

Heathkit®

**SENSATIONAL SPRING/SUMMER
STEREO RECEIVER/SPEAKER SALE!**
SAVE UP TO \$250—See page 32 in the catalog!

SEE THE NEWEST IN KITS

Dual-Drive Floppy Disk
System for the
H89 Computer — page 74

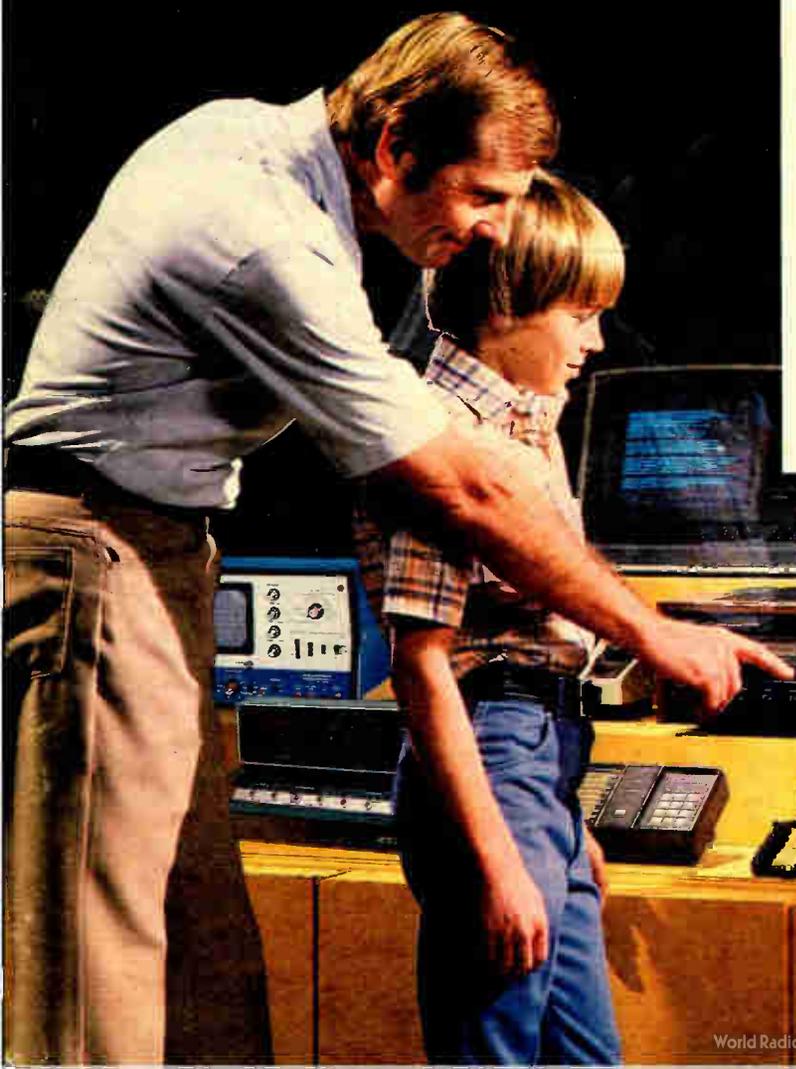
Letter Quality Printer for
top-quality computer-
generated paperwork —
page 81

2-Meter FM Digital Scanning
Transceiver, Power Supply
— pages 30 and 31

Automotive Ignition Tune-Up
Self-Instruction Program
helps you do it yourself
and save — page 49

Value-packed Strip Chart
Recorder — page 65

MAIL ORDER CATALOG 849



The exciting new Heathkit Screen Star Projection TV

Thrill your family. The new Heathkit Screen Star TV puts excitement back in TV viewing. Its sharp, clear picture is 8 times larger than the one you now watch!*

\$2195⁰⁰

- Three-tube projection for a brighter, more vivid picture
- 6-foot diagonal high-reflectivity, washable viewing screen for a big, bright, lifelike image
- A full 5 watts of clear, low-distortion sound
- Built-in adjustments for easy self-service



For the first time, Heath brings its world-famous quality, performance and reliability to you in a TV Projection System you can build yourself! There's nothing better than the new Heathkit Screen Star TV for bringing the theater-like realism of sporting events, movies and entertainment specials into your living room. And the Screen Star gives you the most performance for your TV dollar!

Three-tube projection gives you a brighter, more vivid color picture and provides a wider viewing angle from the projection screen. Both the picture tubes and lenses are the finest available, giving you an unsurpassed state-of-the-art color projection system. Each high-resolution color picture tube beams its image through its own large, high-quality 127 mm f1.0 lens to give you the brightest, sharpest, most beautiful picture!

This image is projected onto a 6-foot diagonal, high-reflectivity viewing screen. The easy-care screen is washable to let you maintain high reflectivity and a bright color picture, and is designed to provide years of enjoyment. The viewing screen is equipped with brackets for mounting on any wall. Or to make your viewing screen free-standing and portable, order the optional GRA-4000-1 Screen Stand (at right).

The electronics of the Heathkit Screen Star provide a bright, clear, lifelike image for years to come! Automatic Fine Tuning (AFT) and an exclusive Heath LC filter maintain IF alignment and reduce drift, keeping your picture in tune from channel to channel. In fact, the IF amplifier never needs re-alignment! Special black level clamps help to faithfully reproduce every scene, whether it's outdoor sun or moonlight. These clamps maintain constant blacks and grays for more accurate brightness levels. Bridge-type low-voltage power supplies provide superior voltage regulation and better all-around performance. And a ferro-resonant power transformer delivers correct power supply voltages, even in areas where line voltages are too low or too high. Proper voltage regulation means you get constant brightness and picture size — even during voltage brownouts.

The external antenna input is designed to give you clearer, crisper TV reception with less troublesome interference! An internal UHF/VHF splitter means you need only one antenna connection to your GR-4000. This true 75-ohm antenna hookup, combined with complete shielding of the tuners, makes the new Heathkit Screen Star TV ideally suited to hook up to your cable television system. (If you don't have cable TV, get the best reception of TV stations in your area with the antennas, rotor and accessories on page 101).

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We've even designed a video input/output panel with an auxiliary 120 VAC outlet that lets you directly connect a video cassette recorder like the Zenith Video Director (see page 27). Direct connection assures higher-quality video.

The major television networks have improved the fidelity of their sound — and with the Heathkit Screen Star you can really hear the difference! The sound system provides a full 5 watts of sound as beautiful, rich, clear and distortion-free as the picture. You can listen through the large 6" x 9" speaker, or use the external speaker jack or the VCR audio output jack — to connect to your stereo system for even better high-fidelity sound!

The Heathkit Screen Star is designed to be energy-efficient. Quick warm-up picture tubes bring the picture up fast — but without high energy consumption — or cost.

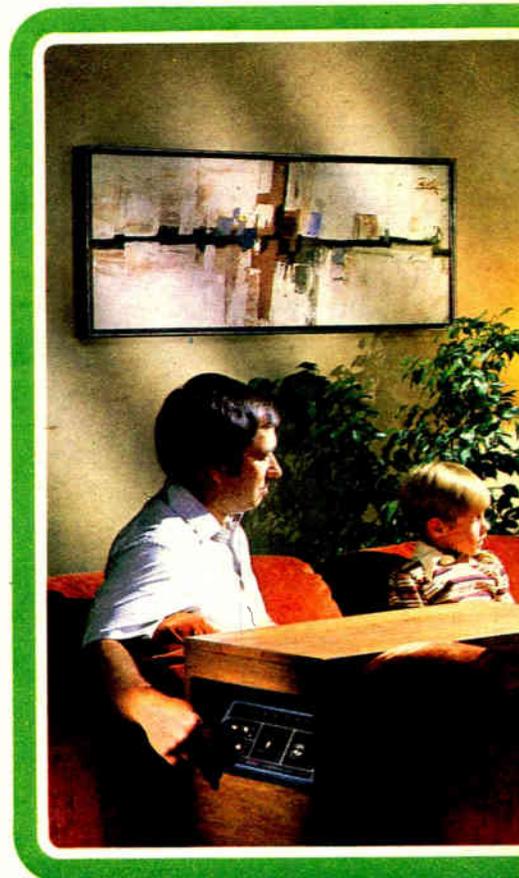
All controls on the projector are easy-to-find and easy-to-use. Illuminated channel indicators instantly tell you which of the 82 UHF and VHF channels you're tuned to. And all adjustments, including the focus controls, are on top of the chassis or an easily accessible panel.

You can easily move the Heathkit Screen Star from room to room! The projector's smooth-rolling casters let you move the projector anywhere, easily — even store it out of the way — when not in use. And with the optional Screen Stand, the lightweight screen can be moved with the same ease. Just place the screen about 8 feet in front of the projector, and you can see lifelike, big-screen color TV.

The new Heathkit Screen Star TV is Heath's easiest-to-build solid-state color TV! It takes just 40 to 50 hours for an intermediate kit builder to assemble. The entire picture tube, yoke and lens units, as well as the high-voltage supply, UHF and VHF tuners, are factory-assembled and adjusted for easier building and more reliable performance. Transistors and integrated circuits plug in for easier assembly and — if needed — simpler testing, adjustment and replacement.

Heath is world-famous for the simplicity and thoroughness of its kit-building manuals — and the Screen Star's assembly manual is no exception! Kit-building is a snap, with the assembly manual taking you every step of the way.

Solid-state reliability means you'll spend less on repair bills. And a complete self-servicing manual, with full illustrations, shows you how to perform your own service and save even more by eliminating costly repair bills! The built-in self-service features make maintenance and repair fast and simple.



A convenient swing-back cabinet on the projector gives you access to make adjustments that can't be made with the easy-to-reach controls on the projector. All convergence controls are located on the upper chassis to simplify adjustments. A built-in crosshatch generator makes it easy to maintain convergence for a sharp picture. The entire chassis conveniently swings back for easy servicing. And a test meter is included for making checks before the TV projector is placed into operation, and to aid you in making more precise adjustments. The test meter can also be used for servicing in the future. With these built-in service features, you can really save money on service calls.

Should you ever run into a problem, however, help is as close as the nearest Heathkit Electronic Center or the Heath factory. You receive complete service support to help you keep your Screen Star in perfect working condition.

Order today! Get the brightest, sharpest, most beautiful picture in breath-taking big-screen realism — with solid-state reliability and the Heathkit self-service advantage — in the new Heathkit GR-4000 Screen Star Projection TV. Your color television viewing will never be the same again.

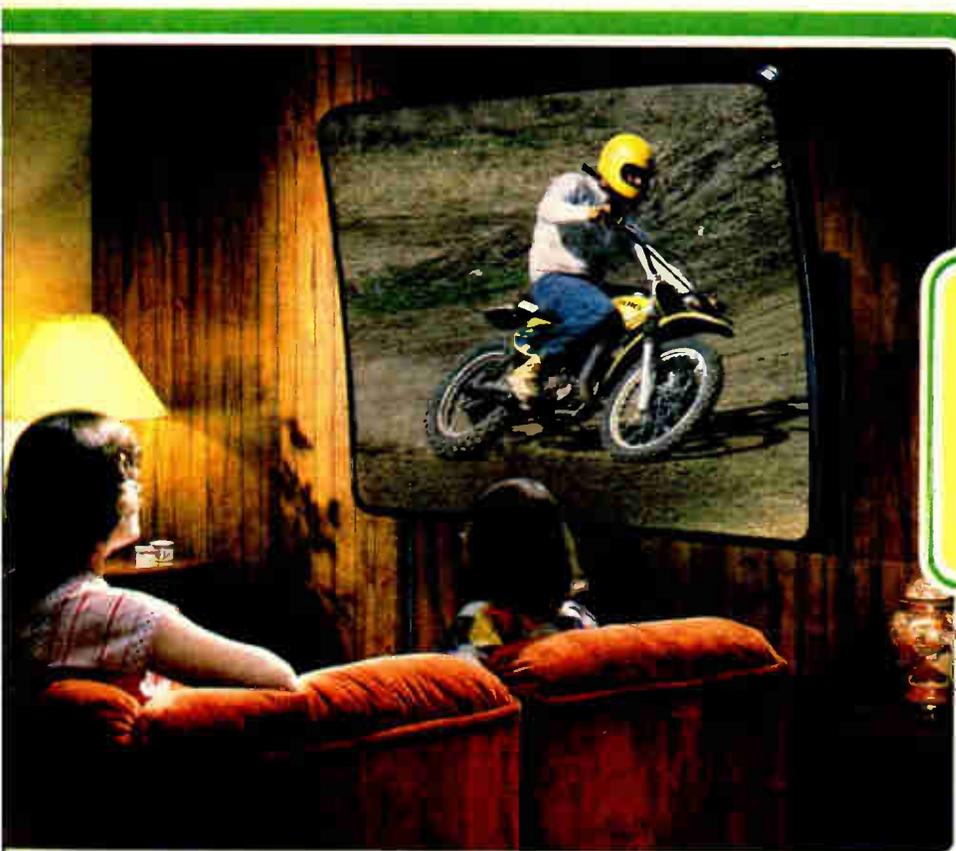
Kit GR-4000, Wt. 190 lbs., Mtr. Frt. 2,195.00

Optional Screen Stand for GR-4000.

GRA-4000-1, wt. 18 lbs., Mtr. Frt. 79.95

(*If your present TV is 25" diagonal or smaller.)

brings big-screen color television right into your living room



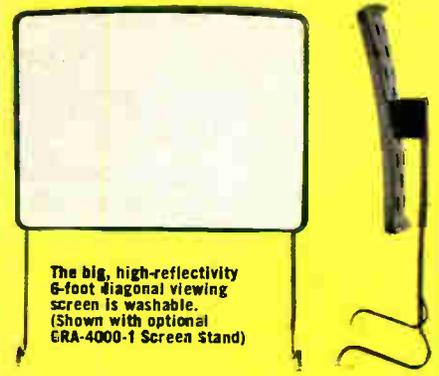
All operating controls are conveniently located on the projector to make operating the Heathkit Screen Star a breeze!



The Screen Star uses the highest-quality f1.0 lenses to beam a brighter, clearer picture!



The Screen Star Color TV Projection Unit is mounted on easy-rolling casters. Move it anywhere when not in use.



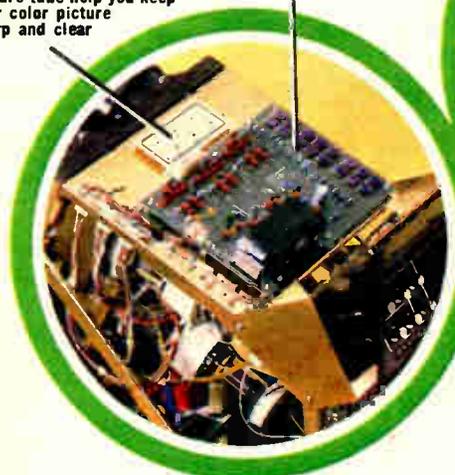
The big, high-reflectivity 6-foot diagonal viewing screen is washable. (Shown with optional 6RA-4000-1 Screen Stand)

Simulated TV picture (Shown with optional screen stand)

Chassis swings back for easier servicing

All convergence controls are located on the upper chassis to make adjustments easier

Focus controls for each picture tube help you keep your color picture sharp and clear



Plug-in ICs and circuit boards make servicing easier than ever!



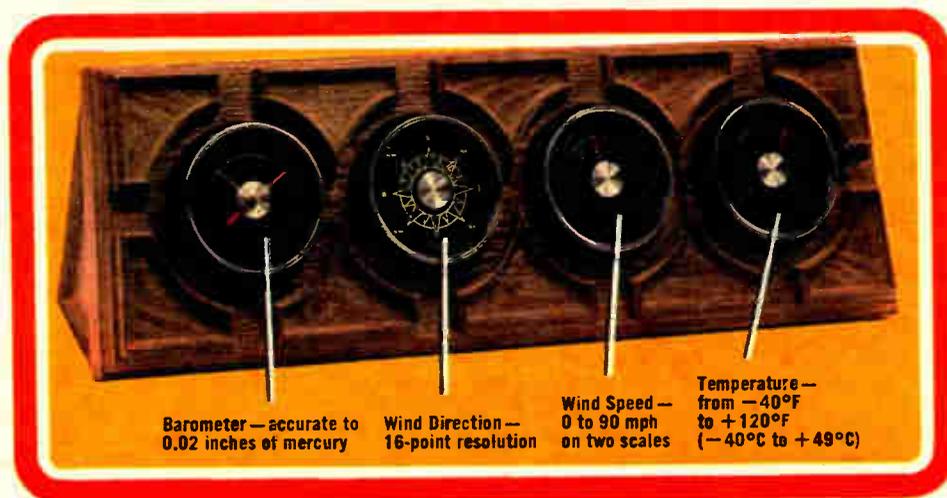
Large 6" x 9" speaker gives you 5 watts of full-bodied hi-fi sound!

Three high-quality picture tubes — the best way to get the brightest, most beautiful color picture!

The picture tubes, lenses, high-voltage supply and tuners are factory assembled and adjusted to assure more reliable performance

GR-4000 SPECIFICATIONS: Antenna Input Impedance: 75 ohms, with internal UHF/VHF splitter. Tuning Range: UHF channels 14 through 83, VHF channels 2 through 13. AFT Pull-In Range: 0.7 to -1.8 MHz. Audio Output: 5 W at speaker and external 8-ohm speaker jack. Total Harmonic Distortion: Less than 0.5%. 30 dB Sound Quieting: Greater than 100 dB at 1 V. Video IF Bandwidth: 4.08 MHz at 6 dB down. Peak Picture Sensitivity: Greater than 100 dB. Video Cassette Recorder: 1 V composite video in/out at 75 ohms, .75 VRMS audio in/out at 600 ohms. Projector Lenses: 127 mm focal length, f 1.0/1. Projector Distance from Screen: Approximately 98 inches. Screen Dimensions: 45" H x 60" W. Projector Dimensions: 28" H x 16 1/4" W x 32" D. Power Requirement: 120 VAC, 60 Hz, 150 Watts.

Heathkit deluxe electronic weather instruments



Barometer — accurate to 0.02 inches of mercury

Wind Direction — 16-point resolution

Wind Speed — 0 to 90 mph on two scales

Temperature — from -40°F to +120°F (-40°C to +49°C)



Handsome wood-grain plastic cabinet mounts horizontally or vertically on wall, or use on desk

Remote transmitter clamps onto any 1" to 1½" TV antenna mast



Get instant, accurate weather readings anywhere!

Easy-to-read precision Five-Function Weather Station

Wherever instant, electronically accurate weather information is needed, the Heathkit ID-1290 Weather Station keeps track of indoor and outdoor temperatures, barometric pressure, wind speed and direction. The thermometer is calibrated in two-degree increments from -40°F to +120°F (-40°C to +49°C), with a switch to select indoor or outdoor readings. The barometer helps you keep abreast of changing conditions by indicating movements as small as 0.02 inch of mercury. You can read wind speed from 0 to 90 mph in two ranges, with eight wind direction lights providing 16-point resolution for precision readings. With its walnut-grained plastic cabinet, the ID-1290 can be used as a handsome desk set, or can be hung horizontally or vertically. The remote transmitter assembly (windcups, weather vane and outdoor temperature sensor) is included

with the ID-1290. It clamps onto any 1" or 1½" diameter TV antenna mast, and is connected to the cabinet with optional eight-wire cable (below).

Kit ID-1290, Shpg. wt. 8 lbs. 129.95

8-Wire cable for remote transmitters. IDA-1290-1, 50 ft. cable, 2 lbs. 7.95

IDA-1290-2, 100 ft. cable, 4 lbs. . . 14.95 IDA-1290-3, 150 ft. cable, 6 lbs. . . 21.95

ID-1290 SPECIFICATIONS: Wind speed: 0-30 mph, ±2 mph; 0-90 mph, ±5 mph. Wind direction: 16-point readout over 360°. Temperature: Typ. indoor: 0°F to +120°F, ±2°F (-18°C to +49°C, ±1°C). Typ. outdoor: -40°F to +120°F, ±2°F (-40°C to +49°C, ±1°C). Barometric pressure: 29 to 31 inches of mercury ±0.02 inch, accurate to 10,000 feet. Power requirement: 110 to 130 VAC, 50/60 Hz, 3.5 watts. Dimensions: Wall mount: 7" H x 20½" W x 2" D. Desk: 7" H x 20½" W x 6¾" D.



High-accuracy digital Wind Speed and Direction Indicator

Outstanding accuracy and an easy-to-read digital display make this kit a must for pilots, boaters — anyone whose activities are affected by the wind. Choose the two readout modes you want from the three available (miles per hour, kilometers per hour or knots). Switches select the mode and front panel lights show which mode is in use. The eight principal compass points are marked by lights, providing 16-point resolution. This easy to build kit will be a welcome addition to your home. Includes remote transmitter as above. Requires eight-wire cable. Order from above.

Kit ID-1590, Shpg. wt. 7 lbs. 79.95

ID-1590 SPECIFICATIONS: Wind speed: 0 to 99 in mph, km/h or knots (choice of two). Response threshold: 3 mph. Accuracy: ±1 digit or ±10%, whichever is greater. Direction response threshold: approx. 2 mph. Operating temperature: Receiver: 0°F to +150°F (-18°C to +65°C). Transmitter: -40°F to +120°F (-40°C to +49°C). Power requirement: 120 VAC, 50/60 Hz, 6.5 watts. Dimensions: 2½" H x 7" W x 5" D.



Easy-to-build digital Indoor/Outdoor Thermometer

Monitor indoor/outdoor (or any two) temperatures with a big, bright ½" high digital readout. The readout includes plus and minus signs, as well as indoor and outdoor indicator lights. Select Fahrenheit or Celsius temperatures, continuous readings of one temperature or alternate readings of both. The 10' indoor and 75' outdoor cables (included) let you place the temperature sensors almost anywhere (home freezer, hot house, basement, swimming pool and a variety of custom applications). Black Cylolac® plastic case with teak-grain vinyl inserts. A practical, easy-to-build kit that gives value year around.

Kit ID-1390, Shpg. wt. 4 lbs. 69.95

ID-1390 SPECIFICATIONS: Temperature range: -40°F to +120°F (-40°C to +50°C). Accuracy: ±2°F from -30°F to +1°F from +20°F to +120°F, ±2°C from -30°C to -15°C, ±1°C from -15°C to +50°C. Display: 2½-digit planar gas discharge with + and - signs. Power requirement: 110 to 130 VAC, 60 Hz, 4 to 6 watts approx. Dimensions: 2½" H x 7" W x 5" D.

Get instant weather reports with this computerized weather station



The Electronic Weatherman

You get indoor and outdoor temperatures, wind speed and direction, barometric pressure...even the time and date...all right at your fingertips.

The only one of its kind, the Heathkit Digital Weather Computer uses a real microprocessor to give you instant, accurate past, present and future weather data. For boaters, pilots, campers, for anyone going outdoors, the weather station can tell you what to expect.

Easy to use. A compact transmitter mounts on your TV antenna mast and relays weather data to the computerized console indoors. The transmitter unit, with windcups and weathervane, features special infra-red sensing devices that are far more sensitive and reliable than old-fashioned mechanical switches or wipers.

Beautiful styling. The Weather Computer has a handsome solid walnut cabinet. You get large, bright digital readouts for temperatures in degrees Fahrenheit or degrees Celsius, for wind speed and direction in miles and kilometers per hour or in knots, for barometric pressure in inches of mercury or millibars, and for time and date. It even calculates the wind chill factor.

Memory stores data. The Weather Computer stores the high and low temperatures, the minimum and maximum barometric pressures, peak and average winds, plus the time and date that each occurred. It calculates the rate at which the barometric pressure changes so you are alerted to storm fronts. You can even connect your own external battery to maintain the memory in case of power failure.

Order the Heathkit Weather Computer today, kit or assembled. And you'll have your own reliable, weather reports at the press of a button.

Kit ID-4001, Shpg. wt. 15 lbs. 389.95

Factory Assembled and Tested Version of above.

IDW-4001. Includes 100' cable. Shpg. wt. 22 lbs. 539.95

ID-4001 SPECIFICATIONS: DIGITAL CLOCK/4-YEAR CALENDAR. Time Accuracy: Determined by accuracy of AC line. No accumulative error. WIND VECTOR: Accuracy: $\pm 5\%$ or better. Direction Display: Accuracy: $\pm 11.26\%$ degrees. THERMOMETER: Temperature Range: -40° to 70° C; -40° to 158° F. Accuracy: $\pm 1^{\circ}$ on Celsius readings; $\pm 2^{\circ}$ on Fahrenheit readings. BAROMETER: Pressure Range: 28.00 to 32.00 in Hg (inches of mercury). 981.9 to 1050 millibars. Accuracy: ± 0.075 in Hg plus ± 0.01 in Hg/ $^{\circ}$ C. Operating Temperatures: Outdoor assemblies, -40° C to $+70^{\circ}$ C (-40° F to 158° F). Unit, 10° to 35° C (59° to 95° F). Power Requirement: 120/240 VAC. Provision for external battery connection for memory backup during power failures. Dimensions: $7\frac{1}{4}$ " H x 16" W x 6" D.

