath representatives and technical support

One-on-one technical support is always available. Heath's field representatives will gladly answer your questions and can arrange on-site training sessions or workshops to familiarize you with the hardware and text material. They also offer an entire line of educational products not shown in the Heathkit Catalog. For the name of the representative in your area, call (616) 982-3281, 8:00 a.m. to 4:30 p.m. Eastern time.

# Why more educators choose Heathkit classroom version courses

The same courses you find in the Heathkit Catalog are available in classroom versions for colleges, technical schools or corporate training classes. These courses are developed by experts who are responsible for many of today's important technological advances.

## Step-by-step learning

Heathkit Educational Systems courses are written in a clear style that's easy to follow. Concepts are reviewed and reinforced to help students retain the information. Student workbooks further enhance their understanding with fun and exciting course experiments.

## Reliable hardware to practice course experiments

A full-line of hardware complements our courses. You can choose ruggedized lab instruments, experiment modules, multipurpose experimenters, test instruments and much more.

Our extremely flexible trainers are meant to be tinkered and experimented with. And, because we design them for classroom students, they're rugged, safe and reliable...meant to withstand any learning environment. Heathkit trainers

| Course | Text ship wt. 2 lbs.* | Price | Workbook ship wt. 2 lbs.* | Price | Instructor's Guide ship wt. 1 lb.* | Price | Assembled Trainer ship wt. 6 lbs.* | Price | Parts ship wt. 1 lb.* | Price | Video Cassettes ship wt. 2 lbs.* | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Introductory** | | | | | | | | | | | | |
| **Concepts of Electronics** | EB-6140 (3 lbs.) | 24.95 | EB-6140-40 (1 lb.) | 12.95 | EB-6140-50 | 10.95 | ETW-3600 | 199.95 | EB-6140-30 | 29.95 | NOT USED | |
| **Concepts of Electricity** | EB-3100 (1 lb.) | 21.95 | EB-3100-40 | 12.95 | EB-3100-50 | 10.95 | ETW-3600 | 199.95 | EB-3100-30 | 34.95 | NOT USED | |
| **Basic Electronics** | | | | | | | | | | | | |
| **DC Electronics** | EB-6101-A | 21.95 | EB-6101-41 (1 lb.) | 12.95 | EB-6101-51 | 10.95 | ETW-3600 | 199.95 | EB-6101-31 (2 lbs.) | 24.95 | EV-3101-A | 39.95 |
| **AC Electronics** | EB-6102-A (3 lbs.) | 21.95 | EB-6102-41 | 12.95 | EB-6102-51 (2 lbs.) | 10.95 | ETW-3600 | 199.95 | EB-6102-31 | 19.95 | EV-3102-A | 39.95 |
| **Semiconductor Devices** | EB-6103-A (3 lbs.) | 21.95 | EB-6103-41 | 12.95 | EB-6103-51 | 10.95 | ETW-3600 | 199.95 | EB-6103-31 | 19.95 | EV-3103-A | 39.95 |
| **Electronic Circuits** | EB-6104-A | 21.95 | EB-6104-41 | 12.95 | EB-6104-51 | 10.95 | ETW-3600 | 199.95 | EB-6104-31 | 34.95 | EV-3104-A | 39.95 |
| **Electronic Fundamentals** | EB-200 (6 lbs.) | 39.95 | EB-200-40 (1 lb.) | 21.95 | EB-200-50 | 11.95 | ETW-3600 | 199.95 | EB-200-30 | 59.95 | NOT USED | |
| **Test Instruments** | EB-6105 (4 lbs.) | 24.95 | EB-6105-40 | 12.95 | EB-6105-50 | 10.95 | ETW-3600 | 199.95 | EB-6105-30 | 29.95 | NOT USED | |