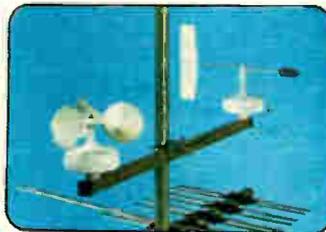
8-Wire cable for ID-4001 kit version

IDA-1290-1, 50 ft. cable, 2 lbs. 7.95

IDA-1290-2, 100 ft. cable, 4 lbs. 14.95

IDA-1290-3, 150 ft. cable, 6 lbs. 21.95

The ID-4001 can be interfaced to the H8 Computer. For details write Heath Tech Correspondence Department.



The ID-4001 comes with the remote transmitter assembly shown here. The transmitter assembly attaches easily to your TV antenna mast. Cable for kit ID-4001 must be ordered separately in the length you require. IDW-4001 comes with 100' cable included.

Enjoy better fishing and safer boating with money-saving



Transducer for the MI-1030 and MI-1031

Transom mount



Thru-the-hull

Deluxe sounder lets you explore depths to 240-ft. for boating safety and more successful fishing trips

Take this portable sounder with you in any boat and come home with more fish in your cooler



You find fish and know the water depth with the deluxe Dual-range Depth Sounder

For improved fishing and navigation, you need this deluxe Dual-range Depth Sounder. It shows water depth, type of bottom, shoals of fish and individual fish. A high-pitched "beep" alerts you to shoals or objects projecting above any preselected depth from 5 to 240 ft. Features switch-selected 0-60 and 0-240 ft. ranges, fixed noise rejection circuit, polarity protection and a super-bright neon indicator. Comes with quick disconnect power and transducer leads. Includes gimbal mount and sturdy Cyclolac® case with glare-free bezel and sun shield.

Kit MI-1031-1, with thru-hull transducer, 15' coax, Shpg. wt. 8 lbs. **89.95**
 Kit MI-1031-2, with transom transducer, 25' coax, Shpg. wt. 8 lbs. **89.95**

Heathkit Single-Range Depth Sounder. As above, single 0-240 ft. range, no alarm.

Kit MI-1030-1, with thru-hull transducer and 25' coax, Shpg. wt. 8 lbs. **69.95**

Kit MI-1030-2, Single-Range Depth Sounder with transom transducer and 25' coax for easy installation, Shpg. wt. 8 lbs. **69.95**

MI-1030 and MI-1031 SPECIFICATIONS: Frequency: approx. 200 kHz. Accuracy: Within 2% of actual depth. Transducer: Barium titanate ceramic element encased in waterproof housing. Power Requirement: 0-60' range, 225 mA @ 11-15 VDC (MI-1031 only), 0-240' range, 125 mA 11-15 VDC with one return pulse. Dimensions: 6½" H x 5¾" W x 7¼" D.

Portable, economy Fish Spotter™ Sounder

Fish swimming between the surface and any preset depth you choose up to 240 ft. will trigger the Fish Spotter's audible alarm. Features two switch-selected ranges (0-60' and 0-240') for sharper definition; noise rejection circuit to eliminate engine ignition interference; bright neon-flasher for precise depth reading. Transducer features a barium titanate ceramic element in encased waterproof housing. Rugged aluminum cabinet. Portable suction-cup transducer bracket. Powered by two 6-volt lantern batteries (not included). 7" H x 6" W x 11" D.

Kit MI-2901, Shpg. wt. 8 lbs. **109.95**

Scanning Transducer Bracket: (Not shown.) Designed for use with MI-2901 and MI-2900 Fish Spotter™ sounders. "C" clamp mounting. For 1⅜" cylindrical transducer. Kit MIA-2900-1, Shpg. wt. 4 lbs. ... **29.95**

Don't get lost! Radio Direction Finder for safe boating.

Stay on course. The MR-1010 keeps you informed on 190-410 kHz longwave beacon band or standard AM. Easy-to-read digital display is bright in direct sunlight, and dims automatically at night for safety and convenience. Finding your bearings is easy, too, thanks to the big azimuth ring marked in 2° increments and a generous 7-inch rod antenna. Lighted meter provides accurate null indications, and a control adjusts meter sensitivity for weak or strong stations. The telescoping sense antenna eliminates 180° ambiguity. Bearing accuracy is an impressive ±3°. Can be used with your boat's 12-15 VDC electrical system, or becomes completely portable with 6 "D" cell flashlight batteries (not included). To prolong battery life, digital readout display automatically shuts off after approximately 20 seconds — but recalled instantly. 7¼" H x 11½" W x 12" D.



Heathkit Radio Direction Finder.
 Kit MR-1010, Shpg. wt. 14 lbs. **259.95**

Thermo Spotter® gets you more fish



Catch more fish! The Thermo Spotter Fishing Thermometer shows you the water temperature at any depth up to 100-ft. Simply lower the line, press spring loaded meter button for temperature readout, check depth on cable. Fish temperature charts (included) indicate the kinds of fish likely to be at that level. Completely self-contained with submersible sensing element. Battery-powered meter circuitry in high-impact

plastic take-up reel case. Requires one 1.5-volt AA battery (not included). 10¼" H x 5¾" W x 3¼" D.
 Kit MI-104, Shpg. wt. 3 lbs. **44.95**

Heathkit marine equipment that you can build yourself

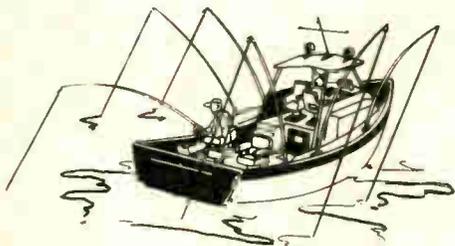
The Heathkit Seeker™ shows you exactly where to find the fish — and it helps you navigate in any weather, too!

Fish near surface

Fish at 50 feet

Fish near bottom

"White Line" Depth Indication



One of the most useful boating and fishing accessories you can own — that's the Heathkit Seeker Chart Recording Depth Sounder. It not only helps you locate the fish, but it also provides a permanent record of the best spots and depths so you can find your favorite spots again and again easily. Its bottom recording accuracy also makes it a valuable navigation aid for following coastline depths and mapping lake bottoms.

The Seeker features an extra-wide beam transducer to allow coverage of a larger area of water than most conventional units. So you get a better and wider "picture" of what's below you. Its three ranges (5' to 200', 200-400', and 400-600') make it useful for any type of boating and fishing area.

Straight line recording system gives you easier, more accurate chart reading and interpretation. A white

line control lets you adjust the bottom indication to a fine line so objects or fish close to the bottom can be distinguished easily. A roll of paper lasts approximately 13 hours for continuous charting. And the two-piece case opens easily for convenient paper replacement.

Two lamps light the chart for easy operation at night. The weather-resistant case with gasket seals helps keep recorder water-tight. Universal gimbal mount for easy installation and removal. Operates from boat's 12-volt battery system. 8" H x 11" W x 7" D. With one roll chart paper.

Depart on boating excursions in greater safety; return from fishing forays with more catches. You'll

sail in greater confidence when you have the Heathkit Seeker as your boating partner.

Kit MI-2910-1, Recorder with through-the-hull transducer and 30' cable. Shpg. wt. 17 lbs. 289.95

Kit MI-2910-2, Recorder with transom mount transducer and 30' cable. Shpg. wt. 17 lbs. 289.95

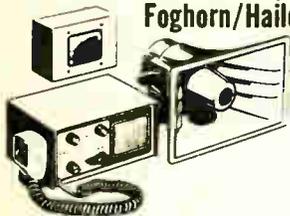
MIA-2910-1, two rolls Chart Paper. Shpg. wt. 2 lbs. 9.95

SPECIAL OFFER — SAVE \$9.75!

12 Rolls Chart Paper. If pur. sep., \$59.70.

MIS-2910-1, Shpg. wt. 12 lbs. 49.95

Foghorn/Hailer, Power Inverter — safe water fun



Automatic Foghorn/Hailer features a husky 55-watt amp, deck horn, 20 ft. cable, gimbal mount. 12 VDC. pos. or neg.

ground. Kit MD-19A, Wt. 15 lbs. 137.95

Kit MDA-19-1, Optional remote speaker for intercom use. Shpg. wt. 2 lbs. 14.95

Economy Power Inverter (not shown). Operates small appliances such as Hi-Fi or TV from 6 or 12-volt input. Up to 175 watts power rating. Not for high starting current or sine wave AC equipment.

Kit MP-10, Shpg. wt. 8 lbs. 49.95

Protect your hull with this Digital Depth Sounder featuring a "Shallow-Water" Indicator

Don't run aground or risk puncturing your hull. The Heathkit Digital Depth Sounder gives you accurate depth readings at a glance. Dual-range digital display automatically reads depth in 0.1 foot increments from 2.5 to 19.9 feet and in 1 foot increments from 20 to 199 feet. A red light signals clearance of 10 feet or less. Single knob controls power on/off and brightness control. Rugged Cyclac® case; gimbal mounting bracket and 25 feet of cable are included. The Heathkit Digital Depth Sounder belongs on your boat.

With through-hull transducer.

Kit MI-101-1, Shpg. wt. 7 lbs. 149.95

With transom transducer.

Kit MI-101-2, Shpg. wt. 6 lbs. 149.95



MI-101 SPECIFICATIONS: Accuracy: $\pm 2\%$, ± 1 digit. Current drain: 300-500 mA. Power: 10-17 VDC @ 500 mA. Dimensions: 2 1/4" H x 6 1/2" W x 8 1/2" D (less gimbal).

Heathkit Metal Locators let you join in the fun

Experience the excitement of treasure hunting — anywhere

Heathkit Metal Locators punch through the ground clutter and search for old coins, artifacts, treasure — any metal object you want to find. Our finest Metal Locator features a Very Low Frequency (VLF) Ground Balance Mode. You can use it almost anywhere — even in highly mineralized soil where conventional metal locators are useless. And our lowest-priced locator uses an induction balance system that helps you pinpoint your find. Buy one now — and get in on the fun of treasure hunting.

1 Groundtrack™ Metal Locator — useable in most soil conditions. Our finest Metal Locator — the Heathkit Groundtrack — will give you hour after hour of fun-filled excitement. Whether you're searching for buried treasure, antique artifacts or old coins, you'll be a step ahead — because the Groundtrack's adjustable discrimination lets you look in areas where high "junk" content makes the use of conventional locators fruitless.

A fully-shielded search coil prevents false signals and is waterproof, so you can even look for buried metal in up to 2 feet of fresh or salt water. The GD-1290 features a sophisticated induction balance system — you don't hear anything until a piece of metal enters the search field; then the tone grows louder as you approach the metal.

Use the Groundtrack anywhere — it's lightweight — and the adjustable shaft telescopes for easy storage. Operates on 6 AA cells (not included) — or with the optional GDA-1190-1 Nickel-Cadmium Battery Pack installed, you can recharge the GD-1290 at home, or in the field from your car's cigarette lighter socket.

Kit GD-1290, Shpg. wt. 5 lbs. 189.95
GDA-1190-1, Rechargeable Battery Pack, Shpg. wt. 2 lbs. 19.95

GD-1290 SPECIFICATIONS: Sensitivity: Locates dime at 4" to 6" typical, may be less depending on soil conditions, mode of operation and amount of discrimination selected. Method of Detection: Induction-balance circuit. Detector Output: Meter, speaker, phone jack. Dimensions: Search Coil: 6" diameter. Extended Height: 45½". Collapsed height: 22½". Power Requirement: Six AA dry cells or alkaline, or optional rechargeable Nickel-Cadmium Battery Pack (GDA-1190-1, see above). Net Weight: 3.4 lbs.

2 Cointrack™ Metal Locator designed for coinshooting. The GD-1190 is the locator to have when you're interested in coins. It features a search coil optimized for coin locating and adjustable discrimination so incredibly good you'll be finding treasure in areas where high "junk" content makes operation with other locators all but impossible! Pushbutton tuning maintains maximum sensitivity — effortlessly. And for shallow water searching, the 1190's waterproof head won't leave you out of the action. Weight is minimal and to cut fatigue even more, an adjustable shaft is provided for maximum comfort.

The GD-1190 collapses for easy storage and transportation. And with its optional GDA-1190-1 Nickel-Cadmium battery pack installed, you can recharge the GD-1190 Cointrack Metal Locator at home, or in the field from the cigarette lighter of your car! It can also operate on six ordinary AA cells (not included). An outstanding value, and an easy and fun kitbuilding experience too.

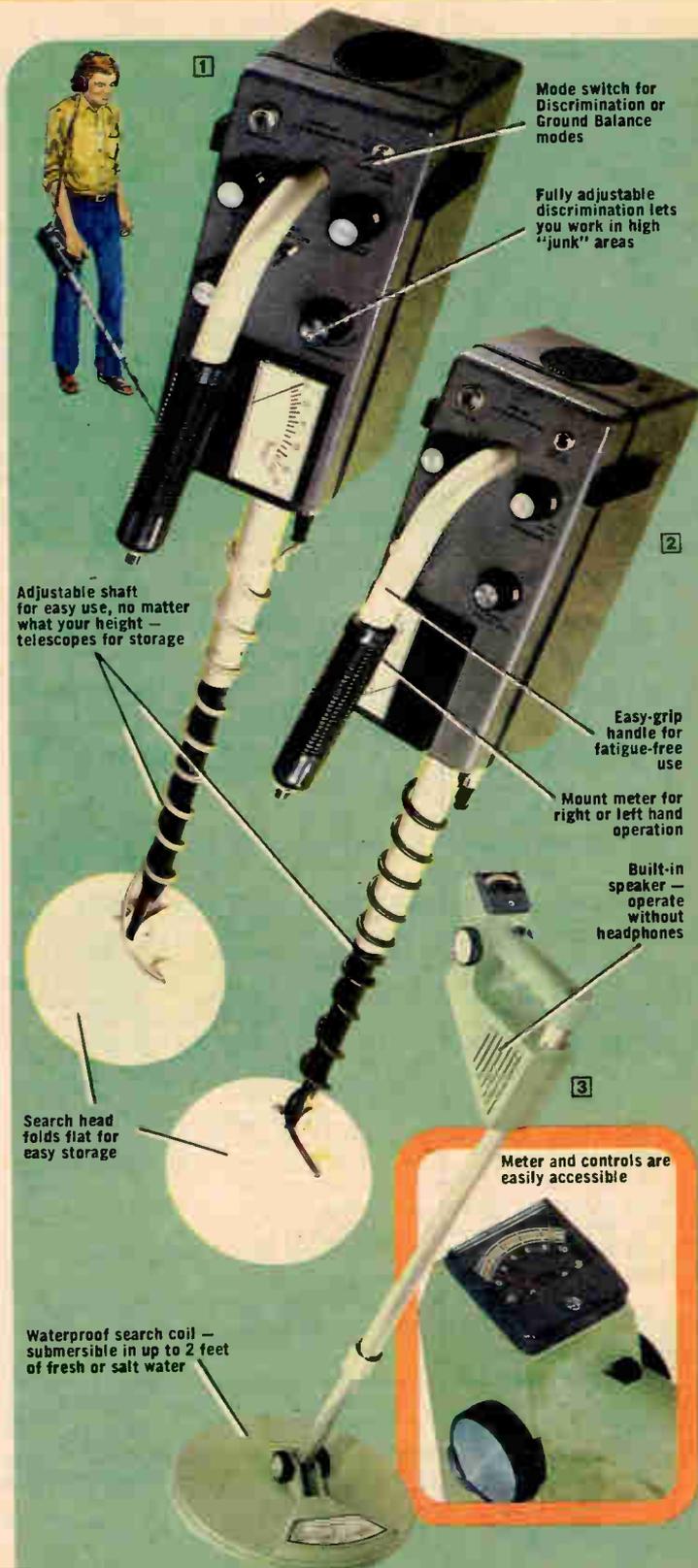
Kit GD-1190, Shpg. wt. 5 lbs. 119.95
Rechargeable Nickel-Cadmium Battery Pack. For GD-1190 or GD-1290. Lets you recharge the Heathkit GD-1190 or GD-1290 metal locators at home from an AC outlet or in the field, from the cigarette lighter of your car. 19.95
GDA-1190-1, Shpg. wt. 2 lbs. 19.95
GDA-1190-2, Headphones. For GD-1190, 1290, Shpg. wt. 2 lbs. 11.95
GDA-1190-3, Carrying Case. For GD-1190, 1290, Shpg. wt. 1 lb. 11.95

GD-1190 SPECIFICATIONS: Sensitivity: Typically 4" to 6", may be less depending on coin size, amount of discrimination and soil material. Method of Detection: Off resonance type. Output: Meter, Speaker, Phone Jack. Dimensions: Search-Coil: 6" diameter. Overall length: Shaft extended 45½", collapsed 22½". Power Requirement: Six — AA Dry Cells or Alkaline, (GDA-1190-1) or rechargeable Nickel-Cadmium battery pack. Weight: 3.4 lbs.

3 Low-priced Induction Balance Locator finds any metal. The GD-348 uses a sophisticated induction-balance system. Listen through its built-in speaker, optional headphones or use the front-panel meter to pinpoint your find. The GD-348 has null and ten-turn sensitivity controls that let you adjust it to find smaller or larger objects or overcome ground effects. The shaft telescopes and the search coil folds for easy storage. Less battery (order below).

Kit GD-348, Shpg. wt. 5 lbs. 79.95
GDA-48-1, 9-volt Battery, Shpg. wt. 1 lb. 4.95
GD-396, 600-ohm Superex Headphones, Shpg. wt. 2 lbs. 7.95
GDA-348-1, Carrying Case, Shpg. wt. 2 lbs. 11.95

10



Kits to bring your family convenience and enjoyment



One-Button Phone Dialer helps you respond fast in emergencies when speed counts!

- Microprocessor-based unit stores up to 16 numbers for quick dialing
- Converts your standard dial telephone to a push-button model

An emergency is no time to be searching for the fire department or police phone number. The Heathkit One-Button Phone Dialer comes to the rescue by dialing a vital number with the push of one button. If the number is busy, you can redial automatically at the push of a single button. Stores up to 16-full 15-digit numbers (enough for area codes, etc.). Easy programming to change numbers. Memory-save circuit maintains stored numbers during power failures (9V battery not included). Converts your standard dial phone to a push-button model compatible with push-button phone). Connects easily to modular jack. Do not use on party lines or pay phones. Complies with FCC regulations. Easy assembly. 120 VAC, 60 Hz. 2" H x 8 $\frac{3}{4}$ " W x 5 $\frac{3}{4}$ " D.

Kit **GT-1217**, Shpg. wt. 3 lbs. **89.95**



Digital Alarm Clock with rich AM/FM sound and beautiful styling

- Stay "on time" even if your electrical power fails, thanks to the built-in "fail safe" circuit
- "Catnap" with the 7-minute snooze button

Loaded with convenient features: 24 hour set'n forget alarm, built-in 3" x 5" oval speaker for truly fine sound, and style that fits anywhere. The GR-1075 displays time in the conventional 12-hour format. Shows AM and PM too. A lighted decimal pulsates to indicate seconds and also shows that the alarm is properly set. The 24-hour alarm cycle can wake you with a gentle pulsating, electronic "beep" or with soft music from the FM or AM radio station of your choice. High quality electronics and 5 μ V FM and 300 μ V/M AM sensitivities make sure you'll "pull-in" a large selection of stations day-or-night. And for the sleepyhead, the clock's 7-minute snooze cycle will give you up to an hour of relaxing catnaps. Two 9-volt batteries (not supplied) take over during power interruptions and keep the clock counting. For 120/240 VAC, 50/60 Hz. 4 $\frac{1}{2}$ " H x 13 $\frac{5}{8}$ " W x 8 $\frac{3}{8}$ " D.

Kit **GR-1075**, Shpg. wt. 10 lbs. **149.95**



Telephone Amplifier lets you talk and listen with hands free

- Answer the phone by pressing a button, without lifting receiver
- Built-in microphone lets you talk from up to 10 feet away

To answer the phone, press the Power Button; to hang up, press it again. Voice-activated switch changes instantly from talk to listen. Talk from up to 10-ft. away. Requires external phone for operation. Comes with $\frac{1}{4}$ " diameter phone plug, 1 $\frac{3}{4}$ " square four-pin phone plug and 6' of 4-conductor cable for easy installation. Operates on 9V battery (not included). 2 $\frac{1}{2}$ " H x 8 $\frac{1}{2}$ " W x 5 $\frac{3}{4}$ " D.

Kit **GD-1112**, Amplifier, Shpg. wt. 3 lbs. Was **\$49.95**, Now **44.95**

Kit **PS-2350**, 120 VAC Converter, Shpg. wt. 1 lb. **4.95**

Kit **PS-2450**, 240 VAC Converter, Shpg. wt. 1 lb. **14.95**

Customer-owned equipment connected to telephone lines may be subject to local tariff.



Dazzling Musical Light Show adds more to your sound system

- 140 Lights pulsate in time with the music — every tune different!
- Bach to rock — your records and tapes never said so much before

The Heathkit Light Show adds exciting sights to your sound system. Just connect it to the speaker leads of any sound source (except AM radio). Without affecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). It's wild. The lights pulsate in time to the music creating spokes of swirling color. 22 $\frac{3}{4}$ " H x 22 $\frac{3}{4}$ " W x 4 $\frac{1}{2}$ " D. For 120/240 VAC. Input is 1 volt RMS min. to 22 volts max. Line isolation provides protection.

Kit **TD-1006**, Shpg. wt. 34 lbs. **109.95**

The convenience clock...with digital accuracy



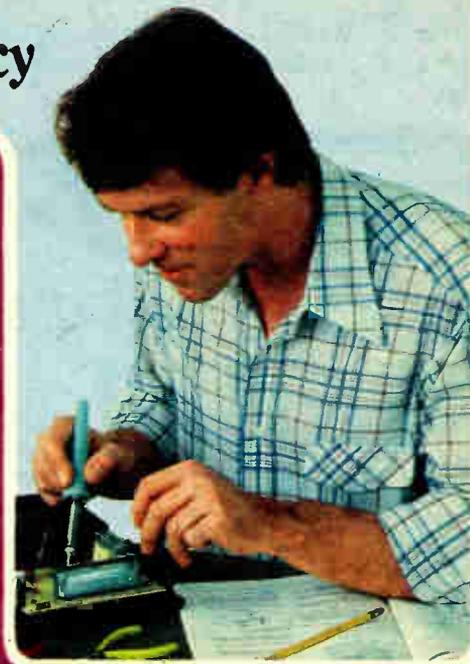
1 EVENING KIT Fast, Easy Assembly

Loaded with convenient features

- Snooze alarm
- Automatic brightness adjustment
- Power failure alert
- Value priced

The Digital Alarm Clock is a great way to get into the hobby of kitbuilding. This low-priced clock takes only one evening to build, following the clear, step-by-step instructions of the Heathkit manual. When you finish, you've built a digital alarm clock with a pleasant electronic tone to start your day out right. A snooze button lets you take 9-minute catnaps for up to an hour. A pleasant blue-green LED display automatically adjusts to changing light conditions. You can easily switch between 12 and 24-hour formats, and accurately set time. And this clock even alerts you to power failures.

Get started today with this value-priced electronic clock. Includes built-in speaker and handsome simulated woodgrain cabinet. Dimensions, 1¼" H x 7" W x 4¾" D. Kit GC-1107, Shpg. wt. 3 lbs.29.95



Digital electronic "Super-Clocks" for floor or shelf display in your own home

- Automatic dimming circuit adjusts to room light for a charming pleasant glow
- Hour and minute readout can be seen from anywhere in the room
- Handsome glass shelves provide nice display for flowers, knick-knacks, etc.

Add elegance with a "space-age" touch anywhere in your home! The "super-clock" is housed in a stylish cabinet with four smoked glass shelves for plants, books or knick-knacks — and the cabinet is finished in handsome simulated walnut-veneer, laminate with anodized aluminum corner pieces.

The 3¼" high clock digits glow brightly enough to be read even in daylight, and an automatic dimming feature adjusts them to diminishing room light for a charming, subtle display in dim or darkened rooms. The clock displays hours and minutes, with the center colon pulsing each second. A special power failure indicator circuit pulses the display brightness to show that power has been interrupted and clock must be reset. Time setting is accomplished by easy-to-use fast and slow time advance switches located on the bottom of the clock chassis.

The GC-1195 is an excellent and truly useful selection for the first time kit builder. The manual is clearly written and guides you step-by-step through construction in a manner which is both easy to understand and easy to follow.

The GC-1195 is a handsome addition to most any decor, and a great conversation piece. For even more charm and "Old World" distinction, add our electronic clock chimes accessory (described at right).

Kit GC-1195, Shpg. wt. 58 lbs. 199.95

GC-1195 SPECIFICATIONS: Format: 3½-digit (12-hour) time readout. Power requirement: 120 VAC, 50/60 Hz, 30 watts. 240 VAC, 50/60 Hz, 30 watts. Dimensions: 60½" H x 14" W x 9½" D.



Our "Super-Clock" in a shelf case

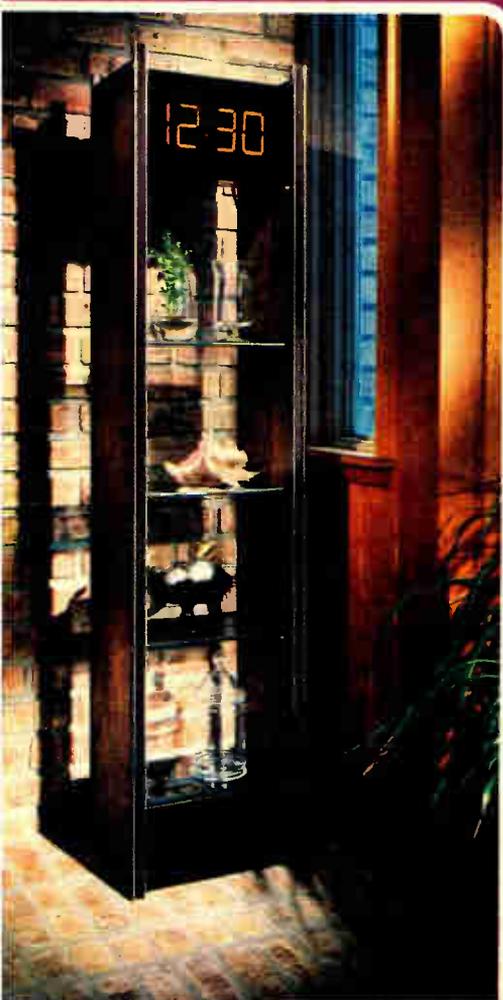
Uses the same electronics and display as the GC-1195 floor clock, but is housed in a good-looking walnut-veneer cabinet suitable for shelf, table or desk-top use. Accepts optional GCA-1195-1 electronic chimes. 6½" H x 12½" W x 6¼" D.

Kit GC-1197, Shpg. wt. 18 lbs. 109.95

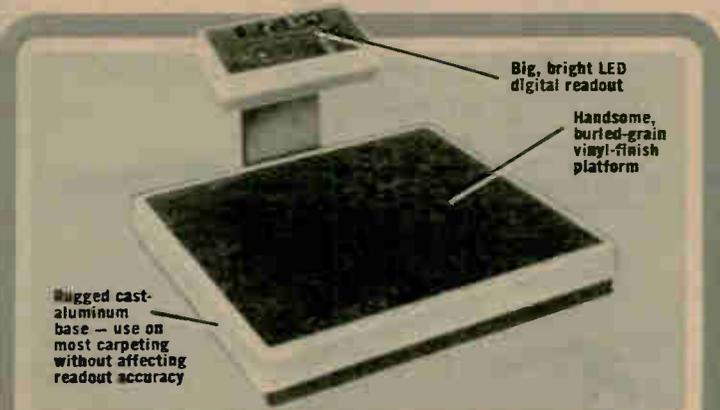
Add a super sound to your Super Clock with these synthesized chimes that give you an authentic "Big Ben" chimes sound

Builds into the GC-1195 or GC-1197 to provide rich, electronically synthesized "Big Ben" chimes: 4 notes on the ¼-hour, 8 notes on the ½-hour, 12 notes on the ¾-hour and the full 16-note passage and hour annunciation on the hour. And you can even turn on a reassuring electronic "tick-tock". This easy-to-build addition to your Super Clock features volume and pitch adjustment, sound-delay control, "tick-tock" volume control, built-in speaker.

Kit GCA-1195-1, Shpg. wt. 3 lbs. 79.95



Easy-to-build kits make life more convenient



Big, bright LED digital readout

Handsome, burled-grain vinyl-finish platform

Rugged cast-aluminum base — use on most carpeting without affecting readout accuracy

Digital Scale is a real weight-loser's helper!

- Electronic mechanism delivers weights accurate to 2/10 pound
- Battery-operated — weigh with space-age accuracy anywhere

The GD-1186 is an ideal companion, wherever you go. Because the scale is battery-operated, you can take it everywhere. You can even use the GD-1186 safely after a shower. And an electronic strain-gage mechanism eliminates the mechanical springs and weights that can go out of adjustment. Electronic accuracy so you can weigh the baby, without weighing the blanket. Manual adjustment lets you weigh small items accurately. Requires 6 "C" cells (not supplied). Base is 1½" H x 3½" W x 6" L.

Kit GD-1186, Shpg. wt. 9 lbs. 94.95

Factory Assembled and Adjusted Electronic Digi-Scale. Readout non-detachable. Reads in pounds only, in increments of 2/10 pound.

GDW-1186, Shpg. wt. 9 lbs. 129.95



Deluxe FM Wireless Intercom brings you clear communication

- Phase-locked loop circuit assures quiet operation
- No bothersome wiring hookups — uses your present house wiring

Here's a two-way intercom you can use anywhere indoors — as long as the units are on the same AC power transformer. After assembly simply plug each unit into an AC outlet and you're ready to communicate. Order as many as you like for complete communications — you can even leave them on all the time at very low cost. Phase locked loop circuitry provides quiet, clear operation. Automatic squelch assures noise-free operation; a pleasant call tone alerts other units. A dictate switch locks the intercom in the "talk" mode for hands-free operation. A transmit indicator lights in the talk mode. 3" speaker. Plastic cabinet, 3" H x 8½" W x 5¾" D, may be wall mounted. For 120 VAC, 60 Hz.

Kit GD-1114, Shpg. wt. 3 lbs. 49.95

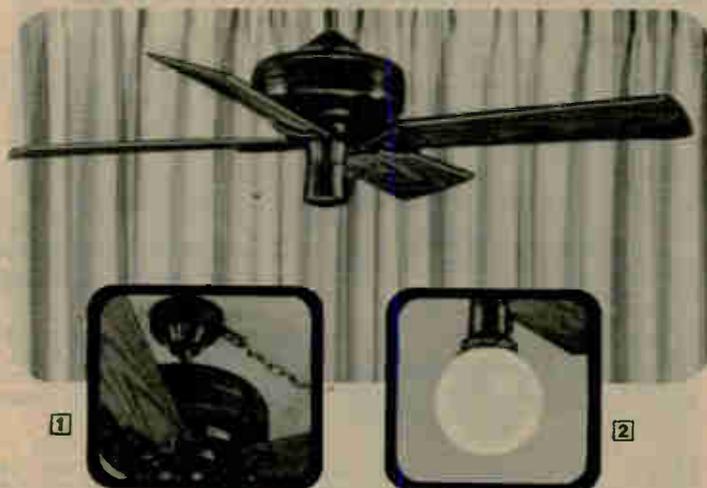


Ultra-convenient Ultrasonic Cleaner

- Tackles those almost-impossible cleaning chores
- Won't interfere with radio or TV reception

The Heathkit GD-1151 Ultrasonic Cleaner makes short work of most hard-to-clean projects. Deep clean watch parts, most jewelry, dentures or any delicate item that could be damaged or otherwise harmed by hard scrubbing, harsh cleaning agents or abrasives. Simply fill the stainless steel tank with any detergent or cleaning solution safe for the item to be cleaned. Place the object or objects in the tank, set the timer and the Ultrasonic Cleaner does the rest. The GD-1151 won't hurt radio or television reception — it meets FCC interference suppression requirements. Tank measures 6" L x 4" W x 2¾" D. Overall dimensions, 4¾" H x 5¾" W x 11" L (including lid). For 120 VAC, 60 Hz.

Kit GD-1151, Shpg. wt. 5 lbs. 89.95



Cut heating/cooling costs with an authentic Casablanca Fan

Cuts heating costs by bringing warm air down from high ceiling areas. Helps cool by circulating stagnant air. Variable speed adjustment. For charming effect, add optional kits below. Not for ceilings under 8 ft.

Kit GD-1238, Shpg. wt. 24 lbs. 119.95

Slow Speed Accessory. GDA-1238-3, 1 lb. 14.95

1 Swag-Chain Kit. Mount your Casablanca fan most anywhere. Includes: 18' antique brass swag chain, gold electrical cord, hardware. GDA-1238-1, 4 lbs. 14.95

2 Light Kit. Adds old world charm and dual purpose to your fan. Includes glassware, glassware holder and mounting accessories. GDA-1238-2, 3 lbs. 16.95

Choose from a wide variety of Heathkit products

Electronic Air Cleaner eliminates 99% of airborne pollen, 94% of all airborne particles in any room



- Easy to assemble — absolutely no soldering!
- For rooms to 25' x 30'
- Adjusts to "quick-clean" a room
- Portable — use anywhere you need it!
- Room-sized unit works for pennies a day



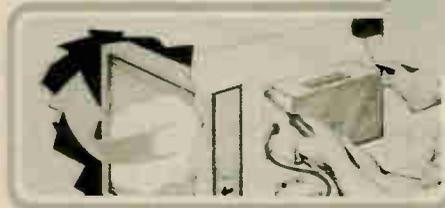
\$189⁹⁵

The Heathkit GD-1247 Electronic Air Cleaner is the ideal way to keep air fresh and clean, especially after parties, smoking, etc. Adjusts from approximately 100 cfm (cubic feet per minute) to 250 cfm — lets you "quick-clean" a room, then turn back the speed to maintain a fresh air level. The removable charcoal filter needs periodic replacement (order below). The other filters are removable and easy to clean. There's no soldering — the power supply and variable speed fan control are fully assembled. The assembled particle board cabinet has a Southern Pecan vinyl finish. The GD-1247 saves you money. Cleaner air reduces the need for cleaning, painting and redecorating caused by airborne pollution that stains and soils your furniture, rugs, walls and drapes. Dimensions, 26½" H x 17¼" W x 13½" D. 120/240 VAC, 60/50 Hz.

Kit GD-1247, Shpg. wt. 56 lbs. **189.95**
 GDA-1247-1, 4 Deluxe Casters, Shpg. wt. 1 lb. **8.95**
 GDA-1247-2, Replacement Charcoal Filter, Shpg. wt. 2 lbs. **5.95**

Electronic Air Cleaner keeps your air fresh and clean, installs easily in any furnace

- Simple installation without changing ductwork
- Traps particles as small as 2.5 millionths of an inch
- Completely automatic — works with your heating/air conditioning system



\$189⁹⁵

Removes most dust, dirt, pollen and other allergenic contaminants so your family can breathe fresh, clean air. Helps remove smoke and reduce odors, too. Filter is removable and easy to clean; pads are easy to replace. **Note:** Installation may require service by a qualified electrician. Check local building codes. Kits below differ in size of filter panel. Check your furnace filter size/capacity before ordering. Installs on standard furnaces or air conditioners directly in place of present filters, usually without cutting or altering ductwork. For two-zone homes, two filters may be used with a single power supply. Air cleaning efficiency, 70%, nominal. Power supply dimensions: 8" H x 12" W x 4" D. For 120 VAC, 25 watts max. Shpg. wt. 24 lbs. each.

Kit GD-1196-1, 20" x 25" x 2", 1000 cfm **189.95**
 Kit GD-1196-2, 20" x 20" x 2", 800 cfm **189.95**
 Kit GD-1196-3, 16" x 25" x 2", 800 cfm **189.95**
 Kit GD-1196-4, 16" x 20" x 2", 640 cfm **189.95**
 Extra Filters, use order nos. above, with GDA prefix (i.e., GDA-1196-1, 20" x 25" x 2", filter only), avg. shpg. wt. 11 lbs. each **99.95**
 Accessory Air Flow Switch, allows air flow to automatically start air cleaner. For 120 VAC outlet, required with 24 VAC systems.
 Kit GD-1196-5, Shpg. wt. 2 lbs. **24.95**

Save on both heating and cooling costs with automatically controlled Setback Thermostat

\$49⁹⁵

- Saves you up to 20% on heating and cooling bills. Pays for itself in no time. Provides automatic control and savings for air conditioners, too.

A programmable clock provides up to 12 different setback periods each day. In the heating control, setback temperatures range from 2° to 15°F, and the higher the setback, the greater your savings. A switch lets you override the setback. The cooling portion shuts off your cooling system when your home is unoccupied and turns it on at a preset time. For use with electric cooling systems in combination with gas or oil furnaces. Works with either four- or five-wire 24 VAC furnace control systems. Thermostat, 5¾" H x 3¾" W x 2" D. Controller, 4¾" H x 6½" W x 2¾" D. Transformer, 2¾" H x 2¼" W x 1¾" D. Not for use with heat pumps. 120 VAC, 60 Hz.

Kit GD-1269, Shpg. wt. 3 lbs. **49.95**

Home Heat Control saves up to 20%



- A low-cost way to keep fuel bills down!
- Reduces room temperature once or twice a day

\$39⁹⁵

Automatically reduces room temperature during one or two preprogrammed periods. **NOTE:** For use with single-stage 24 VAC heating systems only. Some systems may require service by a licensed electrician. Check building codes. 120 VAC.

Kit GD-1776, Shpg. wt. 5 lbs. **39.95**

for your safety, health and convenience

The Informer®: ultrasonic intrusion alarm at an affordable price

\$59⁹⁵

- Use anywhere — fits with any collection of books
- "Sees" intruders up to 25 feet away from unit
- Built-in time delay lets you deactivate alarm
- Also works as an automatic light switch

The GD-39 book-size alarm provides good protection. It alerts you to the presence of an intruder up to 25 feet away from the unit. When the GD-39's field of coverage is broken, the unit activates indoor lights, buzzers, bells, etc. A built-in time delay allows you to deactivate the alarm when you enter the room. You can also use the GD-39 as an automatic light switch for your garage, basement or attic. Use it when you want a light or buzzer to alert you to another's entry or to alert you to a child getting out of bed. Solid-state circuitry assures you of many years of reliable, trouble-free operation. Easy-to-build kit. 10 $\frac{1}{2}$ " H x 2 $\frac{3}{8}$ " W x 7 $\frac{1}{2}$ " D. For 120/240 VAC, 50/60 Hz.

NOTE: Since the GD-39 operates in the same frequency range as some ultrasonic TV remote controls, interference between the two is possible.

Kit GD-39, Shpg. wt. 5 lbs.	59.95
GDA-39-1, Indoor Buzzer Alarm, Shpg. wt. 1 lb.	9.95
GDA-39-2, Outdoor Bell, Shpg. wt. 5 lbs.	26.95



Looks like a book — provides reliable, low-cost security

Eye Spy™ Photobeam for low-priced security

Consists of light source, mirror assembly and a photocell-controlled relay. When beam is broken, warning devices or lamps plugged into the photocell are activated. Works up to 25 ft. from reflecting mirror. Electronics, 5 $\frac{3}{8}$ " H x 4 $\frac{3}{8}$ " W x 5 $\frac{1}{4}$ " D.

Kit GO-1021, Shpg. wt. 3 lbs. 15.95



Heath-Recommended Home Smoke and Gas Detectors

First-Alert™ Smoke Alarm with Remote Detector. An AC-operated smoke alarm that incorporates a built-in radio system. Place the alarm anywhere that's convenient. Then hook up as many of the wireless remote detectors as you need for complete protection (Detector range is 50 to 100 ft.). Completely wireless—no bothersome wires. Remote detectors are battery-operated (battery included). Transmitter is FCC type approved.

GDP-1423, Center, 1 Detector. Assembled, 6 lbs. 79.95

GDP-1424, Wireless Remote Detector. Assembled, 2 lbs. 39.95

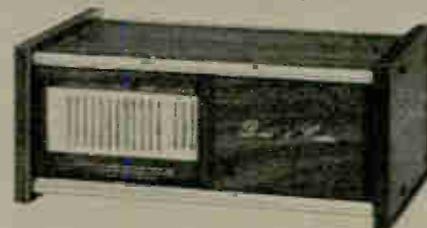
First-Alert™ Gas Detector with Electronic Horn. Gives early warning of propane or natural gas leaks. U.L. listed.

GDP-1425, Assembled, Shpg. wt. 3 lbs. 39.95

Useful Heathkit Automatic Telephone Security Dialer

\$169⁹⁵

- Automatically calls a friend, relative or neighbor when alarm is triggered



When you can't reach the phone or don't have time to dial a complete number, press a button and the Security Dialer dials a preselected number. Has automatic redial if line is busy, three-digit location code and separate microphone. Battery-powered if AC fails (Batteries included). 4 $\frac{3}{4}$ " H x 11" W x 6" D. Check with telephone company for any installation requirements.

Kit GD-1156, Shpg. wt. 7 lbs. 169.95

SAVE \$20⁰⁰

Digital Stopwatch lets you time any event

Quartz crystal accuracy with seven functions

Reads hours, minutes, tenths and hundredths of seconds in a bright red digital readout that's easy to see in any light. Accurate to $\pm 0.006\%$. Can be converted to read hundredths of minutes. Includes AC adapter/charger, rechargeable batteries, sunscreen and lanyard. 5 $\frac{1}{3}$ " H x 2 $\frac{1}{4}$ " W x 2" D.

Kit GB-1201, Shpg. wt. 2 lbs. 84.95

ICA-2009-1, Felt-lined Naugahyde® carrying case, Shpg. wt. 1 lb. 3.95

GBS-1201 System. Save \$20.00 by purchasing Stopwatch and Carrying Case together.

Shpg. wt. 3 lbs. 68.90



Electronic Flying Insect Killer keeps the bugs from bugging you

\$69⁹⁵

- Self-cleaning grid
- Protects up to 1/3 acre from pesky flying insects

Mounts anywhere outdoors and looks handsome near your pool, porch or patio. Ten-watt black light attracts flying insects and electronically charged self-cleaning grid instantly, safely disposes of them. Protective outer screen keeps hands off grid. Attractive flat black and brass-colored housing is corrosion-proof. Operates for only pennies a day. For 120 VAC. 16" H x 11" W x 11" D.

Kit GD-2007, Shpg. wt. 11 lbs. 69.95

GDA-2007-1, Mounting Bracket, Shpg. wt. 2 lbs. 3.95



Special kits for a safer, more convenient home



\$49⁹⁵ "Programmable" Electronic Doorbell plays favorite 16-beat tunes

- Now including song book with over 50 tunes
- Program it for any favorite tune up to 16 beats
- Change tunes easily for any special occasion

What a fun way for guests to announce themselves... your favorite melody (or theirs) plays when they touch the door button. Use as many as 16 beats to program your favorite tune. Change it whenever you wish... program to celebrate a season, an anniversary, a birthday, even a special party. New song book contains fifty pre-programmed tunes including many college songs.

Changing tunes is easy. Just rearrange the programming leads in the "keyboard" behind the front-panel access door. The assembly manual includes programming instructions for a variety of tunes, or you can compose your own. Controls for the electronically synthesized sound also are located inside the front-panel door.

Easy to build, even if you're a first-time kit builder. Installation is easy too — just connect with your existing bell transformer. Dimensions, 5 $\frac{3}{4}$ " H x 8 $\frac{3}{8}$ " W x 2 $\frac{3}{8}$ " D (14.6 x 21.9 x 6.7 cm).
Kit TD-1089, Shpg. wt. 3 lbs.49.95

Freezer Alarm guards your valuable food

\$14⁹⁵ • Sensor installs in any freezer to alert you to power failures

Freezer Alarm signals if freezer door is left open or if freezer temperature rises to 20°F even with door closed. Uses two "C" batteries (not supplied). Mounts anywhere with 20-ft. cable supplied. Dimensions, 1 $\frac{3}{4}$ " H x 3 $\frac{3}{8}$ " W x 4 $\frac{7}{8}$ " L.
Kit GD-1183, Shpg. wt. 2 lbs.14.95



Tabletop Lamp Dimmer saves energy, bulbs

\$8⁹⁵ • You can add more lights up to 300 watts

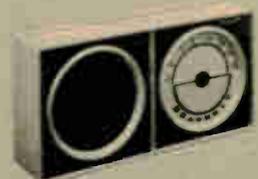
Adjusts brightness of lamps up to 300 watts, giving your home a decorator touch. Also saves energy and extends bulb life. Makes a great heat control for pencil-type soldering irons. 2 $\frac{1}{2}$ " H x 3 $\frac{1}{4}$ " W x 3 $\frac{1}{4}$ " L. Great first-time kit.
Kit GD-1D18, Shpg. wt. 2 lbs.8.95



Take along your favorite radio programs everywhere you roam

\$16⁹⁵

- Great-first time kit, this AM Pocket Radio lets you take news, music and sports with you anywhere!



An ideal way to introduce yourself (or a friend) to kitbuilding. 3 $\frac{1}{2}$ " speaker. Uses 9V battery (not supplied). 4" H x 7 $\frac{7}{8}$ " W x 2" D.

Kit GR-1008, Shpg. wt. 2 lbs.16.95

Automatic Lamp Switch for home security

\$6⁹⁵ • Turns lamps on at dusk, off at dawn



Easy one-evening kit turns lamps on at sundown, off at dawn to give your home a "lived-in" look while you and your family are away. Use with lamps up to 150W. 3 $\frac{1}{2}$ " H x 2 $\frac{1}{8}$ " W x 2 $\frac{1}{8}$ " D.
Kit GD-600, Wt. 2 lbs.6.95

VOX 70 Automatic Telephone Answerer



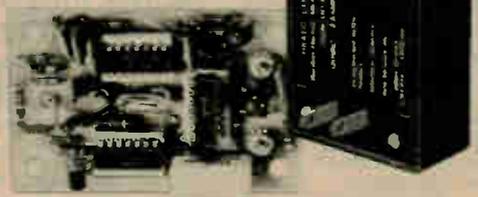
Record-a-Call VOX 70 uses standard cassette tape. Voice actuation allows caller to speak without time limit on the recording. Use it for dictation, too. Fast forward, rapid erase, silent monitor, announce without record, more. Fully assembled. 120 VAC powered.
GDP-1227, Shpg. wt. 12 lbs.199.95

Now enjoy remote control of lights or small appliances

\$16⁹⁵ only
Light Switch

- Sensor Plate mounts anywhere for instant on-off control
- Touch-Control light switch features half-brightness
- Add multiple touch plates

Single circuit board assembly cuts your construction time



1 EVENING KIT
Fast, Easy Assembly

Turn lights and appliances on and off with a touch. Place Touch-Control Switches throughout your home, without adding extra outlets, wall boxes, or rewiring. Simply plug lamp or appliance into the control unit, and plug control unit into an AC outlet. Remote touch plate mounts anywhere and connects to the control unit by easily-concealed wire. 20-ft. of wire included, or use your own for longer runs. You can use more than one touch-plate, too — or use door knob, rail or any other

metal as a touch plate. Both switches feature fast, easy single-board construction. 120 VAC, 60 Hz. Touch-Control Light Switch for incandescent lamps up to 150 W. On, off, half-brightness.

Kit GD-1187, Shpg. wt. 1 lb.16.95

Touch-Control Appliance Switch for TV's to 225 W, fans to 180 W, lamps, heaters to 200 W. Not for use with AM radios. 1 $\frac{7}{8}$ " H x 2 $\frac{3}{8}$ " W x 3 $\frac{3}{8}$ " L.
Kit GD-1287, Shpg. wt. 2 lbs.17.95

Add build-it-yourself security and convenience to your home

Deluxe Garage Door Opener puts an end to leaving your car in nasty weather to open a heavy garage door

\$179⁹⁵

- For extra security, your garage door can't be opened by hand from outside the garage once it is closed
- For extra safety, clutch and safety switch return door to open position if it becomes obstructed during closing

The Heathkit Deluxe Garage Door Opener GD-3309 is an investment that pays off in convenience and security. Is the weather bad? Or is it dark as you pull into your drive late at night? Simply touch the button on the wireless transmitter in your car—your garage door opens automatically and a light turns on in the garage. Touch the button again, and the garage door closes behind you. The GD-3309 features a quiet but powerful $\frac{1}{3}$ hp motor that opens the heaviest residential garage doors (up to $7\frac{1}{2}'$ maximum height). When the door is closing, the important adjustable slip clutch safety reverse feature takes over. If the door encounters any obstruction it stops and reverses instantly, and returns to full open position. A separate doorbell-type switch and 20 ft. of cable let you operate the unit from inside the garage or anywhere you choose. The transmitter and receiver are both solid-state and are digitally coded with 256 code combinations so you can set and change your own code anytime. Both the transmitter and receiver are FCC-approved and fully assembled. Use with standard NEC 3-wire systems.