| Course | Text ship wt. 2 lbs.* | Price | Workbook ship wt. 2 lbs.* | Price | Instructor's Guide ship wt. 1 lb.* | Price | Assembled Trainer ship wt. 6 lbs.* | Price | Parts ship wt. 1 lb.* | Price | Video Cassettes ship wt. 2 lbs.* | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Basic Electronics (Cont.)** | | | | | | | | | | | | |
| Electronic Communications | EB-6106 | 21.95 | EB-6106-40 (1 lb.) | 12.95 | EB-6106-50 | 10.95 | ETW-3600 | 199.95 | EB-6106-30 | 34.95 | NOT USED | |
| Digital Techniques | EB-6201-A (3 lbs.) | 24.95 | EB-6201-41 | 12.95 | EB-6201-51 | 10.95 | ETW-3700 | 199.95 | EB-6201-31 | 34.95 | NOT USED | |
| Digital Techniques Additional Experiments | NOT USED | | EB-6201-71 (1 lb.) | 12.95 | EB-6201-52 | 10.95 | ETW-3700 | 199.95 | NOT USED | | NOT USED | |
| Data Communications and Networks | EB-8090 (5 lbs.) | 24.95 | EB-8090-40 (1 lb.) | 12.95 | EB-8090-50 | 10.95 | ETW-1000 (13 lbs.) | 299.95 | EB-8090-30 | 19.95 | NOT USED | |
| **Advanced Electronics** | | | | | | | | | | | | |
| Operational Amplifiers | EB-601 | 21.95 | Experiments in text | | EB-601-50 | 10.95 | NOT USED | | EB-601-30 | 24.95 | NOT USED | |
| Optoelectronics | EB-605 | 21.95 | EB-605-40 (1 lb.) | 12.95 | EB-605-50 | 10.95 | NOT USED | | EB-605-30 | 29.95 | NOT USED | |
| Laser Technology | EB-610 | 21.95 | EB-610-40 (1 lb.) | 12.95 | EB-610-50 | 10.95 | EWS-4200-A (5 lbs.) | 425.00 | EB-610-30 (3 lbs.) | 39.95 | NOT USED | |
| Electro-optics | EB-611 | 21.95 | EB-611-40 (1 lb.) | 12.95 | EB-611-50 | 10.95 | NOT USED | | EB-611-30 (2 lbs.) | 79.95 | NOT USED | |
| Linear IC Electronics | EB-615 (3 lbs.) | 21.95 | EB-615-40 (3 lbs.) | 12.95 | EB-615-50 | 10.95 | ETW-3600 | 199.95 | EB-615-30 (2 lbs.) | 39.95 | NOT USED | |
| **SMT** | | | | | | | | | | | | |
| Surface Mount Technology | EB-3135 | 24.95 | EB-3135-40 | 12.95 | EB-3135-50 | 10.95 | NOT USED | | EB-3135-30 | 69.95 | NOT USED | |
| **Microprocessor Technology** | | | | | | | | | | | | |
| Microprocessors | EB-6401-A (4 lbs.) | 24.95 | EB-6401-41 (1 lb.) | 12.95 | EB-6401-51 | 10.95 | ETW-3400-A | 399.95 | EB-6401-31 | 64.95 | NOT USED | |
| Microprocessor Interfacing | EB-6402 (5 lbs.) | 24.95 | EB-6402-40 (1 lb.) | 12.95 | EB-6402-50 | 10.95 | ETW-3400-A | 399.95 | EB-6402-30 | 64.95 | NOT USED | |
| Microprocessor Applications | EB-6405 (3 lbs.) | 24.95 | EB-6405-40 | 12.95 | EB-6405-50 | 10.95 | ETW-3400-A | 399.95 | EB-6405-30 (2 lbs.) | 54.95 | NOT USED | |
| 8-Bit Microprocessor Programming | EB-6810 | 24.95 | EB-6810-40 (1 lb.) | 12.95 | EB-6810-50 | 10.95 | EWS-6811 (8 lbs.) | 695.00 | EB-6810-30 (3 lbs.) | 29.95 | NOT USED | |
| 8-Bit Interfacing Applications | EB-6820 (3 lbs.) | 24.95 | EB-6820-40 | 12.95 | EB-6820-50 | 10.95 | EWS-6811 (8 lbs.) | 695.00 | EB-6820-30 (2 lbs.) | 74.95 | NOT USED | |
| 8085 Microprocessor Programming | EB-8085 | 24.95 | EB-8085-40 | 12.95 | EB-8085-50 | 10.95 | EWS-8085 (7 lbs.) | 695.00 | EB-8085-30 | 49.95 | NOT USED | |
| 8085 Microprocessor Interfacing and Appl. | EBI-8085 (3 lbs.) | 24.95 | EBI-8085-40 | 12.95 | EBI-8085-50 | 10.95 | EWS-8085 (7 lbs.) | 695.00 | EBI-8085-30 | 99.95 | NOT USED | |