Kit GD-3309C, Transmitter, Receiver, Mechanism.	
Shpg. wt. 57 lbs. Motor Freight	179.95
Kit GD-3309D, Two Transmitters, Receiver, Mechanism.	
Shpg. wt. 57 lbs. Motor Freight	194.95
Kit GDA-3309-1, Mechanism only. Shpg. wt. 44 lbs. Motor Frt.	149.95
Kit GDA-3209-2, Adapter for jamb and pivot doors. 3 lbs.	9.95
GDP-3309A, 1 Transmitter only. Shpg. wt. 1 lb.	24.95
GDP-3319A, Transmitter, 1 Receiver. (3-wire system) 1 lb.	49.95
GDP-3329A, 2 Transmitters, 1 Receiver. (3-wire system) 2 lbs.	64.95
GDA-3309-3, Power Transformer. Allows use of new transmitter and receiver with 2-wire system door openers. 1 lb.	5.95

GD-3309 SPECIFICATIONS: Overall Size: 12" H x 9" W x 120" L. Motor: 117 VAC $\frac{1}{3}$ HP. Open and Close Time: Approx. 12 seconds. Mounting Clearance: 3" above highest point of door travel. Safety Lamp: Delay circuit keeps lamp on 1 to 3 minutes. UHF TRANSMITTER: Powered by standard 9-volt battery. RF Frequency: 310 MHz. Useful Temperature Range: -50°F . to $+140^{\circ}\text{F}$. UHF Receiver: Powered by 24 VAC from opener mechanism. Usable on any 3-wire mechanism or 2-wire with addition of GDA-3309-3.

Features powerful $\frac{1}{3}$ hp motor plus automatic 75 watt dome light



Use separate switch from inside garage or transmitter unit you carry in your car

Handy Heathkit Intercom saves you time and steps

2-Station Master

This master station lets you talk and listen to two remotes anywhere in your home. Price includes one indoor remote (GD-120).

Kit GD-140, Master and Remote, 4 lbs. **49.95**

6-Station Master

This master station lets you talk and listen to six remotes anywhere in your home, office or factory. All remotes must be ordered separately. $4\frac{1}{2}"$ H x $8\frac{1}{2}"$ W x $7"$ D.

Kit GD-110, 6-Station Master, 5 lbs. **59.95**

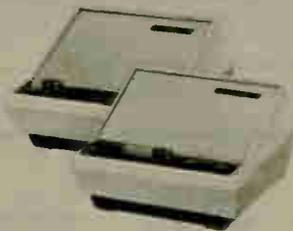
Accessories

Kit GD-120, Indoor Remote, 2 lbs. **19.95**

Kit GD-130, Outdoor Remote. Do not use with GD-140. 2 lbs. **15.95**

GDA-110-2, 100-ft. 4-cond. cable. For GD-110, 140. 3 lbs. **9.95**

GDA-110-4, 100-ft. 2-cond. outdoor cable. For GD-130. 1 lb. **4.95**



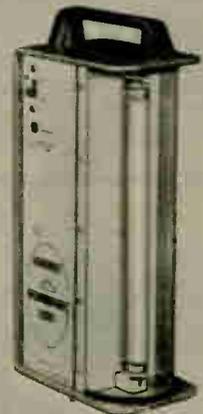
Portable Rechargeable Fluorescent Light for home and outdoors

\$34⁹⁵

- Eliminate the time-consuming inconvenience of buying expensive replacement batteries every time your light goes dim—just when you need it most

Fishing, hunting, camping...or working in the yard, garden, attic or basement—the Portable Rechargeable Fluorescent Light gives you bright illumination without bothersome cords. Built-in rechargeable battery and separate preassembled charger let you use the GD-1246A for hours in almost any environment, then simply plug it into an AC outlet in your home (or into your car's lighter socket using the optional adapter listed below) to restore full power. Dimensions, $9\frac{3}{8}"$ H x $3\frac{1}{8}"$ W x $4\frac{1}{8}"$ D.

Kit GD-1246A, Shpg. wt. 6 lbs. **34.95**
12V adapter. Kit GDA-1246-1, wt. 1 lb. **4.95**



Amateur Radio and Heath give you the greatest hobby yet

Amateur Radio is a hobby everyone can enjoy. Man, woman, child or senior citizen, there are no barriers to the two-way communication potential of Amateur Radio. And Ham Radio is versatile. You can communicate with the world right from your home, car or boat... or even on a back-pack trip into the wilderness. Every time you "work" your equipment, transmitting and receiving, you are in for a new, exciting adventure.

You can combine Amateur Radio with your other interests — get on the air and have a "QSO" with a group of Hams who share your love for boating, computers, R/C modeling... any subject under the sun. And, speaking of the sun, perhaps experimenting with a solar-powered QRP rig is an area you'd like to explore. The ways you can enjoy the exciting world of Amateur Radio are virtually unlimited.

Besides giving pleasure to hundreds of thousands, Amateur Radio provides a

valuable service in times of emergency. Often when normal means of communications have been disrupted by earthquake, blizzard, tornado or fire, Amateur Radio has provided the vital link that helps protect property and save lives.

In this exciting and worthwhile hobby, we naturally think that starting and pursuing your hobby with Heathkit equipment is the best way to go. That's because our complete line of Amateur Radio equipment can provide everything you need, from a basic Code Practice Oscillator all the way to a sophisticated station.

Heathkit Amateur equipment is easy and fun to build, you learn about circuitry and operation as you put your equipment together, you'll probably save money over comparable assembled units, and you'll even save by being able to perform your own maintenance and service. Read on to see what Heathkit Amateur Radio equipment has for you.

The Heathkit Novice License Program makes it easier for you to get your ticket and get on the air!

- From Heath — the world leader in Amateur Radio equipment — here is a self-instruction program that's guaranteed to help you get your Novice ticket. In fact, this program is so effective that if you fail to pass your FCC Novice exam after completing the course, Heath will REFUND your money for the program material. Simply return the program materials to Heath Co. along with a copy of your rejection notice from the FCC.

So... if you have been putting off getting your Novice ticket because of fear of failing the code test... or the technical exam, or if you just didn't know where to start, the Heathkit Novice License Program is the answer. Everything you need to get your license is in the comprehensive, well-organized package. You can't fail — Heath guarantees that you will pass! Order now — the exciting world of Amateur Radio is waiting for you.



\$39⁹⁵

You can get on the air sooner than you think

Now — for CB'ers, electronic hobbyists, anyone interested in operating world-wide two-way Amateur Radio equipment — Heath makes it easier than ever! This deluxe learning program prepares you for the Amateur Radio Novice FCC exam, and provides you with helpful guidelines for setting up and operating your own station once you pass the exam. When you have completed the Novice License program, you will be able to send and receive the Morse code accurately at the rate of five words per minute, and to pass a 20-question, multiple-choice written test from the Federal Communications Commission. The course is organized in 9 separate modules corresponding to the areas covered by the FCC Novice exam.

At the end of each module, a multiple choice exam checks your understanding and retention of the material. After Module 9, two practice exams and a final exam styled after the actual FCC exam give you test-taking experience to make the actual thing a breeze. And, by successfully passing the optional final exam with a grade of 75% or better, you will earn 1.0 Continuing Education Unit and a Certificate of Achievement.

The Novice License Program includes two audio cassette tapes to aid in your Novice ticket. The first contains not only an introduction to Amateur Radio, but

also an explanation of RST signal reporting, a review of circuit components, and a review of practical circuits. The second tape teaches you the Morse code in letter groups and then helps you bring your code speed up to the five words per minute required to pass your FCC Novice code test.

In addition, you will receive a set of Operating Aids, plus an attractive 31" x 22" Frequency Spectrum chart and matching U.S. Call Area Map for display on the walls of your Ham "shack." All materials in the Program are packaged in an attractive vinyl binder for convenient reference after you have obtained your license.

ER-3701, Shpg. wt. 7 lbs. 39.95

Kit HD-1416, CW Oscillator (see below) Wt. 2 lbs. 13.95

Assembled Cassette Recorder/Player. Ideal for playing the tapes supplied with ER-3701 (above). Features volume and tone controls, pushbuttons for record and play, rewind, fast forward, stop and eject. Factory wired, not a kit.

ECP-3801A, Shpg. wt. 4 lbs: 60.00

Handy CW Oscillator for your code practice



The ideal way to build up your code speed for the FCC exam, this practice oscillator features a telegraph key, phone jack, built-in speaker, plus volume and tone controls. Once you get your license, the HD-1416 can serve as a side tone oscillator for any transmitter using grid block keying. Dimensions: 2 $\frac{5}{8}$ " H x 4 $\frac{1}{8}$ " W x 4 $\frac{3}{8}$ " D. Operates on a single 9 V transistor battery (not included). Easy-to-build first-time kit.

Kit HD-1416, Shpg. wt. 2 lbs. 13.95

SAVE

\$8⁹⁵

This money-saving package can help you get started in the exciting world of Amateur Radio. Why delay?

We can help you get started in Amateur Radio by saving you money on the ER-3701 Novice License Program (above) and the HD-1416 Code Practice Oscillator (at left) when you purchase the pair together. And to save you even more money, this package even includes a certificate good for a 10% discount on your first purchase of up to \$100 worth of Amateur gear from the Heathkit catalog. If purchased separately, the Code Oscillator and Novice License Program would cost you \$53.90.

ERS-3701, Shpg. wt. 9 lbs. 44.95

Heathkit General Class Amateur Radio Program will help you move up the ladder in your enjoyment of Amateur Radio

\$49⁹⁵

- When you upgrade, you open new doors to the full range of Amateur Radio experiences. Leave the crowded Novice or CB bands behind by earning your Technician or General Class License with the help of Heath's ER-3702 General Class Amateur Radio Program. Upgrading has never been easier — it has everything you need.

The ER-3702 General Class Amateur Radio License Program helps you increase your technical knowledge and code skill so you can pass the FCC General Class License or the Technician Class License examination. If you have been putting off going for a higher class license, this is the program for you. It even carries the same money-back guarantee as the Novice Program. Move up to General Class and get all the added privileges it offers — more frequencies to operate on, plus voice transmission, radioteletype, Amateur television and more that you're missing by operating with just a Novice license.

This Program begins to prepare you by providing extra code practice to help you bring your code speed up to 15 words per minute. Since the FCC requires only 13 words per minute to pass the General exam, the extra "two-word edge" this program gives you helps eliminate examination day jitters by giving you the confidence you need to pass the code test with flying colors.

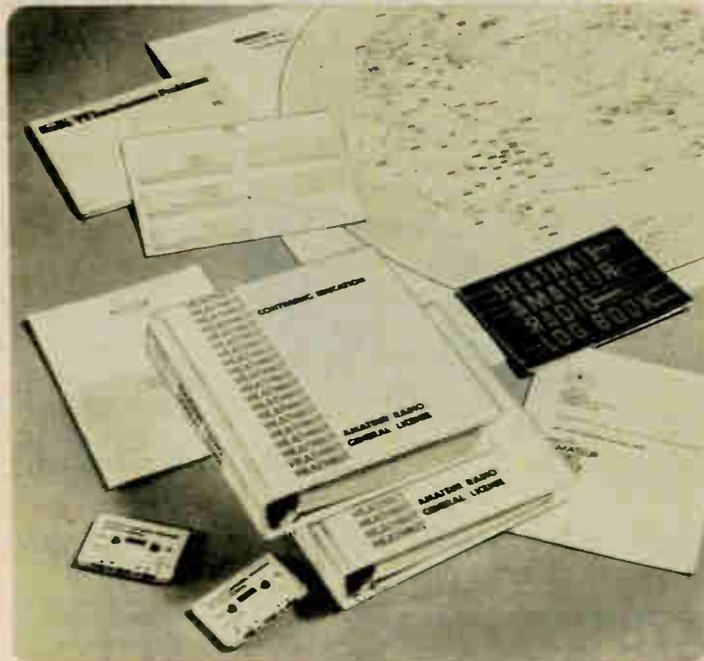
The written section of the License exam has been approached with the same concern for completeness and clarity. An informative text takes you through the subjects covered on the written exam. It is designed to concentrate on the information necessary to pass the exam, so you don't get bogged down by learning information that won't be covered by the FCC examination.

Just as the extra code builds your CW confidence, the program also includes a simulated FCC written exam. Not only does this exam give you the test-taking experience you need to build your confidence, but it also allows you to review any problem areas you might encounter so you will be more fully prepared for the actual exam. When you pass the FCC General exam, send us a copy of your new license or FCC notification of passing to receive 5.0 C.E.U.'s and a Certificate of Completion for the Program. Suitable for hanging on the wall of your shack.

Your General Class License Program will retain its value even after you pass your exam and get on the air. You will want to keep the materials handy as a valuable reference resource. That's easy to do — all materials included in the program are contained in two attractive matching vinyl binders.

Your General License Program is a complete package. In addition to the program text, you will receive:

- Code practice workbook
- Amateur Radio log book
- FCC Form 610
- T.V.I. booklet
- Two code cassette tapes
- Simulated FCC exams
- World call area map
- 5.0 C.E.U.'s
- Certificate of Achievement
- Two vinyl binders
- FCC exam schedule
- FCC rules and regulations



The General Class Amateur Radio Program is composed of 10 separate units arranged in the following manner:

- | | |
|-----------------------------|------------------------------------|
| 1. Amateur Radio Operations | 6. Measurements |
| 2. Direct Current | 7. Transmitters |
| 3. Alternating Current | 8. Receivers and Station Operation |
| 4. Active Devices | 9. Antennas |
| 5. Electronic Circuits | 10. Practice Exams |

Heath offers you the new General Class License Program with the same money-back guarantee as the popular ER-3701 Novice Learning Program. So confident are we of this Program, that should you fail to pass the FCC Amateur Radio General Class or Technician Class License Exam after completing this program, Heath Company will refund your money for the Program materials when you return them along with your FCC rejection notice.

Don't delay. There was never a better time than now for you to upgrade to your Technician or General Class Amateur Radio License. And the Heathkit ER-3702 Self-Instruction Program is the tried and tested way to reach that goal by making the most efficient use of your study time. Order yours now — the excitement of low band SSB, SSTV, RTTY and more are waiting for you.

ER-3702, Shpg. wt. 24 lbs. 49.95

Code Courses, Study Guides and Reference Books to help you get more from Amateur Radio

Ameco Junior Cassette Code Course. This tape cassette course presents 10 lessons of Morse Code instruction. It begins with an introduction to the code symbols for letters of the alphabet, numerals and punctuation. It increases code speed progressively, finally taking you through eight words-per-minute, more than enough to qualify you for the FCC Novice or Technician class license code requirement of five words-per-minute.
HDP-432, Shpg. wt. 1 lb. 4.95

Ameco Senior Code Course. This course consists of two 33 RPM long playing records. It contains 22 lessons taking you from an introduction to the code through 18 words-per-minute.
HDP-332, Shpg. wt. 2 lbs. 7.50

Ameco Senior Cassette Code Course. As above, cassettes instead of LP's. HDP-532, Shpg. wt. 1 lb. 8.95

"By the Word" Code Course. Two audio cassettes teach you code using the world-famous "by the word" method. Unique course begins with simple material at 13 words-per-minute, then increasing in complexity, not speed. Develops proficiency in less time than with conventional code course methods.
HDP-132, Wt. 1 lb. 9.95

Amateur Radio License Study Guides. Makes getting your license easy; also serves as a convenient reference.
GENERAL, EDP-123 7.95
ADVANCED, EDP-124 6.95
EXTRA, EDP-125 5.95

US Callbook. Complete listing of Radio Amateurs in all US call areas and territories; SSTV, AMSAT, OSCAR users, Great Circle Bearings, more, 1070 pages.
EDP-126 16.95

DX Callbook. Complete listing of foreign Amateurs, addresses, postal rate charts, call zone maps, world time conversion chart, world QSL bureaus, more. 900 pages.
EDP-127 15.95

1980 Edition. ARRL Radio Amateur's Handbook. Up to date electronics theory and application. Covers all facets of Amateur operations. 538 pages in new, larger format.
HDP-293 10.00

73 Dipole Antennas. Descriptions, construction of 73 different dipole and long-wire antennas. 160 pages.
EDP-180 4.95

ARRL Antenna Handbook. Antennas, transmission lines, propagation, antenna design, data on specific designs for HF, VHF, UHF, mechanical construction. 336 pages.
EDP-182 5.00

See page 53 for book-ordering information.

Reliable, money-saving accessories



For
VHF
use

Factory-assembled
and calibrated
sensor can be
mounted in housing or separately

New HM-2141 Dual Meter VHF Wattmeter lets you monitor forward and reflected power simultaneously between 50 and 175 MHz

\$79.95 • Dual meters • $\pm 7.5\%$ Forward power accuracy
• Direct reading SWR • Reads PEP or average power

Heath's new HM-2141 VHF Dual Wattmeter gives you instant power readings. It measures forward and reflected average power, forward and reflected peak envelope power (PEP) and Standing Wave Ratio (SWR) between 50 MHz and 175 MHz. Simultaneous readings of transmitted output up to 30/300 watts forward and 10/100 watts reflected power make antenna tuning a snap. Average forward accuracy is $\pm 7.5\%$. Reads SWR directly from 1:1 to 3:1. Factory-assembled and calibrated sensor for reliable performance. Operates on 9V battery (not included) or on 120 VAC with the optional GRA-43-1 converter below.

Kit HM-2141, Shpg. wt. 5 lbs. 79.95
PS-2350, AC Adapter for HM-2141, Shpg. wt. 1 lb. 4.95
HDP-3622, 3 ft. coax with connectors. Shpg. wt. 1 lb. 4.95

HM-2141 SPECIFICATIONS: Frequency Range: 50 to 175 MHz. Insertion SWR: less than 1.05:1. Accuracy (full scale): 30 W and 300 W (FWD), 100 W (REF), $\pm 7.5\%$ (AVG), 10 W (REF), $\pm 10\%$ (AVG). Dimensions: $4\frac{1}{8}''$ H x $7\frac{1}{2}''$ W x $6\frac{3}{8}''$ D.



For
HF
use

The HM-2140 boasts
 $\pm 5\%$ average forward power accuracy

HM-2140 Dual HF Wattmeter reads forward and reflected power to help you operate your low band station more effectively

\$79.95 • Reads PEP or average power • Direct reading SWR
• Factory-assembled and calibrated sensor

Handy wattmeter installs in your transmission line to measure forward and reflected power for frequencies between 1.8 and 30 MHz. It measures transmitter output up to 200/2000 watts PEP in the forward direction and up to 50/500 watts reflected. Has dual meters for forward and reflected power and SWR, $\pm 5\%$ forward power accuracy for precision measurements. High and low power ranges and a factory assembled and calibrated sensor insure accurate readings. Reads SWR directly from 1:1 to 3:1. Also reads PEP or Average power. Operates on 9-volt battery (not included) or 120 VAC with converter below.

Kit HM-2140, Shpg. wt. 3 lbs. 79.95
PS-2350, AC Adapter for HM-2140. Shpg. wt. 1 lb. 4.95
HDP-3622, 3-ft. coax with connectors. Shpg. wt. 1 lb. 4.95

HM-2140 SPECIFICATIONS: Frequency Range, 1.8 to 30 MHz. Insertion SWR: less than 1.05:1. Accuracy (full scale): 200 W and 2000 W (FWD), 500 W (REF), $\pm 5\%$, 50 W (REF), $\pm 7.5\%$. Dimensions: $4\frac{1}{8}''$ H x $7\frac{1}{2}''$ W x $6\frac{3}{8}''$ D.

Solid-state Electronic Code Keyer with selectable word speed



Your CW transmissions will be 100% copy with the HD-1410, because sending code is easy, whether you're operating base or portable. The dot and dash paddles travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Iambic operation forms most characters with reduced wrist movement. Dots and dashes are self-completing and

always in proper proportion. During construction, you select the speed range you want — 10 to 35 words a minute or 10 to 60 words per minute. Operates on 120 VAC or 12 VDC. Adjustable side-tone frequency, built-in speaker, headphone jack. Styled to match our famous "SB" line. A special weighted cabinet helps keep the HD-1410 stable to prevent sliding or fumbling. Its low-profile styling and compact size won't block other controls. $3''$ H x $5''$ W x $7\frac{3}{8}''$ D.

Kit HD-1410. Shpg. wt. 4 lbs. 54.95

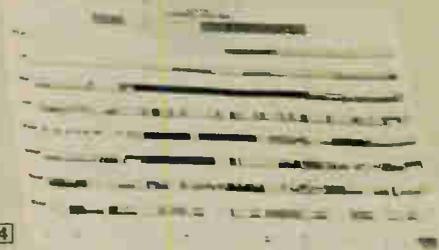
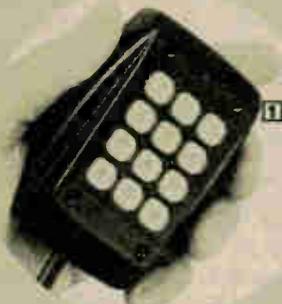
Value-packed, solid-state Dip Meter covers 1.6 to 250 MHz



Another Heath value — a better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with a MOSFET paraphase amplifier and hot-carrier diodes for more sensitivity and a better dip. It uses a Q-multiplier for greater detector sensitivity and a responsive $150 \mu\text{A}$ meter movement for positive resonance indications. It includes a phone jack for modulation monitoring. It's smaller and lighter than others, too. Whether you're checking resonant frequencies, adjusting traps, looking for parasitics, or using it as a signal generator, the HD-1250 is designed to go anywhere. It fits your hand and thanks to its solid-state design and 9-volt battery operation, it's ready to use instantly wherever you are. Easy to build, too — usually just a single evening. The custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted plug-in coils in transit, and makes a handy storage place.

Kit HD-1250, less battery, Shpg. wt. 4 lbs. 64.95

increase the operating efficiency of your Amateur station



1 Heathkit Micoder™ II Microphone/Auto Patch Encoder. Replace your old mike with the Heathkit Micoder II. Its 300-3000 Hz response is tailored for clean voice transmission. Up to 30 mV rms maximum output for full modulation. Push-to-talk bar for convenient one-hand use. Accurate and stable tones for phone calls through repeaters equipped for auto-patch. Operates on one 9V battery (not supplied) or power from transceiver. Use with most transceivers having a high-impedance input. Includes 6' coiled cord, hanger clip. 3 3/4" H x 2 5/8" W x 1 3/4" D.
Kit HD-1984, Shpg. wt. 1 lb. 44.95

2 NEW! Six-socket Multiple Outlet Box provides additional electrical outlets for your equipment in Ham shack, workshop, basement or garage. Features 6 three-hole outlets — 5 switched for killing power to equipment, and 1 unswitched for clock or memory save. Includes fuse holder, fuse and 6' cord. Handles 10A maximum load. For 120 VAC.
Kit HD-1360, Shpg. wt. 2 lbs. 12.95

3 Twelve-socket Multiple Outlet Box. As above, but features 12 3-hole outlets — 11 switched and 1 unswitched. 10A maximum load. 12' cord.
Kit HD-1274, Shpg. wt. 4 lbs. 17.95

4 Frequency Spectrum Chart. This colorful addition to the wall of your Ham shack measures a big 31" W x 22 1/4" H. Shows graphically, in full color, a detailed breakdown of the radio frequency spectrum. Comes to you rolled in a mailing tube.
HDP-1495, Shpg. wt. 1 lb. 4.95

5 Famous Heathkit "Antenna"™ RF Dummy Load. Helps you avoid unnecessary interference during tune ups. Ideal for transmitter maintenance and alignment. Handles up to 1 kW of RF with VSWRs of less than 1.5:1 to 300 MHz, and less than 2:1 to 400 MHz. 50 Ω. Oil filled (oil not included).
Kit HN-31, Shpg. wt. 3 lbs. 19.95
HDP-3622, 3' jumper w. PL259 conns., 1 lb. ... 4.95

6 Heathkit Combination HF Wattmeter/SWR Bridge. Features dual power/SWR scales, easy calibration, and extra long interconnect cable for positioning the meter up to six feet from the detector/bridge. Operates over the 1.8 to 30 MHz range with minimal insertion loss and a nominal impedance of 50 ohms.
Kit HM-102, Shpg. wt. 3 lbs. 49.95

HM-102 SPECIFICATIONS: Frequency Range: 1.8 to 30 MHz. Wattmeter Accuracy: ±10% of full-scale reading. Power Capability: 10 to 2000 watts. SWR Sensitivity: Less than 10 watts. Impedance: 50 ohm nominal. Connectors: UHF type SO-239. Dimensions: 5 1/4" H x 2 1/4" W x 6 1/2" D.

Kit HM-2102 (not shown), same as above, except 50-160 MHz and 25 to 250 watts. 4 lbs. 49.95

HDP-3622, 3' jumper w. PL259 conns., 1 lb. ... 4.95

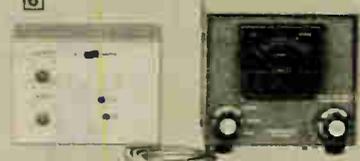
7 Hybrid Phone Patch. Add the versatility of phone patch capability to your shack with Heath's HD-15. Individual receiver/transmitter line gain controls simplify adjustment and the HD-15's VU meter continuously monitors the unit's output and lets you adjust for maximum null depth to produce maximum isolation between the telephone line and your station's equipment. Interfacing is a simple matter. Matches 3-16 ohm speakers and hi-Z or 600 ohm inputs. PTT operation. 2 5/8" H x 9 1/4" W x 3 5/8" D.
Kit HD-15, Shpg. wt. 3 lbs. 44.95

8 Relative Field Strength Meter. Makes transmitter adjustments quicker and more precise. Provides visual indication that transmitter is radiating a signal, helps tune transmitter for maximum output. Covers 1.8 to 250 MHz. 2 5/8" H x 4 1/8" W x 4 3/8" D.
Kit HD-1426, Shpg. wt. 2 lbs. 12.95

9 Portable Twin Speaker ideal for mobiling. Plugs directly into the external speaker jack of most transceivers, tape players, etc. Plug included. Visor mount to overcome road noise. Can be quickly unplugged to remove from vehicle for theft protection. 3 1/4" H x 5 3/4" W x 1 1/4" D. Fully assembled.
HDP-1228, Shpg. wt. 1 lb. 12.95

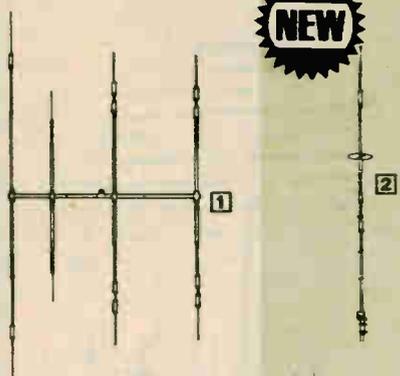
10 Fully assembled Heathkit Mobile PTT Mike. Features a high impedance piezo-ceramic element, with 200 to 5000 Hz response and a peak response frequency of 2300 Hz. Sensitivity: -55 ±3 dB below 1 volt per microbar at 1000 Hz. Complete with cable and mounting clip. Connector not included.
HDP-1340, Shpg. wt. 1 lb. 14.95

11 Fully assembled Heathkit Desk Mike with VOX and PTT. This Hi-Z dynamic microphone features 70-10,000 Hz response, VOX and grip-to-talk operation. Has rugged die-cast case, grey and satin chrome finish. The PTT switch can be mounted on the base or handle of the mike. Includes cables.
HDP-121A, Shpg. wt. 4 lbs. 54.95



Antennas and accessories that get your signal out

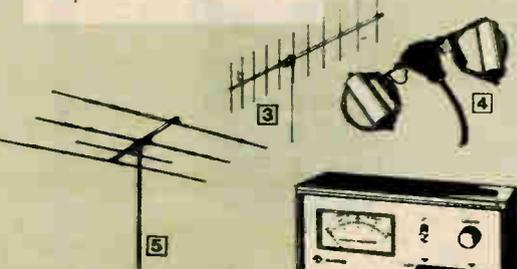
NEW



1 New Heathkit SA-7010 4-Element Tri-Band Yagi — easy to assemble, works the world. The new SA-7010 is the easiest-to-assemble Tri-Band antenna ever. An easy-to-follow, Heathkit manual means you can be on the air in as little as 3 to 4 hours.

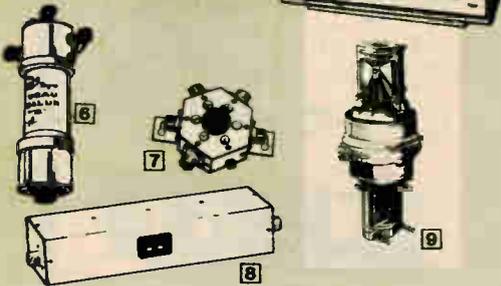
And once you assemble the compact SA-7010, you'll get excellent performance. Three active elements on each band give you good 8.3 dB actual gain over a dipole on 10, 15 or 20 meters. Front-to-back ratio is 25 dB, minimizing interference. A separate 10-meter reflector assures correct monoband spacing. Energy transfer is more efficient, with a VSWR of less than 1.5:1 at resonance on each band. Full legal power. 15' boom, 31' longest element. 17"5" turning radius. 5.8 sq. ft. wind area.

SA-7010, Shpg. wt. 45 lbs. 219.95



2 The Cushcraft ATV-5 is a vertically-polarized, omnidirectional antenna designed to provide complete CW and SSB coverage of the 80 through 10 meter Amateur bands. It features specially designed high Q traps optimized for wide operating bandwidth. SWR is 1.5:1 or less at resonance on each band. The ATV-5 may be used with any transmitter or receiver employing nominal 50-ohm input. Accepts full legal power. Built-in coax connector takes the PL-259 on your feedline. Height is 28"4" on CW; 24"9" on phone. This multiband vertical provides the low angle of radiation you need for long-haul DX communications. Choose it for maximum performance in limited space. Assembly required.

HDP-1473, Shpg. wt. 10 lbs. 99.95



3 Cushcraft A147-11 11-Element Yagi Antenna. 13.2 dB forward gain, a 28 dB front-to-back ratio and gamma match tuning for minimum SWR. Feeds directly with 52-ohm coax. 146-148 MHz. Assembly required. Mfr.'s sugg. price \$36.95.

HDP-1470, Shpg. wt. 6 lbs. 31.95

4 Barker and Williamson 5-Band Trap Dipole Antenna. Covers 80 through 10 meters. Only 2 trap adjustments and terminations. Ready to use. Includes wire, traps, 50-ft. RG-8/U coax and PL-259 connector, two end insulators and dipole center connector. 52Ω. Traps 9 oz. each. Length 110 feet.

HDP-3500, Shpg. wt. 9 lbs. 64.95

5 Cushcraft ATB-34 Tri-Band Beam Antenna. Equals single-band yagi on 10, 15 and 20 meters. Broad bandwidth, four active elements for super performance. With low-loss 1:1 balun which mates with PL-259 connector. Turning radius, 18"9". Wind area, 5.4 sq. ft. Mfr.'s sugg. price \$289.00. UPS shippable.

HDP-1471, Shpg. wt. 46 lbs. 239.95

6 Don't waste your signal! World-famous "W2AU" balun helps reduce TVI and improve F/B ratio. 2 kW PEP rating, 3-30 MHz. Fully enclosed body with silver-plated SO-239 connector and hang-up hook, built-in lightning arrester. Weatherproof. Includes complete instructions. Impedance ratio, 1:1.

HDP-3615, Shpg. wt. 1 lb. 14.95

7 Choose among up to four antennas or interconnect gear with this Coax Switch. Handles 2 kW PEP, to 250 MHz. 50 ohms. Grounds all outputs not in use. Kit HD-1234, Shpg. wt. 1 lb. 12.95

HDP-3622, 3 ft. coax with conn., 1 lb. 4.95

8 Solve TVI problems with this rugged low-pass Barker and Williamson filter. Provides a minimum of 70 dB attenuation. Cutoff frequency is 34 MHz. Less than 0.3 dB insertion loss at operating frequency. For 10-160 meters. 50Ω. Full legal power.

HDP-3700, Shpg. wt. 2 lbs. 29.95

HDP-3622, 3-ft. coax with conn., 1 lb. 4.95

9 Alliance HD73 Heavy-Duty, Dual-Speed Rotator. For antennas with up to 10.7 sq. ft. wind load area. Has positive no-slip drive, automatic brake action. For masts 1 3/8" to 2 1/2" O.D. For 120 VAC, 60 Hz. Uses 6-cond. cable, or 8-cond. listed below.

HDP-1295, Shpg. wt. 19 lbs. 119.95

IDA-1290-1, 50-ft. 8-cond. cable, 2 lbs. 7.95

IDA-1290-2, 100-ft. 8-cond. cable, 4 lbs. 14.95

IDA-1290-3, 150-ft. 8-cond. cable, 6 lbs. 21.95

Superflex RG-8/U 52-Ohm Coaxial Cables with PL-259 connectors (not shown). Lets your rig and antenna perform at top efficiency. 11-gauge center foam polyethylene dielectric, 92% copper braided shielded flexlife jacket. With PL-259 connectors.

HDP-3620, 100-ft., Shpg. wt. 11 lbs. 29.95

HDP-3621, 50-ft., Shpg. wt. 6 lbs. 19.95

HDP-3622, 3-ft., Shpg. wt. 1 lb. 4.95

Give your antenna system more efficiency and convenience

Coax is expensive. So the bargain-priced SA-1480 Remote Coax Switch replaces five feedlines from shack to antennas with just one piece of coax. With the SA-1480, you can select any one of up to five remote antennas just by turning a knob. Never again will you need dedicated cables from your shack to each antenna.

Bright LEDs show you which antenna is being used. And with the SA-1480's erasable front panel, you can write each antenna's designation next to its LED indicator.

This Heathkit remote coax switch is capable of accepting even VHF signals, up to 150 MHz — and is designed to accept full legal power, up to 2000 watts PEP. Input impedances can vary between 50 and 70 ohms, with almost no insertion loss — less than 2 dB at 100 MHz. SO-239 connectors are used to connect coax to the SA-1480.

Silver-plated switch contacts reduce the standing

wave ratio (SWR) for more efficient power transfer and greater reliability, while the SA-1480's special shielded, weatherproof switch housing protects the remote coax switch from the elements and further reduces SWR. As a result, SWR is reduced to 1.05:1 under 30 MHz, and 1.20:1 below 150 MHz.

The SA-1480 Remote Coax Switch also features a unique switch position that allows the grounding of all antennas simultaneously, to protect your antenna system from lightning strikes.

You'll find the SA-1480 easy-to-build. And when you're finished, a U-bolt assembly is included to make antenna pole mounting easier. Control box is 3 3/8" H, 5 3/8" W, 5 1/4" D. Remote unit: 8 1/4" H x 4 3/8" W x 7 1/2" D. Order eight-wire cable below.

Kit SA-1480, Shpg. wt. 8 lbs. 89.95

IDA-1290-1, 50-ft. 8-cond. cable, 2 lbs. 7.95

IDA-1290-2, 100-ft. 8-cond. cable, 4 lbs. 14.95

IDA-1290-3, 150-ft. 8-cond. cable, 6 lbs. 21.95

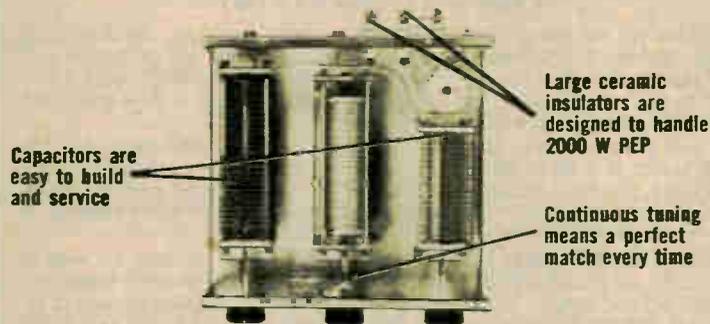


Tuner and power supplies designed for your home QTH

Heathkit 2 kW Antenna Tuner for low SWR and better signal

\$149⁹⁵

- Built-in balun accepts balanced or unbalanced feed
- Continuously variable inductor for exact matching
- Eraseable front panel for writing in band settings



Here's the Antenna Tuner you've been asking for — and the more than 200 Hams at Heath have designed it with features and price that are hard to beat!

You're going to like the way the Heathkit SA-2040 2 kW Antenna Tuner helps you radiate more of your signal by maximizing power transfer from your transmitter to your antenna. Your neighbors will like it, too, because it will help you reduce TVI and out of band emissions. The built-in balun gives you the versatility of using any type of feedline — balanced or unbalanced — dipole, long wire or beam. And you can tune continuously from 3.5 MHz to 30 MHz, which means your SA-2040 is ready for MARS operation or for the recently approved new band allocations.

This handsome addition to your shack features a continuously variable inductor to give you an infinite number of impedance settings, assuring precise antenna matching. A convenient counter on the front panel indicates inductors settings. The thorough Heathkit assembly manual includes a preset chart giving you high-, mid- and low-band settings on each HF band, plus a full page logging scale for recording intermediate settings. And the eraseable front panel of the SA-2040 allows you to make notations of your most frequently used band settings for ease of operation, especially helpful in contest conditions.

The SA-2040 features silver-plated straps and roller contact assembly for mini-



mal RF loss at high frequencies. Its large ceramic feed-through insulators are designed to withstand high voltage RF. This Antenna Tuner is capable of handling power input of up to 2000 watts PEP on side-band and 1000 watts on CW. SO-239 connectors allow incorporation into your 50 Ω system.

It won't take you long to get your SA-2040 on the air — the easy-to-build kit is a two-evening project. And when you've tightened the cover, you can personalize your Heathkit Antenna Tuner, because stick-on numerals and letters in the kit let you add your own call sign to the front panel. The rugged black metal cabinet measures 5 5/8" H x 14 1/8" W x 13 1/8" D.

Compare our new SA-2040 2 kW Antenna Tuner with all the competitors — match power handling capabilities, features and price. Then you'll see why the SA-2040 is your best buy for the money. This new Tuner is going to look great in your shack... and do a great job for you — receiving as well as transmitting.

Kit SA-2040, Shpg. wt. 15 lbs. 149.95
HDP-3622, 3-ft. RG8U jumper with PL259 connectors, Shpg. wt. 1 lb. 4.95

SA-2040 SPECIFICATIONS: Frequency Coverage: 3.5-30 MHz. Power Input Capability: SSB: 2000 watts PEP; CW: 1000 watts. Input Impedance: 50 ohm. Impedance Transformation: 4:1 (balance-to-unbalanced) balun. Output Impedance: Wide Range. Cabinet Dimensions: 5 5/8" H x 14 1/8" W x 13 1/8" D (36.8 x 14.6 x 35.2 cm).

AC Power Supplies for your Heathkit or other make Amateur Radio gear

A great AC Supply for most 2-meter rigs

1 The PS-1175 supplies the necessary voltage and current to power the new VF-7401 2-meter transceiver and HA-202A amplifier (or most other makes of VHF mobile equipment) from standard 120 VAC or 240 VAC outlets for base station operation. Output voltage is internally adjustable between approximately 12 and 14.5 volts DC. A Darlington circuit provides exceptionally high gain for excellent regulation. Has fused overload protection. With cables and 3-wire line cord. Easy assembly.

Kit PS-1175, Shpg. wt. 15 lbs. 69.95

PS-1175 SPECIFICATIONS: Output Voltage: 13.8 VDC regulated (internally adjustable from approx. 12 to 14.5 VDC). Output Current: 10 amperes intermittent, 10 minutes max. (5 amperes continuous). Load Regulation: less than 1% at 10 amperes. Ripples less than 0.5% at 10 amperes. Power Requirement: 120 VAC, 50/60 Hz at 4 amperes, 240 VAC, 50/60 Hz at 2 amperes. Fuses 4-ampere, 3AG, slow-blow for 120 VAC primary, 2-ampere, 3AG, slow-blow for 240 VAC primary. 15-ampere, 3AG, output. Dimensions: 5 1/4" H x 6 3/4" W x 11" D.

Here's the Supply to power your HF gear

2 The PS-23 provides the operating voltages for the HW-101 as well as those necessary for the operation of many older Heath transceivers and other types of Amateur Radio equipment. Has high voltage and two internally selectable low B+ taps. Also provides fixed bias and 12.6 filament voltage. The PS-23 features excellent bias supply filtering and extremely low ripple content. Circuit breaker in the primary circuit provides overload and short circuit protection. Can be wired for either 120 or 240 VAC operation. Easy kit assembly.

Kit PS-23, Shpg. wt. 17 lbs. 64.95

PS-23 SPECIFICATIONS: High voltage output: 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple. Less than 1% @ 250 mA. Low voltage output: (High tap) 350 VDC, no load; 300 VDC @ 150 mA ±10%, (Low tap) 275 VDC, no load, 250 VDC @ 100 mA; ±10%. Less than 0.05% AC ripple @ 150 mA, continuous duty to 175 mA. Fixed bias: -130 VDC ±10%, no load; -100 VDC @ 20 mA. Power requirement: 120/240 VAC, 60/50 Hz, 350 watts maximum. Dimensions: 6 3/4" H x 4 3/4" W x 9" L.



Heathkit linears fight inflation with more punch per dollar



SB-221 SPECIFICATIONS. Band coverage: 80, 40, 20 & 15 meters. Max. power input: SSB, 2000 W. PEP; CW, 1000 W; RTTY, 1000 W. Driving power: 100 W. Duty cycle: SSB, Continuous voice modulation. CW, Continuous (max. key-down 10 min.). RTTY, 50% (max. transmit time 10 min.). Third order distortion: -30 dB or better. Input impedance: 52 Ω unbal. Output impedance: 50 Ω unbal.; SWR 2:1 or less. Front panel controls: Tune, Load, Band, Sensitivity Meter Switch, Power, CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Rel. Power, High Voltage) Rear panel: Line cord, circuit breakers (two 10 A). Antenna Relay (phono). ALC (phono). RF Input (SO-239). Ground post. RF Output (SO-239). Tubes: Two Eimac 3-500Z. Power req.: 120 VAC, 50/60 Hz @ 20 amp. max. 240 VAC, 50/60 Hz @ 10 amp. max. Cabinet size: 8 $\frac{1}{4}$ " H x 14 $\frac{7}{8}$ " W x 14 $\frac{1}{2}$ " D.

Get a 20 over 9 signal with the Heathkit SB-221 2 kW Linear

\$599⁹⁵

- Paralleled Eimac 3-500Z's deliver top power
- 2 kW PEP on phone, 1 kW in on CW and RTTY
- Heavy duty power supply for reliable operation
- Easily wired for either 120 or 240 VAC

Haven't you lost enough contacts because you can't punch your signal through? The Heathkit SB-221 Linear Amplifier packs a wallop that will get you 20 over 9 reports when the others are down in the noise. And the SB-221 does it at a price that's hard to beat. Now that you're ready to move up to 2 kW power, see why this amp is the one for your shack.

A pair of rugged Eimac 3-500Z's deliver 2000 watts PEP in on phone, and can be loaded to 1 kW in on both CW and RTTY. A broad-band pre-tuned pi-input delivers maximum efficiency with extremely low distortion over the entire 80-15 meter bands. Just 100 watts of exciter drive is all that's required to drive this amplifier to full output. No alignment necessary.

With an SB-221, tune-up couldn't be easier! Just select the band you wish to operate, set the CW-tune/SSB rocker switch to the CW-tune position, adjust both tune and load controls for maximum relative power out — and you're ready to go. Ready with the kind of signal that always catches the new DX, gets your traffic through, and provides reliable year-after-year communications performance.

The SB-221's power supply can be easily wired for either 120 or 240 VAC operation. Zener diode-regulated operating bias reduces idling current for cooler running and extended tube life. The amplifier incorporates built-in circuit breaker protection and a large, quiet-running fan provides maximum tube cooling. Other features include ALC to prevent distortion-producing overdrive; front-panel switch-selected monitoring of grid current, relative power, and high voltage. There's also a separate meter for measuring final amplifier plate current.

A great amp with a great price, and it has been accepted by the FCC.

Kit SB-221, Shpg. wt. 66 lbs. **\$599.95**

HDP-3622, 3-ft. RG8/U Jumper w/PL259 Connectors, Shpg. wt. 1 lb. **4.95**



SB-201 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. Maximum power input: 1200 watts P.E.P. SSB, 1000 watts CW. Driving power required. 100 watts. Duty cycle: SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). Third order distortion: -30 dB or better at 1000 watts P.E.P. Output impedance: 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. Meter functions: 0-100 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. Front panel controls: Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch, on/off. Tube complement: Two 572B/2T-160-L (in parallel). Power requirement: 120 volts AC @ 16 amperes (maximum), 240 volts AC @ 8 amperes (maximum). Cabinet dimensions: 6 $\frac{5}{8}$ " H x 14 $\frac{7}{8}$ " W x 13 $\frac{3}{8}$ " D.

Heathkit 1 kW Linear gets your signal through the QRM

\$419⁹⁵

- Rugged 572B finals need just 100-watt exciter
- Forced air cooling is ideal for contesting
- Switchable multifunctional metering
- Pre-aligned cathode-input tank circuits

Do you find yourself sitting on the sidelines during a pileup for a rare DX find because your signal doesn't measure up to the challenge? Then move up to the Heathkit SB-201 1 kW Linear Amplifier. It won't put a hole in your ham-gear budget while it's punching a hole through the QRM.

Just 100 watts is all it takes to drive the 201's heavy-duty pair of forced air-cooled 572B's to a full 1200 watts PEP in on phone, and 1000 watts in on CW. So it's ideal for use with most popular transmitters or transceivers. And you have no fear of TVI, because those finals are completely shielded to insure excellent TVI protection.

The SB-201 sports an ALC output to prevent distortion-producing overdrive. And for maximum efficiency, the 201's cathode-input tank circuits come pre-aligned and ready to go on air. No alignment necessary.

The SB-201 has a built-in solid-state power supply which features full circuit breaker protection. A switchable multi-function panel meter shows SWR, grid current, plate current, relative power and plate voltage. For extra operating convenience, an antenna relay automatically switches the antenna to the exciter input when the SB-201 is off.

The sturdy yet lightweight construction of the SB-201 is achieved by using a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and component isolation. The amplifier's clean open chassis layout assures easy assembly and provides maximum efficiency for year-after-year dependability.

From its front panel right on back to the rear apron, the SB-201 is packed with features that make this amplifier a bargain. Has FCC acceptance.

Kit SB-201, Shpg. wt. 47 lbs. **\$419.95**

HDP-3622, 3-ft. RG8/U Jumper w/PL259 Connectors, Shpg. wt. 1 lb. **4.95**

Great CW and listening gear at prices you can afford



The HX-1681 QSK CW Transmitter has power to span the globe

\$239⁹⁵

- 100 watts out on 80-15, 75 watts out on 10
- No crystals — built-in VFO
- Rugged 6146 finals
- Full break-in (QSK)
- Solid-state TR switching
- Designed as a match for the HR-1680 receiver

Whether you're a veteran brass-pounder or have just earned your Novice ticket, the HX-1681 QSK Transmitter is the ideal CW rig for you. You get full break-in capability, so you can hear other stations whenever your key is up...even between individual dits and dahs of your transmission.

A pair of rugged 6146A finals combine with solid-state design to give you a clean 100 watts minimum on 80-15, and 75 watts out on 10. The HX-1681 features built-in TR switching, adjustable sidetone output, and receiver muting. Keying is provided for adding an external power amp.

This rig covers 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5 and 28.0-28.5 MHz. You need the Heathkit PS-23 power supply on page 23. 6¾" H x 12¾" W x 12" D.

Kit HX-1681, Shpg. wt. 16 lbs. 239.95
Kit PS-23C, AC Power Supply, Shpg. wt. 17 lbs. 64.95

HR-1680 SSB/CW Receiver — ideal for serious Ham band listening

\$219⁹⁵

- No instrument alignment
- Dual conversion front end works 80 through 10 M
- 0.5 μ V sensitivity
- 4-Pole crystal filtering
- Active audio filtering
- Built-in preselector
- Built-in 100 kHz calibrator

Looking for your first receiver? The solid-state HR-1680 is the right choice. It combines high performance and low cost for serious Ham band listening. A hot dual-conversion front end and 0.5 μ V sensitivity covers 80 through 10 meters: 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-28.5, 28.5-29.0 MHz.

Selectivity is outstanding. With a matched 4-pole crystal filter in the IF, you can count on your 1680 to be razor sharp. A tunable preselector filters out unwanted signals. Also features built-in 100 kHz calibrator.

Assembly is easy, thanks to the detailed Heathkit manual. And you can align your HR-1680 without instruments. Match the 1680 with the HX-1681 Transmitter for an unbeatable pair. 120/240 VAC or 11.5-15 VDC. 6¾" H x 12¾" W x 12" D.