| Advanced 16-Bit Microprocessors | EB-8088 (4 lbs.) | 24.95 | EB-8088-40 | 12.95 | EB-8088-50 | 10.95 | ETW-100 (33 lbs.) | 799.00 | EB-8088-30 | 59.95 | NOT USED | |
| **Robotics and Automation** | | | | | | | | | | | | |
| Intelligent Machines | EB-1900 | 21.95 | EB-1900-40 (1 lb.) | 12.95 | EB-1900-50 | 10.95 | NOT USED | | EB-1900-30 (2 lbs.) | 39.95 | NOT USED | |
| Electronics for Automation | EB-1901 | 21.95 | EB-1901-40 (1 lb.) | 12.95 | EB-1901-50 | 10.95 | NOT USED | | EB-1901-30 | 69.95 | NOT USED | |
| Industrial Robotics and Automation | EB-1903 (3 lbs.) | 21.95 | EB-1903-40 (1 lb.) | 12.95 | EB-1903-50 | 10.95 | EWS-19-32 (100 lbs.) | 1295.00 | EB-1903-30 (2 lbs.) | 64.95 | NOT USED | |
| HERO 2000: Programming and Interfacing | EB-1950 (5 lbs.) | 59.95 | NOT USED | | | | NOT USED | | NOT USED | | | |
| Robotics & Ind. Electronics | EB-1801 (4 lbs.) | 29.95 | EB-1801-40 | 14.95 | EB-1801-50 | 10.95 | ETZ-18-Z (95 lbs.) | 1800.00 | EB-1801-30 (2 lbs.) | 44.95 | NOT USED | |
| HERO 1 Advanced Experiments | EB-1802 (1 lb.) | 24.95 | NOT USED | | | | | | NOT USED | | | |
| **Computer Servicing** | | | | | | | | | | | | |
| Computer Fundamentals | EB-2001 (3 lbs.) | 21.95 | EB-2001-40 | 12.95 | EB-2001-50 | 10.95 | ETW-100 (33 lbs.) | 799.00 | EB-2001-30 | 39.95 | NOT USED | |
| Computer Peripherals | EB-2002 | 21.95 | EB-2002-40 (1 lb.) | 12.95 | EB-2002-50 | 10.95 | ETW-100 (33 lbs.) | 799.00 | EB-2002-30 | 39.95 | NOT USED | |
| Computer Maintenance | EB-2003 | 21.95 | EB-2003-40 (1 lb.) | 12.95 | EB-2003-50 | 10.95 | ETW-100 (33 lbs.) | 799.00 | EB-2003-30 | 29.95 | NOT USED | |
| **CAD** | | | | | | | | | | | | |
| AutoCAD | EB-609 (6 lbs.) | 39.95 | NOT USED | | NOT USED | | NOT USED | | NOT USED | | NOT USED | |
| **Applied Physics** | | | | | | | | | | | | |
| Mechanisms: Fund. of Mechanical Devices | EW-4300 | 24.95 | EW-4300-40 | 17.95 | EW-4300-50 | 10.95 | ET-4400 | 649.00 | NOT USED | | NOT USED | |
| **Telecommunications** | | | | | | | | | | | | |
| Telephone Systems | EB-5010 | 24.95 | EB-5010-40 | 12.95 | EB-5010-50 | 11.95 | EWS-5000 (14 lbs.) | 699.90 | ETB-5010 Exp. Modules | 449.95 | NOT USED | |
| Communications Systems | EB-5020 | 24.95 | EB-5020-40 | 12.95 | EB-5020-50 | 11.95 | EWS-5000 (14 lbs.) | 699.90 | ETB-5020 Exp. Module | 249.95 | NOT USED | |

* Standard ship weight unless otherwise stated.

# A few ideas to warm you up!

Nothing heats up those cold winter evenings like a soldering iron and a Heath kit. The excitement begins on page 2 where you'll find a variety of projects that are fun and educational for the whole family. From the Electronic Dice to the Speaker Phone, you're sure to find a kit that's guaranteed to please. A soldering iron and some basic tools are all you need to get started. Our complete 10-piece tool set on page 3 is a great choice.

Pick up the phone and place your order today. We'll rush your new kit to you just in time to take the chill out of winter!

---

# Heathkit®

HEATH COMPANY
BENTON HARBOR, MI 49022

**Order toll-free 24 hours a day**
**1-800-253-0570**
**Or FAX your credit card orders: 616-982-5577**

CURRENT RESIDENT OR

```
***************5-DIGIT 91320
                 223-402

WILLIAM BRINKMEYER
417 BOB COURT
NEWBURY PARK    CA 91320
```

0004