Kit HR-1680, Shpg. wt. 14 lbs. 219.95
Kit HS-1661, Matching Speaker, 5 lbs. 29.95

For Novice or Extra, at home or in the great outdoors, the HW-8 is your passport to the ultimate challenge of QRP operation

\$139⁹⁵

- 80, 40, 20 and 15 meters CW
- 0.2 μ V receiver sensitivity
- Adjustable T/R delay and semi break-in
- Tunable preselector
- Two-position active audio filter
- Front panel meter to show relative power

Put more fun in a great hobby. Try QRP operation with the Heathkit HW-8. With your skill and this great little CW transceiver to back you up, you'll be amazed at what you can do. Join the growing number of Hams going to solar-powered QRP operation. Or power your HW-8 from a trail bike's battery, pumping that QRP signal into the great outdoors through a dipole strung between two pines. You can do it with this great little performer.

Performance starts with a quiet, super-sensitive receiver section. Hum and noise figures are minimal and as little as 0.2 μ V in at the antenna terminal gives you a usable signal. There's a tunable preselector, selectable wide and narrow audio filtering, RF and AF gain controls.

The HW-8 pumps a minimum of 3 watts in on 80 and 40, 2.5 watts in on 20 and 15. Semi-break-in operation with adjustable T/R delay, a built-in relative power meter, pushbutton bandswitching, and stable temperature-compensated VFO. Runs on batteries (not supplied) or from optional AC power supply.

A great performer that's going to give you hours of fun in the shack or on a mountain peak — that's the HW-8. Order yours now so you can join the growing numbers who are discovering the fun and fraternity of QRP operation with the popular HW-8.



Kit HW-8, Shpg. wt. 6 lbs. 139.95
Kit HWA-7-1, AC Power Supply, Shpg. wt. 4 lbs. 19.95

HW-8 SPECIFICATIONS: Transmitter — DC Power Input: 3.5 W (80 M); 3.0 W (40 M); 3.0 W (20 M); 2.5 W (15 M). Frequency Control: built-in VFO. Frequency Stability: Less than 150 Hz/hour drift after 60 minutes warm-up. Receiver: Sensitivity: 0.2 μ V for readable signal; 1 μ V or less for 10 dB S+N/N. Frequency Coverage: 3.5-3.75; 7.0-7.25; 14.0-14.25; 21.0-21.25 MHz. Power Requirement: 12-16 VDC, 90 mA, receive; 430 mA, transmit. Size: 9¼" H x 8½" W x 4¼" D.



SPACE RESERVED FOR REVOLUTIONARY NEW SS-8000

INNOVATIVE HEATHKIT HF TRANSCEIVER...

- NEW TECHNOLOGY
- NEW FEATURES, BENEFITS, APPLICATIONS
- NEW HORIZONS FOR AMATEUR RADIO

After four years of design, development and testing, the wraps are ready to come off!
SEE IT HERE — IN YOUR NEXT HEATHKIT CATALOG

Heathkit accessories to increase your operating efficiency



1 Matching Speaker for SB-104A

1 Matching Speaker for your SB-104A

This 5" x 7" oval speaker is response-tailored for SSB, offering a 300-3000 Hz response. Styled to match the SB-104A, it may be used with most other amateur receivers or transceivers. The easy-to-build kit includes the necessary connector plug and cable. The attractive cabinet measures 7 1/8" H x 10 1/8" W x 14" D (18 x 25.7 x 35.6 cm).

Kit SB-604, Shpg. wt. 8 lbs. 39.95

2 Station Monitor checks your signal

The SB-614 Station Monitor is a convenient instrument for continuous observation of "on-the-air" signals. It can be used on SSB, CW and AM signals up to 1 kW from 80 through 6 meters. The SB-614 shows non-linearity, insufficient or excessive drive, poor carrier or side band suppression, regeneration parasitics and key clicks. Can be used in conjunction with a receiver to monitor audio signals from other stations. The manual shows 40 CRT transmit displays, including: 21 transmit envelope patterns, 7 trapezoid patterns, 6 RTTY cross patterns (for proper sift, mark and space adjustment), and 6 CW patterns. Also shown are 21 receive patterns. For limited test applications the Station Monitor can



2 Station Monitor

also be used as a normal oscilloscope. Completely solid-state design except for the display tube. Can be used with most amateur or commercial transmitters whose output levels and frequencies are within the specified limits.

Kit SB-614, Shpg. wt. 17 lbs. 159.95
HDP-3622, 3 ft. Coax w/connectors, 1 lb. 4.95

SB-614 SPECIFICATIONS: RF SAMPLING SECTION: Power Limits: Exciter Input (50-75 Ω) 10-300 W; Antenna Input (50-75 Ω) 10-1000 W. Insertion Loss: Negligible. VERT. AMPLIFIER: Input Impedance: 1 MΩ shunted by 75 pf. Sensitivity: 60 mV rms/1/4" vert. deflection. Attenuator: 2-pos.; x1, 2V rms max. input; x10, 20V rms max. input. HOR. AMPLIFIER: Input Impedance: 1 MΩ shunted by 50 pf. Sensitivity: 50 mV rms/1/4" hor. deflec. Power: 120/240 VAC, 60/50 Hz. Size: 7 1/4" H x 10 1/4" W x 15 1/4" D.

3 Save \$30 on Station Console

A great accessory becomes a greater bargain; now you can save \$30 on the SB-634 Five-function Station Console. It features a 24-hour digital clock, 10-minute ID timer, RF wattmeter with 200 or 2000-watt full scale ranges, SWR bridge with sensitivity control, phone patch that can be used manually or with VOX control. Wattmeter impedance is a nominal 50 Ω. Phone patch provides at least 30 dB isolation.



3 Save \$30 on Station Console

tion. Input impedance is 600 Ω. Matches 3-16 Ω receiver outputs, and 600 Ω or hi-Z transmitter input. Kit SB 634, Wt. 13 lbs. . . . Was \$179.95, Now 149.95
HDP-3E22, 3 ft. Coax w/connectors, 1 lb. 4.95

SB-634 SPECIFICATIONS: CLOCK — Display: Six digits. Time Base: 24 hr. TIMER — Display: Three full digits. Time Interval: 10 min. with auto. reset. Manual reset at any portion of 10-min. period. Signal: Visual and aural or visual only. RF POWER/SWR METER — Frequency Range: 1.8 to 30 MHz. Wattmeter Accuracy: +10% of full-scale reading. Power Handling Capability: 2000 W (max.). SWR Sensitivity: Less than 10 W. Impedance: 50 Ω nominal. Connectors: SO-239. Power Requirement: 120/240 VAC, 60/50 Hz. Size: 7 1/4" H x 10 1/4" W x 15 1/4" D.

BW Clipper gives you true RF processing

Put more punch in your audio. BW Clipper increases average SSB output by 66% — to just a little below key down CW output. Designed for Heath SB100/101/102, HW-100/101 transceivers and SB400/401 transmitters. Quick, easy installation. All cables included. Fully assembled. 2" H x 6" W x 4" D.
HDP-1220, Shpg. wt. 2 lbs. 149.95



Useful reference books to help you get more from the world of electronics

Popular books at low Heathkit prices



Transistor Substitution Handbook. Replacements for over 19,000 American and foreign bipolar transistors. Includes computer-selected and manufacturers-recommended replacements. 544 pages.
EDP-175 5.95

The 555 Timer Applications Source Book. Explains the 555 timer and 556 dual timer. Includes 17 simple experiments to give you a basic practical knowledge in using the 555 timer in various specialized applications. 160 pages.
EDP-249 6.95



The TTL Data Book. Design and specification data, pin outs, test data and applications of transistor-transistor logic. Indexes are designed for ease of circuit selection. Section on IC sockets and interconnection panels is handy reference for the design engineer. 832 pages. EDP-220 7.50

Electrical Soldering. Excellent book for beginners and good review for technicians. Functions and requirements of soldering equipment for manufacturers. 144 pages. EDP-178 3.95

Tube Substitution Handbook. Lists 12,000 replacements for all types of American and foreign receiving and picture tubes. Tube basing diagrams provide handy reference to pin numbers. 112 pages.
EDP-174 2.95



TTL Cookbook. What transistor-transistor logic is, how it works, how to use it. From basic to advanced designs, gate and timer circuits, clocked logic, JK and D-type flip-flops, etc. Includes projects. 336 pages.
EDP-183 8.95

Home TV-FM Antennas. For technician or homeowner with basic electronic knowledge. Antennas, towers, lead-in, rotators, amps, accessories. Photos show installation from start to finish. 208 pages.
EDP-186 6.50

Building and Installing Electronic Intrusion Alarms. For novice installing own system or technician planning to enter security electronics. 128 pages.
EDP-135 4.50

(See book-ordering information on page 53).

NEW

New Digital Scanning Transceiver makes Two more fun



Shown with optional Micoder II mike

LED indicates 5 kHz position

0 kHz/5 kHz button gives 800 channels in 5 kHz steps.

Dim/Bright button — bright for daytime meter and frequency readout, subdued for safe nighttime mobilizing.

Manual/Scan button lets you find a frequency, or lets the 7401 find one for you.

Lock/Latch button. In Scan/Lock, receiver scans to a signal and remains until reset. In Scan/Latch, resumes scanning 4-8 seconds after received transmission ends.

10 kHz button advances readout in 10 kHz steps. In Scan, as it recycles from "9" to "0," it also causes 100 kHz readout to advance by one digit.

Squelch Control also functions as scanning sensitivity control to skip weak signals and stop scanning only on "full-quieting" ones.

1 MHz button allows you to select any 1 MHz segment of the 2-meter band.

100 kHz button controls tuning in 100 kHz increments, allowing you to change frequency when the 7401 is in the Manual mode.

Available in late June

The VF-7401 2-Meter FM Digital Scanning Transceiver is loaded with the features you want at a price you can afford

\$339.95
with PTT mike

- Continuously adjustable, 15-watt output
- Scanning capability
- Preprogrammed power-up on any channel
- Detachable microphone

Throw away your repeater guide! Never again will you have to search through all that tiny print looking for a repeater as you drive through unfamiliar territory. The new Heathkit VF-7401 2-Meter FM Digital Scanning Transceiver will find all of the local activity for you. This exciting new transceiver scans the entire 2-meter band in 1 MHz segments. When it finds an active channel, it stops. It will remain on that channel, when you select the Scan/Lock mode, until you reset it by pressing the 10 kHz button. Or, set your VF-7401 in the Scan/Latch mode, and it will resume scanning when the received transmission ends.

Of course, you don't have to put up with every weak signal that reaches your antenna. If you hate "picket-fencing," use the VF-7401's squelch control as a scanning sensitivity control. You can adjust the receiver to stop scanning for "full-quieting" signals only. Or, open the squelch when there are 2-meter band openings. Your VF-7401 will find that "2-meter DX" for you without the tedious task of flipping through every individual channel.

Naturally, your VF-7401 lets you change frequencies manually, too. Three small front panel switches permit you to select manually any desired frequency at the scan rate. Once you have obtained the frequency you want, you may also offset it by a separate 5 kHz switch.

Another unique feature of your new VF-7401 is the ability to "power-up" on a pre-programmed frequency. While you're building your rig, you can program in your favorite simplex or repeater frequency. Then, every time you turn your 7401 on, before it begins to scan, you'll be able to monitor your favorite frequency first. Besides simplex, the rig has +600 kHz, -600 kHz and 1 MHz offsets. It can accommodate any 2 meter amateur band offset combination.

The VF-7401 is a continuously adjustable, 15-watt (nominal), solid-state, narrow-band FM transceiver. Its fully-synthesized digital circuitry provides full-band coverage without the need for additional crystals—even MARS and CAP channels are covered. Featuring a hot receiver, the new VF-7401 incorporates a double-tuned front end with MOSFET RF amplification, dual-conversion, 8-pole crystal IF filtering for perfect bandpass shaping and outstanding adjacent channel selectivity, IC limiting, Quad detection, and excellent audio quality.

30

An improved synthesizer eliminates the need for a panel-mounted sync lock light (although there's one inside should you need it for servicing). And brought out from the inside are power amp tuning and output power level adjustment, both now accessible from the rear panel without removing the case. A look at the 7401's rear panel will also reveal a sturdy SO-239 antenna connector, plus chassis-mounted power and external speaker jacks for added convenience.

Another feature you've asked the 200 Hams at Heath to provide is a detachable microphone. So, you got it—with a sturdy 4-pin DIN connector. And if you choose your 7401 with the optional Micoder II Microphone/Auto Patch Encoder (described on page 21) you don't have to worry about microphone batteries anymore. The Micoder II now draws its power from the rig, eliminating the need for a mike battery.

The VF-7401 includes a gimbal-mount bracket for mobile installation as well as home QTH use. The rig requires a 13.8 V, 3 amp continuous, 4 amp intermittent, power source such as a charging automobile electrical system, or the optional VFA-7401-1 AC Power Supply (see page 31). Available in late June.

This device has not been approved by the Federal Communications Commission. This device is not, and may not be, offered for sale or lease, or sold or leased until the approval of the FCC has been obtained.

VFS-7401-1, Transceiver and Micoder II, wt. 12 lbs. **359.95**

VFS-7401-2, Transceiver and PTT Microphone, wt. 12 lbs. **339.95**

VF-7401 SPECIFICATIONS: Receiver: Sensitivity: 0.5 μ V for 12 dB SINAD (or 15 dB of quieting). Squelch Threshold: 0.3 μ V or less. Audio Output: 1.5 watts at less than 10% THD; 2 watts maximum output (typical). Image Rejection: -50 dB or greater. Spurious Rejection: -50 dB or greater. IF Rejection: -80 dB or greater. Internally Generated Spurious Signals: Below 1 μ V equivalent. Bandwidth: 6 dB at 15 kHz minimum and 60 dB at 30 kHz maximum. Modulation Acceptance: 6.5 kHz minimum. Transmitter: Power Output: 15 watts nominal to a 50 Ω < 0° (resistive) load at 25° C and 13.8 VDC. Harmonic and Spurious Output: -60 dB. Modulation: FM, 0-7 kHz, adjustable. Duty Cycle: 100% with VSWR of less than 10:1. Tone Encoder: 3 tones, 70 to 200 Hz, approx. 700 Hz deviation. Transmitter Offset: -600 kHz, +600 kHz, +1 MHz (AUX). General: Frequency Coverage: Any 4 MHz segment from 143.5 to 148.5 MHz. Frequency Increments: 5 kHz. Frequency Stability: +.0015%. Operating Temperature Range: +15° F to +125° F (-10° C to +50° C). Operating Voltage Range: 12.6 to 16 VDC (13.8 VDC, nominal). Current Consumption: Receive Mode: 550 mA max., squelched; 750 mA max., full rated audio. Transmit Mode: 4A max. at 13.8 VDC. Dimensions: 2 3/4" H x 7 1/4" W x 10 1/4" D (7.0 x 18.4 x 26.0 cm).



New AC Supply gives you double duty from your 7401

\$42⁹⁵

- Gives you the flexibility of operating your new VF-7401 from your home QTH, as well as on the highway
- A well-regulated supply providing 13.8 V, 3A continuous, 4A intermittent
- Rugged and reliable construction to give you years of service
- Modern "military" styling and color to match your VF-7401 Transceiver

- An easy-to-build kit you can get up and running quickly, and can wire for either 120 VAC or 240 VAC use

The new Heathkit Model VFA-7401-1 AC Power Supply is the perfect match-up for your VF-7401 2-Meter FM Digital Scanning Transceiver. It provides well-regulated, low voltage, DC power from an AC power source so you can put your VF-7401 on the air from your shack, as well as on the highway.

The VFA-7401 is an easy-to-build kit, so you can get it up and running quickly. And you can wire it to operate from either a 120-volt or 240-volt 50/60 Hz AC power line. It will maintain output regulation within 1.5%.

Designed primarily to provide +13.8 VDC for the VF-7401, this supply may also be used with other equipment that requires +13.8 VDC at a maximum of 3.0A continuous, 4A intermittent.

Rugged and reliable, this supply has been designed to match the VF-7401 in the popular, attractive "military" styling and color. It will be a great addition to your shack...and it will provide you with many years of dependable service.



Kit VFA-7401-1, Shpg. wt. 7 lbs. 42.95

VFA-7401-1 SPECIFICATIONS: Output Voltage: 13.8 VDC regulated (Adjustable from approximately 12 to 15 VDC). Output Current: 4.0 amperes for 20 minutes (40% duty cycle). 3.0 amperes continuous. Output Regulation: Better than 1.5% from no load to full load (3.0 amperes). Output Ripple: Less than 2 mV peak-to-peak. Power Requirement: 110 to 130 VAC or 220 to 260 VAC, 50/60 Hz, at 85 watts (full load). Overall Dimensions: 3 3/8" H x 7 1/4" W x 9 7/8" D (7.8 x 18.4 x 25.1 cm).

Heathkit 40-Watt Amplifier increases your range on 2-meters

\$54⁹⁵

- Put extra punch in your 2-meter signal with this rugged 40-Watt Amplifier. The more than 200 Hams at Heath have designed it to meet and surpass FCC specs for harmonic and spurious radiation.



Are you tied too closely to your repeater? Or are you missing the fun of "2-meter DX" because of a weak signal? The Heathkit HA-202A 40-Watt Amplifier puts the extra punch in your signal. It delivers a solid 40 watts minimum for just 10 watts in. And it draws only 7 amperes maximum from your car's charging system. The HA-202A features an antenna changeover relay and sensing circuitry for completely automatic T/R switching. Tuned input/output circuits are designed to provide low spurious radiation. A special emitter ballasted configuration withstands VSWR's of up to 3:1. The HA-202A can be internally adjusted to cover any 1.5 MHz portion of the 143-149 MHz band. Final alignment requires a VTVM, wattmeter or SWR bridge. The amp mounts almost anywhere in your car, or team it with the PS-1175 Power Supply on page 23 for a better signal from your home QTH. The HA-202A includes SO-239 connectors for easy hookup.

Kit HA-202A, Shpg. wt. 4 lbs. 54.95

HDP-3622, 3 ft. RG8U jumper with PL259 connectors, 1 lb. 4.95

HA-202A SPECIFICATIONS: Power Output: 20 W @ 5 W in. 40 W @ 10 W in. 50W @ 15 W in. Impedance: 50Ω nom. Input VSWR: 1.5:1 max. Max. Stable VSWR: 3:1. Harmonic and Spurious Radiation: -60 dB or better. Standby Current: 1 mA. Power Requirement: 12-16 VDC, 7 A max. Size: 3" H x 4 1/4" W x 5 1/2" D.

Heathkit 10-Watt Amp gives your 2-meter hand-held clout

\$39⁹⁵

- Your 2-meter hand-held will be able to compete with "the big boys" once you add this compact 10-Watt Amplifier. It's designed to meet or surpass the latest FCC specifications for harmonic and spurious radiation, too.



Just because you like the convenience and portability of a hand-held 2-meter transceiver, it doesn't mean that you have to take a back seat when it comes to increasing your range. The Heathkit HA-201A 2-Meter Amplifier will get your hand-held into your favorite repeater full-quieting every time, because it delivers up to a full-bodied 10 watts for a mere 1 1/2-watt input. Or you can have 8 watts for just 1 watt in. It's an ideal amplifier for use with any low-power 2-meter transceiver such as the Heathkit VF-2031 on page 29.

The HA-201A features fully automatic operation with solid-state transmit/receive switching. It incorporates tuned input and output for maximum efficiency and reduced spurious emissions, and meets or surpasses FCC requirements for spurs and harmonics. It has been designed, also, to withstand infinite VSWR load without failure. Your HA-201A kit includes a dummy load and RF detector, as well as SO-239 connectors for easy hookup. A VTVM is necessary for tuneup. And the Amplifier requires a 12-16 VDC power source for operation.

Kit HA-201A, Shpg. wt. 2 lbs. 39.95

HDP-3622, 3-ft. RG8U jumper with PL259 connectors, 1 lb. 4.95

HA-201A SPECIFICATIONS: Power Output (at 13.6 VDC input): 8 W @ 1 W in; 10 W @ 1.5 W in. Input/Output Impedance: 50Ω. Power Requirement: 12-16 VDC, 2.2 A max. Size: 2 3/4" H x 5 5/8" W x 5 1/2" L.

SAVE AS NEVER BEFORE DURING THE SENSATIONAL HEATHKIT STEREO

RECEIVER & SPEAKER SALE!

We're making build-it-yourself audio more economical than ever before. Heathkit stereo systems for every budget — at REAL savings!

Order before July 20, 1980 and save over Winter catalog prices!

SAVE \$250

on our top-of-the line AR-1650B receiver, with stunning black front panel, plus two ASX-1383 Linear Phase speaker systems



Was ~~\$1349⁸⁵~~ NOW ONLY **\$1099⁸⁵**

Our top-quality, high-performance receiver, plus state-of-the-art speakers you have to hear to believe — now, for hundreds less.

ARS-1650B, 164 lbs., Motor Frt. . . . Was \$1349.85, NOW ONLY 1099.85

SAVE \$230

when you buy our AR-1650S Receiver in elegant silver, with a pair of ASX-1383 Linear Phase Speaker Systems

Was ~~\$1329⁸⁵~~ NOW ONLY **\$1099⁸⁵**



ARS-1650-S, 164 lbs., Mtr. Frt., Was \$1329.85, NOW ONLY 1099.85

SAVE \$250

on our exceptional AR-1515 Receiver, with a pair of our outstanding AS-1373 3-Way Speaker Systems

Was ~~\$949⁹⁰~~ NOW ONLY **\$699⁹⁰**



A medium-power package designed to satisfy the audiophile.

ARS-1515, Shpg. wt. 179 lbs., UPS Was \$949.90, NOW ONLY 699.90

SAVE AN EXTRA \$50

WHEN YOU BUY THIS TURNTABLE WITH ANY OF THE SYSTEMS ON THIS PAGE!



The Dual 622 Direct-Drive Turntable includes base and dust cover. Order cartridge from pg. 41. Manufacturer's price \$319.95. ACP-1465, 19 lbs., Our Price \$299.95 . . . ONLY 249.95 WITH PURCHASE OF ANY SYSTEM ON THIS PAGE

SAVE \$80

when you buy the budget-priced system with the full-price sound!



Was ~~\$379⁹⁰~~ NOW ONLY **\$299⁹⁰**



Years of Heathkit engineering have developed the great-sounding AR-1219 receiver. And when you add two of our AS-1342 high-efficiency reflex speaker systems, you get an unbeatable team!

ARS-1219-2, Shpg. wt. 109 lbs. NOW ONLY 299.90

SAVE \$130

on our value-packed medium-power receiver and two high-efficiency two-way speaker systems



Was ~~\$529⁹⁰~~ NOW ONLY **\$399⁹⁰**

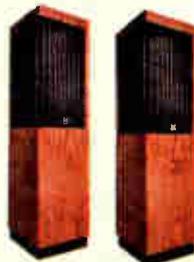


Our AR-1429 Receiver has features found on units costing hundreds more. And our AS-1342 Reflex Speaker Systems let you custom-tailor the sound to your own listening preferences.

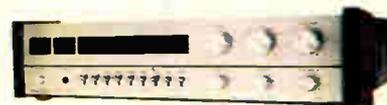
ARS-1429-1, Shpg. wt. 123 lbs. NOW ONLY 399.90

SAVE \$160

when you choose our AR-1429 System with two Sound Column Two-Way Speaker Systems



Was ~~\$659⁹⁰~~ NOW ONLY **\$499⁹⁰**



So versatile, you can even add the optional AD-1504 Dolby™ Module for even better sound. And our Sound Columns are outstanding.

ARS-1429-2, Shpg. wt. 164 lbs. Was \$659.90, NOW ONLY 499.90

Heathkit Pro-Series—studio quality in your living room

① Two speed cassette deck with metal tape capability

Reel-to-reel quality in a cassette deck. Records and plays top-quality metal tapes. Compares favorably with units costing hundreds more. Details on page 42. ATP-1484, Fully Assembled, Shpg. wt. 22 lbs. **799.95**
 Rack Adapter for ATP-1484. ATA-1484-1, Shpg. wt. 2 lbs. **24.95**

② Outstanding Pro-Series Stereo FM/AM Tuner

One of the world's finest. It's loaded with features that add up to distortion-free, noise-free reception. Super-sensitive 5-gang FM front end and FM IF/Stereo Demodulator are factory assembled and tested for easier kitbuilding. Bandwidth can be extra-wide for less noise, better separation — or narrow for minimal interference in crowded signal areas. Multipath switch lets you meter multipath distortion. For 120/240 VAC. 5¾" H x 19" W x 14" D.

Kit AJ-1600, Shpg. wt. 25 lbs. **399.95**
 Dolby™ FM Noise Reduction Module. AJA-1600-2, Shpg. wt. 1 lb. **49.95**
 Oak-Finish Cabinet. AEA-1800-2, Shpg. wt. 6 lbs. **39.95**

AJ-1600 SPECIFICATIONS: FM: Sensitivity: 1.8 μ V mono, 3.5 μ V stereo. Signal/Noise Ratio: 83 dB mono, 75 dB stereo. Harmonic Distortion: 0.1% @ 1 kHz. Image Rejection: 100 dB. Capture Ratio: 1.2 dB. Stereo Separation: 45 dB @ 1 kHz. AM: Sensitivity: Ext. Antenna, 30 μ V. Selectivity: Alternate Channel, -70 dB. Image Rejection: 70 dB.

③ Pre-amplifier with quality design, special features

Dual turnover tone controls. Built-in infra-sonic filter reduces rumble and low-frequency noise. 3 phono inputs, including one for moving coil cartridges like our ADP-1294 below. Selectable cartridge capacitance for flatter frequency response. Record from one deck to another while listening to source or tape. Adapter for equalizer or noise reducer. 3 switched, 3 unswitched outlets handle up to 1500 watts. For 120/240 VAC. 5.22" H x 19" W x 11¼" D.

Kit AP-1800, Shpg. wt. 27 lbs. **349.95**
 Oak-Finish Cabinet. AEA-1800-2, Shpg. wt. 6 lbs. **39.95**

AP-1800 SPECIFICATIONS: Selectable Phono Input Sensitivities: Moving Coil, 100/200/400 μ V; Phono, 1/2/4 mV; High-Level, 200 mV. Hum and Noise: Moving Coil, -70 dB; Phono, -75 dB; High-Level, -90 dB. Input Impedance: Moving Coil, 100 ohms; Phono, 47K ohms; High-Level, 50K ohms. Frequency Response: Phono (RIAA), \pm 0.2 dB, 20 Hz to 20 kHz; High-Level, +0, -0.2 dB, 20 Hz to 20 kHz. Rated Output: 1.5 V. Total Harmonic Distortion: Phono, 0.03%; High-Level, 0.02%, 20 Hz to 20 kHz. Intermodulation Distortion: 0.02% maximum. Crosstalk: -50 dB @ 1 kHz. Stereo Separation: 50 dB @ 1 kHz.

④ Graphic Output Indicator for accurate monitoring

Monitors peak power with LEDs to help avoid overloads and speaker damage. 6-position range switch for a wide range of sensitivities. Extremely fast response time. With oak-finish cabinet. For 120/240 VAC. 2" H x 19" W x 13" D.
 Kit AD-1701, Shpg. wt. 15 lbs. **189.95**

⑤ Pro-Series High-Power Stereo Amplifier

125 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.05% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

Reproduces music with a clarity and definition that make it excellent for any speaker system. Transient intermodulation distortion is less than 0.05% for clean, well-defined sound — even at the high end.

Speaker turn-on delay, thermal circuit breaker assure full protection. Amplifier, power supply are fully assembled for easier kitbuilding. 120 VAC, 60 Hz. 7¼" H x 19" W x 13" D.

Kit AA-1600, Shpg. wt. 51 lbs. **329.95**
 Oak-Finish Cabinet. AEA-1800-1, Shpg. wt. 5 lbs. **39.95**

AA-1600 SPECIFICATIONS: Freq. Response: \pm 1 dB, 7 Hz to 50 kHz. -3 dB, 5 Hz to 100 kHz @ 1 watt. Damping Factor: Greater than 50. Hum and Noise: 100 dB below 125 watts. Separation: 70 dB min. Input Impedance: 20K ohms. Input Sensitivity: 1.5 V.

Heath-recommended Moving-Coil Cartridge

Audio-Technica AT-30E Cartridge brings out the Pro-Series System's full capabilities. Requires AP-1800 or similar preamp. Mfr.'s price, \$125.00.

ADP-1294, Shpg. wt. 1 lb. **Our Price 79.95**
 With turntable or changer purchase from page 41 **59.95**

Pro-Series lets you hear your music just the way you like it



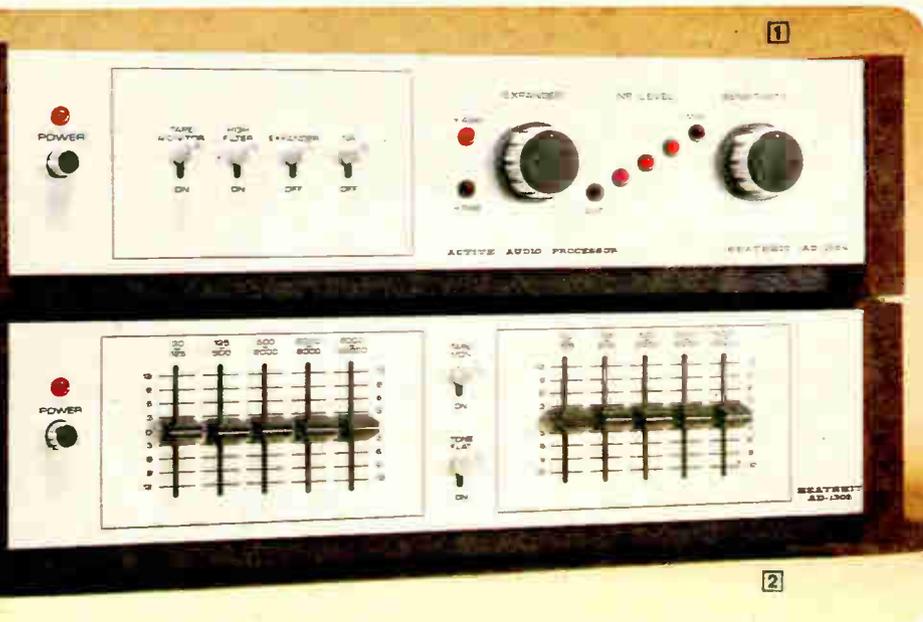
Heathkit Pro-Series Components are also available with optional oak-finish wood cabinets. Cabinets are listed and sold separately for each component.

Pro-Series Rack combines function and beauty

Bring all your Heathkit Pro-Series Components together in this handsomely-designed rack. Get easy access to all controls. Convenient swivel casters lock in position. Standard EIA panels, in any height, are compatible. Includes walnut veneer side panels, record dividers and an extra shelf. Dimensions, 43½" H x 21½" W x 18" D.

Kit AE-1705, Shpg. wt. 74 lbs. **249.95**

Quality Heathkit components enhance your audio system



1 Active Audio Processor reduces noise while expanding the dynamic range of any program material

\$199⁹⁵

Improves the sound of your hi-fi system without introducing distortion

The Heathkit AD-1304 is specifically designed to both eliminate 10 dB of high frequency noise and add 7 dB of dynamic range expansion to any program source. A separate expander section accounts for 7 dB of dynamic range expansion. Three high-frequency dynamic filters work in conjunction with a sensitivity control to discriminate between noise and music for up to 10 dB of noise reduction. Each filter operates in its own separate portion of the audio spectrum to provide the best sound while maintaining overall frequency response. For inherently noisy material such as 78-rpm recordings, AM radio or 8-track tapes, a high-filter switch on the front panel activates a 7 kHz, linear phase, 12 dB per octave filter. The AD-1304 connects between the tape output and tape monitor jacks on most units. Tape monitor facilities are provided on the back panel of the AD-1304 so that the tape monitor function is not lost.

The front panel LED's provide an easy-to-read indication of the processing. -3 dB and +4 dB LED's indicate the expander's gain. When both are of equal intensity, gain is unity. Noise reduction LED's indicate the relative amount of noise reduction. All four on indicates maximum reduction, while the green LED at lower left indicates no reduction.

The Heathkit Audio Processor boosts your dynamic range in an unobtrusive way. Your sound remains natural. Make it part of your system today.

Kit AD-1304, Shpg. wt. 12 lbs. **199.95**

2 5-Band, 2-Channel Audio Equalizer gives you complete, precise tone control

\$134⁹⁵

Lets you control the entire frequency spectrum for exacting system response and beautiful sound.

The AD-1305 Audio Equalizer offers complete tone control with five slide controls for each stereo channel. It is designed for use with any receiver or amplifier having a pre-amp output and power amp input, or tape monitor. Provides precise corrections without overlapping.

A center detent allows exact 0 dB setting bypassing each band; a tone flat switch bypasses the equalizer. Compensates for acoustics, differences in cartridges and speakers, even deficiencies in sources. Can also be used with tape recorders to filter old or scratchy records or broadcasts.

The AD-1305's own tape monitor lets it be used in a

receiver's tape monitor circuit without losing monitor capability.

The Heathkit Audio Equalizer is a fun-to-build kit, too, even for the first-time builders. Parts mount on three simple circuit boards. Price includes case. Kit AD-1305, Shpg. wt. 11 lbs. **134.95**

AD-1305 SPECIFICATIONS: Input Impedance: 100k ohms. Output Impedance: 100 ohms. Rated Output: 1.5 V rms. Overload: 5 V rms. Signal-to-Noise Ratio: 90 dB below 1.5 V. Total Harmonic Distortion: 0.05% from 20 Hz to 20 kHz at 1.5 V output. IM Distortion: 0.05% at 1.5 volts. Frequency Control Range: (separate controls for each channel), 30-125 Hz, 125-500 Hz, 500-2000 Hz, 2000 Hz to 8 kHz, 8 kHz-32 kHz. Overall Gain (flat): Zero dB (unity gain). Slope of Filters: 12 dB per octave. AC outlets: One switched, one unswitched. Power Requirement: 120/240 VAC, 60/50 Hz. Dimensions: 4 3/4" H x 17 1/2" W x 8" D.

AD-1304 SPECIFICATIONS: Rated Input: 200 mV. Input Impedance: 100K ohms. Gain: Expander off, 0 dB (unity) ±0.5 dB. Expander on, -3 dB to +4 dB. Frequency Response: +0, -0.2 dB from 20 Hz to 20 kHz. High Filter: 7 kHz, 12 dB octave rolloff. Noise Reduction: 10 dB typical between 4 kHz and 15 kHz. Hum and Noise: -70 dB, 20 Hz to 20 kHz. Channel Separation: 50 dB at 1 kHz. Output Impedance: 500 ohms. Input Overload: 5 volts. Total Harmonic Distortion: 0.1% from 20 Hz to 20 kHz. Power Requirement: 120/240 VAC, 50/60 Hz, 15 watts. Dimensions: 4 1/2" H x 17 1/2" W x 8 1/8" D.



Solid-state mono amplifier — a perfect beginner's kit

3.25 WATTS, MIN. RMS, INTO 8 OHMS WITH 4.5% THD FROM 40-20,000 HZ

Use the AA-18 with a record player fitted with a ceramic cartridge, a tape player, a mono AM or FM tuner or any other signal input of at least 250 millivolts. You'll be surprised at the volume the AA-18 delivers to an efficient 8-ohm speaker — and it's clean sound, too. Assemble in just a couple of evenings. Attractive metal case included. The AA-18 makes an ideal gift for the beginning kit builder. 2 3/8" H x 7 1/8" W x 5 3/8" D.

Kit AA-18, Shpg. wt. 4 lbs. **29.95**



Stereo Mike Mixer Console for pro-quality tapes

- Priced to fit your budget
- Just 0.5% maximum distortion

Wide frequency response and low distortion deliver clean, life-like mixing capability. Each output has its own master level control and meter. Two high-level auxiliary inputs and mike inputs can be switched off or to the left or right channels. The fourth mike input has a pan control to adjust its apparent location. Backlighted meters. For 120/240 VAC, 50/60 Hz. 60 dB gain permits use with almost any type of microphone. Case with walnut-veneer end panels. Dimensions, 5 3/8" H x 16" W x 9 3/8" D.

Kit TM-1626, Shpg. wt. 12 lbs. **179.95**

Quality Heathkit components enhance your audio system

A "Super-Amp" for the audiophile —
and you can build it yourself

\$499⁹⁰

with meters

- Enough power to faithfully reproduce any type of music — without any coloration

200 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

If you're striving for musical reproduction free of imperfections, the Heathkit AA-1640 Stereo "Super-Amp" is for you. With outstanding specifications, a unique combination of power and features, and distinctive styling, it combines the ultimate in performance with the maximum in system protection.

Many audio systems need a "Super-Amp" like the AA-1640 because, as sounds grow louder, the ear becomes less sensitive to them. For one sound to seem twice as loud as another (20 dB louder), 10 times as much power is required. A 3 dB change is barely noticeable — yet it requires twice as much power.

In an average-size room, acoustic suspension speakers may require 20 watts per channel to produce a reasonable listening level — about 90 dB. But when a momentary musical peak, 10 dB louder, comes along, your amplifier must try to produce 200 watts per channel. Tone controls, loudness circuits and equalizers make even more power demands on your amplifier. And if your amplifier is unable to deliver that much power, it clips off the peaks of the signals.

Clipping causes distortion and reduces dynamic range (the contrast between loud and soft passages). Music sounds constricted, harsh and unreal. Clipping also produces harmonics which can damage the tweeters of your speaker systems.

The electronics of the AA-1640 have but one purpose — clean, flawless reproduction of music. Its wider dynamic range lets more of the live-performance realism come through, loud and clear. You'll hear a striking difference in your music... improved definition... solid bass free of "boom" — distinct, note for note... accurate highs, clearly defined and open.



The AA-1640's frequency response is flat within —1 dB from 7 to 50,000 Hz. Total harmonic distortion is an infinitesimal 0.1%, and with hum and noise inaudible at 100 dB below full output, you'll hear your music on a clean background of velvety silence.

A unique speaker protection system does not connect your speakers at turn-on until transients have decayed, and immediately disconnects them at turn-off. It also features circuitry which disconnects your speakers when dangerous DC voltages and very low frequencies are present and prevents them from damaging your expensive speaker systems.

The "Super-Amp" also features massive side-mounted heat sinks. These heavily finned units provide maximum cooling and, at the same time, eliminate the need for the noisy cooling fans found on many other high-power amplifiers. Should overheating occur, thermal circuit breakers disconnect your speakers to prevent amplifier damage, and an LED is illuminated to alert you to the situation.

The amplifier inputs feature a two-transistor unity gain amplifier for optimum impedance matching and to provide maximum preamp-to-amplifier signal transfer. The amplifier circuit has a differential

amplifier to keep DC output level at zero, and also features an eight output device per channel push-pull configured class AB output stage.

For extra protection, both channels employ speaker fusing and intelligent solid-state current limiting, to protect the output transistors — should an external short circuit occur.

Now save \$40 by purchasing the meters with your "Super-Amp."

Kit AA-1640, Less Meters, 72 lbs., UPS only 479.95

Kit AAA-1640-1, Output meters, 3 lbs. 59.95

SAVE! Kit AAS-1640, Amp and Meters together.

Shpg. wt. 86 lbs. Was \$539.90, Now 499.90

OTHER AA-1640 SPECIFICATIONS: Frequency Response: —1 dB, 7 Hz to 50 kHz; —3 dB, 5 Hz to 100 kHz. Total Harmonic Distortion: Less than 0.1%, from 20 Hz to 20 kHz, 0.25 watts to 200 watts. Intermodulation Distortion: Less than 0.1% from 0.25 to 200 watts. Damping Factor: Greater than 50. Hum and Noise: Less than 400 μ V or 100 dB below full output. Channel Separation: Minimum 50 dB. Input Impedance: 50 kilohms. Input Sensitivity: 1.5 volts. Net Weight: 58 lbs. Dimensions: 7 $\frac{1}{4}$ " H x 19" W x 18" D. Power Requirement: 120 VAC, 60 Hz only.

Save \$30
on this great
Audio Control
Center



- Meter your power amplifier

Features peak-responding meters, sensitive enough to respond to a record click, with back-lighted scales and calibration from —30 to +3 dB, from 0.2 to 200 watts. Monitor power output of high-power amplifiers like our "Super-Amp" above. Also has terminal strips for versatile amplifier and speaker hookup capabilities, conventional headphone jacks and hookup for electrostatic headphones. Four switched and four unswitched AC outlets (total capacity, 1500 watts) for flexible control of other components. For 120/240 VAC, 50/60 Hz. Dimensions, 4 $\frac{1}{2}$ " H x 17 $\frac{1}{2}$ " W x 8 $\frac{1}{2}$ " D.

Kit AD-1307, Shpg. wt. 11 lbs. Was \$129.95, Now 99.95

Save \$20 on last call
for this versatile
Stereo Preamplifier



- Ideal for use with our "Super-Amp" above

An outstanding budget-priced preamp with specs and features normally found on preamps costing much more. Extremely wide dynamic range (100 dB for all inputs) with less than 0.05% intermodulation distortion. Far more precise and versatile tone adjustments than normal bass and treble controls. An output relay prevents turn-on "thumps". A sub-sonic filter eliminates noise from turntable rumble or record warp. Has high-frequency filter, two phono inputs, auxiliary and tuner inputs, tape monitor, mono switch, headphone jack and front panel dubbing inputs/outputs. For 120/240 VAC, 50/60 Hz. Dimensions, 4 $\frac{1}{2}$ " H x 17 $\frac{1}{2}$ " W x 8 $\frac{1}{8}$ " D.

Kit AP-1615, Shpg. wt. 12 lbs. Was \$139.95, Now 119.95

Introducing the finest Heathkit Stereo Receiver ever

\$779⁹⁵

Silver
front
panel

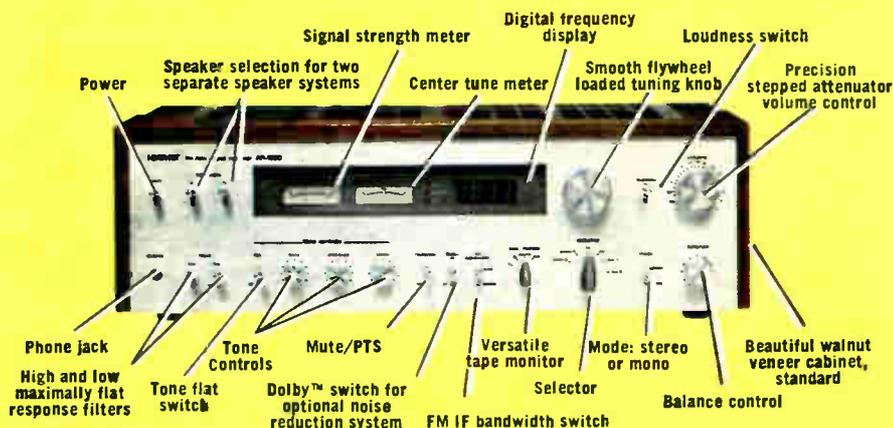
125 watts of superbly defined sound plus luxury features that put you in total control

Beautiful specs, beautiful sound

- 125 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.05% TOTAL HARMONIC DISTORTION FROM 20 TO 20,000 HZ
- 1.8 μ V FM sensitivity for reception of weak stations
- 80 dB FM signal-to-noise ratio for wide dynamic range
- -90 dB amplifier hum and noise for backgrounds of total silence
- 45 dB FM stereo channel separation for excellent imaging

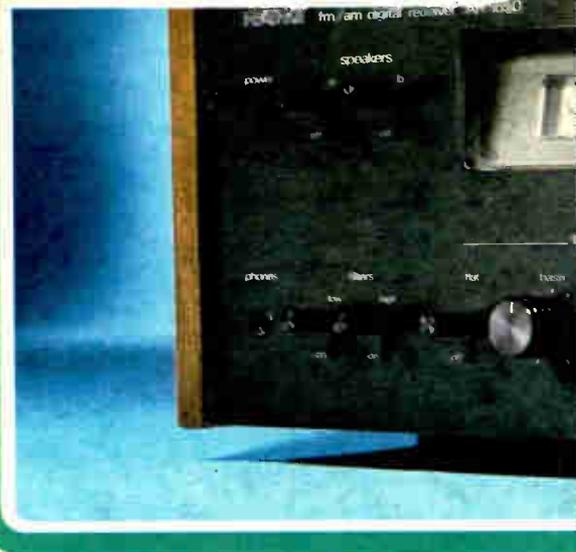
Spare-nothing design

- Digital readout displays frequencies more accurately than tuning dial
- Precision Tuning System (PTS) automatically corrects mistuning
- Stepped attenuator volume control for more accurate tracking between channels
- Convenient phono jacks permit separation of preamp and power amp for insertion of equalizer or for bi-amping
- Tri-band tone controls let you equalize your room for the most natural sound
- Complete speaker and circuit protection includes speaker turn-on delay and thermal circuit breaker and fuses
- Center tune meter indicates exact center of channel for best separation and lowest distortion and noise
- 5-section tuning capacitor gives maximum rejection of unwanted signals for lower noise and cleaner sound
- Optional Dolby noise reduction for those in areas where it is available



For a variety of listening options

- Source selection includes two phonos, two auxiliary sources, FM or AM or tape monitor
- A unique tape monitor system lets you monitor 2 decks or add a signal processor or other accessory
- Accommodates two separate speaker systems, so you can have music in two different areas of your home
- Phone jack lets you listen privately by headphones



The Heathkit AR-1650 Stereo Receiver

Power is more than just a number of watts. Every receiver has a particular quality in the power it delivers. That's why receivers of the same power rating, played with the same source and speakers, can sound so different. The new AR-1650 not only has all the raw power you'll ever need, it also delivers a sound quality unlike any you've ever heard before.

The designers of the AR-1650 were striving for more than just power. They were striving for precisely defined musical peaks, solid bass, fully-detailed midrange. They were striving for power infused with clarity. And the result is one of the most remarkable stereo receivers to be introduced to you in a long time, the new Heathkit AR-1650.

Remarkable signal reception

The AR-1650 Receiver has a 5-section FM tuning capacitor that gives you maximum rejection of unwanted signals for lower noise and cleaner sound. Interference is further minimized by an attenuator switch which reduces strong signals from the antenna. And a special narrow FM bandwidth switch lets you switch out unwanted signals in crowded areas for more precise reception.

Digital readout gives you a clear, handsome display of your frequency to the nearest two-tenths. It shows you exactly the frequency you're on.

Center tune meter indicates the exact center of the channel for best separation and lowest distortion and noise. Signal strength meter shows you when your signal is strongest. And a special Precision Tuning System (PTS) automatically corrects mistuning and makes it easier to find exact center tune.

Controls that let you hear your music just the way you like

The AR-1650 gives you total control to adjust the sound to your specific preference. Tone controls include separate bass, midrange, and treble for adjusting the entire frequency range. A special tone flat



The new AR-1650 is available with a choice of front panels: black anodized aluminum shown above (order AR-1650B) or natural silver anodized aluminum at right (order AR-1650S).



switch bypasses tone controls to provide the flattest possible frequency response. High and low, maximally flat response filters with 12 dB per octave roll-off minimize signal reduction in the passband and maximize attenuation of undesired signals beyond the 3 dB frequency. They are among the best response filters you can find at any price.

Versatile source accommodation

The AR-1650 accommodates two phonos, two auxiliary sources, AM or FM, or tape monitor, for a more-than-adequate variety of source options.

The record mode lets you record from deck 1 to deck 2 while you monitor deck 2.

Two speaker systems can be separately driven from the AR-1650, so you can have music in two different areas of your house.

Built-in protection

Fused B+ and B- power supply lines for each channel provide protection and eliminate the need for dissipation limiters that can cause tweeter-damaging clicks and pops. Complete speaker protection includes turn-on delay and thermal circuit breakers.

Hidden features found only in the finest receivers

Like any fine equipment, the AR-1650 has features you can only feel as you operate it. The special fly-wheel loaded tuning knob passes smoothly through the frequency spectrum. Stepped attenuator volume control gives you more accurate tracking between channels, even at low levels.

Not all extra features are hidden. A beautiful walnut veneer cabinet is standard with every AR-1650. And you have your choice of front panels: dramatic black anodized aluminum (AR-1650B) or elegant silver (natural) anodized aluminum (AR-1650S).

Heathkit Tech Consultants assure your satisfaction

Like all Heathkit projects, the AR-1650 comes with a detailed, easy-to-follow assembly manual. And experienced service technicians are just a phone call away should you need them. You have their assurance that your AR-1650 will produce the beautiful sound it was designed to produce. To ensure performance to specifications, the amplifier, tuner and IF multiplex circuit boards are factory assembled and tested. The AR-1650 is a ten-evening kit. Order yours today. It's a beautiful receiver in appearance and performance.

Kit AR-1650S, Silver front panel, 66 lbs. 779.95
 Kit AR-1650B, Black front panel, 66 lbs. 799.95
 Kit AJA-1600-2, Dolby FM Module, 1 lb. 49.95

See page 32 for special sale on receiver/speaker combos.

SPECIFICATIONS: FM Section Stereo: Sensitivity: 3.5 μ V (16.1 dBf) usable; 36 μ V (36.1 dBf) @ 50 dB signal-to-noise. Frequency response: * \pm 0.5 dB, 20 Hz to 15 kHz. Signal-to-noise ratio*: 73 dB. Total Harmonic Distortion*: 50 dB S/N; 0.5%. FM Section Mono: Frequency response: \pm 0.5 dB, 20 Hz to 15 kHz. Sensitivity*: 1.8 μ V (10.3 dBf) usable; 2.5 μ V (13.2 dBf) @ 50 dB signal-to-noise. Selectivity*: Wide IF bandwidth: 40 dB; Narrow IF bandwidth: 80 dB. Image Response Ratio*: 100 dB. AM Section: Sensitivity*: External antenna: 30 μ V; radiated: 250 μ V/Meter. Signal-to-noise Ratio*: External antenna: 50 dB; Radiated 45 dB. Total Harmonic Distortion: 400 Hz, 90% Mod: 0.5%. Frequency response*: +1 to -3 dB from 40 Hz to 3.5 kHz. Preamp*: Frequency response: Phono: RIAA \pm 2 dB from 20 Hz to 20 kHz; Aux: +0 to -2 dB from 20 Hz to 20 kHz. Total Harmonic Distortion: Phonos: .1%; Aux: 0.05%. Input Sensitivity: Phonos: 0.67 mV; aux 67 mV. Maximum Input Signal: Phonos: 150 mV; Aux: 10 V. Intermodulation Distortion: .05%. Amplifier*: Total Harmonic Distortion: less than .05%. Intermodulation Distortion: less than .05%. Frequency Response: 0 dB to -2 dB, 20 Hz to 20 kHz. Input Sensitivity: 0.12 V. Hum & Noise: -90 dB. Dimensions: 7" H x 21 $\frac{3}{4}$ " W x 16 $\frac{7}{8}$ " D. *IHF Standards

5% discount on complete Heathkit stereo systems

Choose: 1. a receiver like the AR-1650 and a pair of speakers like the ASX-1383's. Or: 2. an amplifier, pair of speakers and a program source (tape deck, tuner or turntable). Add up the cost of the individual components, then deduct 5% (excluding shipping and handling).

The same big 5% discount also applies to any accessories you order with your system — extra speakers, cabinets, tapes, phono cartridges, etc. — No limit!

It's just another way we give you great sound for less money.

5% discount is not applicable to special prices on page 32.

Superbly designed receivers give you thrilling sound



Now Only
\$499⁹⁵
SAVE \$130

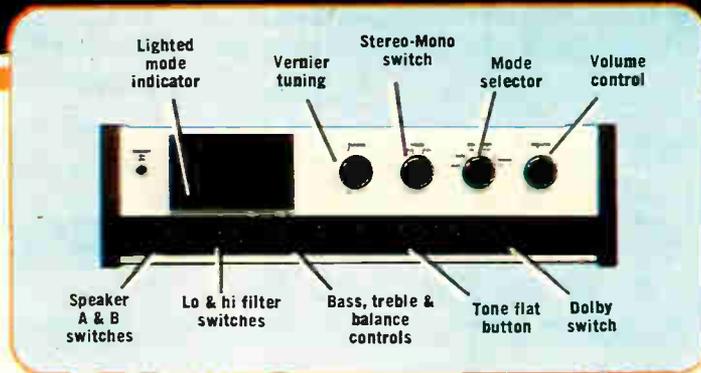
**70 WATTS, MINIMUM RMS, PER CHANNEL INTO
8 OHMS WITH LESS THAN 0.08% TOTAL
HARMONIC DISTORTION FROM 20-20,000 HZ**

Elegant and functional, the Heathkit AR-1515 is an exceptional stereo receiver. LED digital readout lets you tune to the frequency you want, far more accurately than dial-type tuning. Signal strength and center-channel meters help you zero in on the strongest signal and lowest FM distortion. There's even an oscilloscope output to monitor multipath distortion. The FM section features great 1.8 μ V sensitivity, and the optional AD-1504 Dolby Module (below) lets you enjoy reduced noise and even greater dynamic range. Dual-gate MOSFETs in the front end and a computer-designed 9-pole filter make the AM section one of the finest in any receiver! Heath builds in an extra margin of performance to assure clean, wide-range sound, over a background of silence, without audible strain or struggle. Preamp out/amp jacks allow an audio equalizer or noise reducer to be used. And modular design and color-coded wiring harnesses, along with a test meter to double-check your work, make the AR-1515 easy to assemble.

Kit AR-1515, Shpg. wt. 47 lbs. Was \$629.95, Now 499.95

Dolby FM Module, Kit AD-1504, Shpg. wt. 1 lb. 44.95

Save with a system — AR-1515 Receiver, two AS-1373 Speakers (details on page 32).
ARS-1515, Shpg. wt. 179 lbs. 699.90



High-performance amplifier section of the AR-1515 Stereo Receiver.

Kit AA-1515, Shpg. wt. 40 lbs. 299.95

AR-1515 SPECIFICATIONS: AMPLIFIER: Frequency Response: +0, -1 dB, 8 Hz to 45 kHz; +0, -3 dB, 4 Hz to 80 kHz. IM: Less than 0.08%, 0.25 to 70 watts. Damping Factor: Greater than 60. Input Sensitivity: Phono 1 & 2, 2 mV; Aux., Tape & Dub, 200 mV. Hum and Noise: Phono (2 mV ref.), -65 dB; Aux., Tape, Dub (200 mV ref.), -80 dB. FM Sensitivity: 1.8 μ V IHF. Selectivity: 100 dB IHF. Image Rejection: 90 dB IHF. Stereo Separation: 40 dB or greater at mid-frequencies. AM Sensitivity: 5 μ V with 50-ohm direct input. Selectivity: 20 dB at 10 kHz.



**15 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH
LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ**

AR-1219 SPECIFICATIONS: AMPLIFIER: Frequency Response: \pm 1 dB, 7 Hz to 100 kHz. IM: Less than 0.5%, full power; less than 0.2% at 1 W. Damping Factor: Greater than 30. Input Sensitivity: Phono, 2 mV; Tape, 190 mV. Hum and Noise: Phono, -60 dB; Tape, -65 dB. FM Sensitivity: 2 μ V IHF. Selectivity: 60 dB IHF. Image Rejection: 50 dB IHF. Stereo Separation: 40 dB typical, 35 dB minimum. Signal-to-Noise Ratio: 65 dB (65 dB). Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: 3 $\frac{7}{8}$ " H x 17" W x 13" D.

**This value-priced AM/FM stereo receiver delivers
clean, clear sound for your system at an affordable price**

\$229⁹⁵ • High-performance tuner sections
• 40 dB typical separation for spacious stereo sound

When it comes to giving you high quality, enjoyable stereo performance, the Heathkit AR-1219 is hard to beat! We've taken years of audio engineering excellence and packed them into a straight forward receiver that really performs! Just 15 watts per channel; but careful engineering makes sure the AR-1219 has none of the annoying colorations and imperfections of most low-cost systems. High-performance tuners give you excellent sensitivities of 100 μ V/M on AM and 2 μ V on FM. Includes headphone jack and speaker disconnect for private listening, tape monitor switch for extra convenience. Easy kit assembly.

Kit AR-1219, Shpg. wt. 18 lbs. 229.95

Save with a system — AR-1219 Receiver, two AS-1342 Speakers (details on page 32).
ARS-1219-2, Shpg. wt. 109 lbs. only 299.90

Now save \$80 on the heart of a beautiful sound system



Now only
\$299.95

35 WATTS, MINIMUM RMS, PER CHANNEL INTO 8 OHMS WITH LESS THAN 0.1% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

Here's a medium-power stereo receiver with specs that you'll find only on units costing a great deal more. It provides enough low-distortion power for almost any listening area. And specifications that mean true professional performance! FM sensitivity is an excellent $1.8 \mu\text{V}$ and stereo separation is 40 dB. Two 4-pole ceramic filters are used in the AM section for superb, distinct station selection. Two 8-pole ceramic filters in the FM section ensure excellent FM selectivity. An improved FM-PLL stereo demodulator provides excellent stereo reception with minimum distortion.

There are two high-level inputs, a magnetic phono input and pre-amp out/power-amp in jacks for audio accessories. A tape monitor lets you make professional style recordings. Attractive tuning scale has large, easy to read numbers. Signal and tuning meters make tuning easy and accurate. Complete controls include bass, treble and balance, FM mute and blend switches, loudness and tape-flat switches, so you can tailor the sound to your listening preference. For private listening, a headphone jack is provided on the front panel.

You can build and install the optional AD-1504 Dolby™ FM Module for the reduced noise and increased dynamic range of Dolby FM broadcasts.

Kit assembly is easy with modular circuit board construction and color-coded wiring harnesses. You'll find it hard to beat the AR-1429 without spending a lot more money. The cabinet with solid-walnut end panels (included) makes the AR-1429 a handsome addition to any decor.

Kit AR-1429, Shpg. wt. 32 lbs. Was \$379.95, Now 299.95
Kit AD-1504, Optional Dolby FM Module, Shpg. wt. 1 lb. 44.95

Save when you buy a Heathkit Audio System (see page 32 for complete details).
AR-1429 Receiver with two AS-1342 8" 2-Way Speaker Systems.
ARS-1429-1, Shpg. wt. 123 lbs. 399.90
AR-1429 Receiver with two AS-1344 Sound Column Speaker Systems.
ARS-1429-2, Shpg. wt. 164 lbs. 499.90

AR-1429 SPECIFICATIONS: AMPLIFIER — Frequency Response: -1 dB , 5 Hz to 45 kHz. Damping Factor: 60. Input Sensitivity: Phono, 2 mV; Aux. Tape and Tape Mon., 200 mV. Hum and Noise: Phono, -65 dB (-79 dB for 10 mV input); Aux., Tape and Tape Mon., -75 dB . Phone RIAA* Equalization: $\pm 1 \text{ dB}$ (30 Hz to 20 kHz). FM SECTION — Sensitivity: $1.8 \mu\text{V}^*$ (10.3 dBf) usable, $4.0 \mu\text{V}$ (27 dBf @ 50 dB signal to noise). Selectivity: 65 dB. Capture Ratio*: 1.8 dB; AM Suppression*: 48 dB; Image Rejection: 90 dB*. Stereo Separation: 40 dB, typ. at 1000 Hz. Frequency Response: $\pm 1 \text{ dB}$ from 20 to 15,000 Hz. AM SECTION — Sensitivity: $10 \mu\text{V}$. Selectivity: 20 dB. Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: $4\frac{3}{4}'' \text{ H} \times 20'' \text{ W} \times 13\frac{1}{2}'' \text{ D}$ (12.06 cm H x 50.8 cm W x 34.29 cm D). *Rated IHF (Institute of High Fidelity) Standards. Dolby is a trademark of Dolby Labs.

Value-priced Heathkit amplifier and tuner — good first-time kits for the beginning builder!



\$129.95

- Excellent sound that fits your pocketbook

15 WATTS MINIMUM RMS, INTO 8 OHMS WITH LESS THAN 0.5% TOTAL HARMONIC DISTORTION FROM 20-20,000 HZ

The Heathkit AA-1219 Stereo Amplifier features the same excellent specifications found in the amplifier section of the AR-1219 Receiver. Delivers 15 watts, minimum RMS, per channel. Intermodulation distortion is less than 0.5% at full power, less than 0.2% at 1 watt. Phono hum and noise are -60 dB , channel separation 55 dB — which adds up to beautiful sound! Styled to match AJ-1219.

Kit AA-1219, Shpg. wt. 15 lbs. 129.95



\$129.95

- AM/FM Stereo Tuner with great sensitivity and PLL circuitry

The AJ-1219's pre-assembled and aligned FM front end provides $2 \mu\text{V}$ sensitivity with extremely low cross modulation and no overload, even on strong FM signals. A phase lock loop (PLL) multiplex circuit provides excellent stereo separation with minimum distortion. Stereo separation is typically 40 dB, 35 dB minimum. The AJ-1219 also delivers excellent AM performance. Pushbutton band selection, stereo light. Inputs for FM antenna, built-in AM antenna. Handsome metal case with stained walnut veneer end panels.

Kit AJ-1219, Shpg. wt. 12 lbs. 129.95

Speakers to give you more from your music



sold in pairs only

This time-aligned speaker system gives you reduced diffraction for great sound

\$224⁹⁵
each

- Structural foam baffle
- Minimum transient distortion
- Brazilian rosewood cabinet

Heath engineering has designed the ultimate time-aligned speaker system. Instead of a conventional wood flat baffle, we chose one of molded structural foam so speaker elements can be time aligned and the vertical distance between drivers can be minimized. The result is closer approximation of a single point sound source for improved imaging and realism. Contoured surfaces reduce diffraction for smooth frequency and phase response.

This baffle combines with specially selected 10" woofer, 5" midrange and 1" soft dome tweeter, all connected through a constant-voltage crossover network, for flat frequency and phase response.

The cabinet is of matched Brazilian rosewood veneers

with a charcoal black, acoustically transparent grille. All this combines to make the ASX-1383 the most natural sounding speaker offered.

Don't take our word for it, though. Listen to the KEF, Daulquist, B&W or other time-aligned systems. Then stop in at your nearest Heathkit Electronic Center to hear the ASX-1383s. You'll agree that they match up in every respect...and beat the others' prices. The ASX-1383s are sold in matched pairs only.

Kit ASX-1383, 114 lbs. Motor Freight ... pair 449.90

ASX-1383 SPECIFICATIONS: Frequency Range (-10 dB): 30 Hz to 30 kHz. Frequency Response: ± 3 dB, 40 Hz to 25 kHz. Impedance: 8 ohms. Recommended Amplifier Power: 10 watts minimum to 200 watts (fused for larger amplifiers). Crossover Frequencies: 750 Hz, 400 Hz. Fuses: Woofer, 1 amp slow-blow; midrange, 1/2-amp slow-blow; tweeter, 1/2-amp regular. Dimensions: 36" H x 13 1/2" W x 13 1/4" D (96 cm H x 34.3 cm W x 33.7 cm D).

This three-way floor/shelf speaker system produces truly beautiful sound

\$189⁹⁵
each

- You can build for either shelf or floor placement
- Great first-time kit

A truly outstanding floor/shelf speaker system, for use with the best components. The 10" woofer provides solid, well-defined bass. The woofer to midrange crossover frequency is 500 Hz to minimize IM distortion and insure smoothness. The 4 1/2" midrange is isolated in its own polyester-damped sub-enclosure to prevent distortion caused by woofer vibrations and reflections. The 1" dome tweeter provides excellent power handling and definition, and features horizontal dispersion of a full 120° even at 12,000 Hz. All three drivers are flush mounted, and there are no "rails" around the cabinet to limit treble dispersion. For best stereo imaging, you can position the tweeter directly above the midrange whether you position the system vertically or horizontally — a Heath exclusive! While the AS-1373 can be used with almost any amplifier, a high-power am-

plifier like the AA-1640 reveals its awesome dynamic range and clarity. Has individual fusing for each driver, two high-frequency controls to match response to your listening area. Fully assembled walnut-finish veneer cabinet with deluxe, acoustically transparent foam grille, make this speaker system look as good as it sounds. With an easy-to-follow assembly manual, the AS-1373 is easy-to-build, even for first-time kitbuilders.

Kit AS-1373, 68 lbs. UPS 189.95

Kit AS-1373-2, 141 lbs. UPS pair 359.95

AS-1373 SPECIFICATIONS: Frequency Range (-10 dB): 30 Hz to 22 kHz. Frequency Response: ± 3 dB, 40 Hz to 20 kHz. Impedance: 8 ohms. Recommended amplifier power: 10 watts min. to 200 watts. (fused for larger amplifiers). Crossover frequencies: 500 Hz (12 dB octave) and 3000 Hz (12 dB/octave). Fuses: Woofer, 1/4 amp Slow Blow; midrange, 3/4-amp Slow-Blow, tweeter, 1/2-amp regular. Controls: 3 kHz shelf/flat; 10 kHz rolloff/flat. Dimensions: 26" H x 14 1/2" W x 12 1/8" D.

High-power three-way speaker system gives you a massive 15" slot-loaded woofer

\$349⁹⁵
each

- Ideal for disco and rock
- Extra wide dynamic range
- Handles up to 250 watts

Designed for use with the finest stereo components, the AS-1348 offers the bass power and extra wide dynamic range you want to reproduce any kind of music realistically. Combines a massive 15" slot-loaded woofer, two 4 1/2" midrange speakers and three 1" tweeters in a precision-designed cabinet. Has dynamic range from below 30 Hz to above 20 kHz. The woofer is mounted in the rear of the cabinet to improve low-frequency response. The two midrange drivers radiate directly forward for excellent presence and realism. The three tweeters face forward, angle right and angle left for high-frequency response with outstanding dispersion.

While most conventional speaker systems produce maximum sound levels only at upper bass and midrange frequencies, the AS-1348 produces very high sound levels without distortion at ALL audible frequencies. Has individual fuses for woofer, midranges

and tweeters, 14 position attenuation controls for adjusting response characteristics to any listening area. Fully assembled, acoustic-suspension enclosure with walnut and oak veneer finish. Acoustically transparent grille cloth is removable. The AS-1348 does justice to the finest stereo systems in both sound and appearance. This fine Heathkit three-way speaker system is a kitbuilding experience that will bring you years of stereo listening enjoyment. 8 ohms impedance. 38" H x 24" W x 15" D.

Kit AS-1348, 110 lbs. Motor Freight 349.95

Kit AS-1348-2, 220 lbs. Motor Freight ... pair 659.95

AS-1348 SPECIFICATIONS: Frequency Range (-10 dB): 22 Hz to 22 kHz. Frequency Response: ± 3 dB, 28 Hz to 20 kHz. Impedance: 8 ohms nominal. Recommended amplifier power: 8 watts min. to 250 watts (fused for larger amplifiers). Crossover frequencies: 500 Hz (12 dB/octave) woofer-to-midrange and 3000 Hz (6 and 12 dB/octave) midrange-to-tweeter. Fuses: Woofer, 1 1/2-amp Slow-Blow; midrange, 3/8-amp Slow-Blow; tweeter, 1-amp regular Blow. Dimensions: 38" H x 24" W x 15" D. (96.52 x 60.96 x 38.1 cm.).



Heathkit designs for beautiful sound

Budget-priced, full-range three-way bookshelf speaker gives excellent sound

The AS-1363 Three-Way Bookshelf Speaker System is engineered to give you smooth sound, anywhere in a room. Its 10-inch woofer produces a good combination of transient response, dynamic range, deep bass output, efficiency and low distortion. With a 4½" midrange and 1" dome tweeter, you get 45 Hz to 18 kHz frequency response, ±3 dB.

Recommended for amplifier of up to 40 watts per

channel with normal program material, the AS-1363 has adjustable flat or -3 dB midrange and tweeter level controls, to tailor the sound to your room. Impedance, 8 ohms nominal. The 1.5 cubic foot cabinet is designed to give excellent bass response. Dimensions, 24¾" H x 14¼" W x 11½" D.

Kit AS-1363, Shpg. wt. 55 lbs., UPS . . . each 149.95
Kit AS-1363-2, Shpg. wt. 128 lbs., UPS . . pair 269.95



1 High-efficiency 2-way reflex speaker

The AS-1342 Reflex Design Speaker System provides excellent high-fidelity music reproduction, yet requires a comparatively low-powered amplifier to efficiently drive it. For normal operation, as little as five watts of continuous power per channel — or as much as 20 watts per channel — can properly drive the AS-1342.

This medium-sized speaker can be placed in just about any position — vertically or horizontally, at any point 12 inches or more above the floor. Wherever you place it, the AS-1342 has good 60 to 14,000 Hz frequency response. And a continuous tweeter level control lets you adjust the output level of the 2" x 6" horn-type tweeter to suit the acoustics of almost any room. Impedance, 8 ohms nominal. Dimensions, 22¼" H x 12" W x 10½" D.

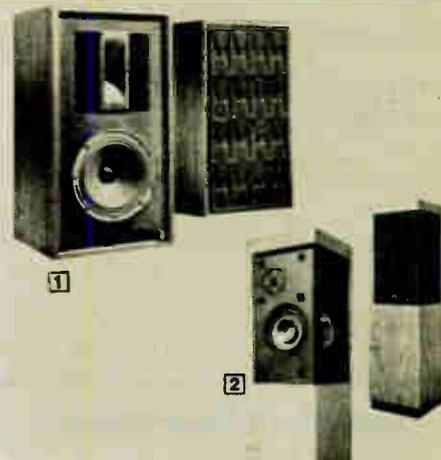
Kit AS-1342, Shpg. wt. 32 lbs., UPS . . . each 89.95
Kit AS-1342-2, Shpg. wt. 78 lbs., UPS . . pair 169.95

2 2-way Sound Column speaker system

Here's a speaker that sounds outstanding, no matter where you sit in the room. Two 6½" full-range drivers and two 1" dome tweeters are mounted in separate woofer-tweeter arrays on adjacent sides of the cabinet to produce omnidirectional sound.

The woofers are located well above the floor, so bass response is solid and well-defined. With no mid-bass boom or resonance, mid-frequencies come through loud and clear. The tweeters deliver a full 10 to 20 dB more off-axis response than conventional tweeters for bright, clean highs. Flat/-3 dB tweeter level controls let you tailor the sound to each particular room setting. Have 4 ohms nominal impedance, so most amplifiers deliver up to TWICE their rated 8-ohm power. Handles 6 to 30 watts. Dimensions, 40" H x 11" W x 11" D.

Kit AS-1344, Shpg. wt. 57 lbs., UPS . . . each 149.95
Kit AS-1344-2, Shpg. wt. 122 lbs., UPS . . pair 279.95



Whatever your audio system, we have the turntable and cartridge that fit your needs

Choose from our complete selection of quality turntables

Base and dust cover are included when you buy a turntable from Heath.

MODEL	FUNCTION	DRIVE	RUMBLE, DIN-B (dB)	WOW AND FLUTTER, WRMS (%)	MFR.'S SUGG. PRICE	HEATH PRICE
Dual 714Q ACP-1466, 22 lbs.	Auto-stop only, DC quartz PLL control	DC Gapless	-78	0.015	\$479.95	449.95
Dual 622 ACP-1465, 19 lbs.	Single play, auto start/stop, continuous repeat	DC Direct	-75	0.03	\$319.95	299.95
Dual 1264 Chgr. ACP-1464, 17 lbs.	1 to 6 records, cont. repeat, anti-resonance filter	Belt	-70	0.04	\$275.00	249.95
B•I•C 80Z Chgr. ACP-1463, 21 lbs.	Microprocessor control, 4-digit display, 1-6 records	Belt/Quartz Dig. Servo	-70	0.06	\$239.95	209.95
B•I•C 40Z Chgr. ACP-1462, 19 lbs.	1-6 records, repeat play, 9" static-bal. tone arm	Belt	-68	0.08	\$149.95	129.95



B•I•C

• ACP-1463 (B•I•C 80Z)

Dual

• ACP-1466 (Dual 714Q)

An unbeatable selection of quality and price. B•I•C changers provide more quality and features for your turntable dollars. Dual turntables and changers are built to exacting specifications and provide uncompromising performance for years to come.

Ortofon Cartridge for Dual Turntables and Changers. The latest in technology — ultra-low 0.35 gm moving stylus mass protects records. Use with all Dual products except ACP-1466. Mfr.'s price \$110.00.

ADP-1293, Shpg. wt. 1 lb. Our Price 79.95
With Dual turntable or changer 59.95

Improve your system with a famous-brand stereo cartridge

Save from mfr.'s prices. Save up to \$85.00 when you order with a turntable.

MODEL	RESPONSE (Hz)	OUTPUT	SEPARATION	STYLUS	TRACKING FORCE	MFR.'S PRICE	HEATH PRICE	WITH TURNTABLE
Shure V-15 Type IV ADP-1259, 1 lb.	10-25,000	4.0 mV	25 dB	Elliptical 0.2 x 0.7	¾ to 1¼ gm.	\$165.00	109.95	89.95
Audio-Tech. AT-14SA ADP-1139, 1 lb.	5-45,000	2.7 mV	25 dB	Shibata	¾ to 1¾ gm.	\$150.00	89.95	69.95
Audio-Tech. AT-30E ADP-1294, 1 lb. Needs preamp like AP-1800 (page 33).	15-25,000	0.28 mV	25 dB	Elliptical 0.3 x 0.7; User Replaceable	1.4 to 2.0 gm.	\$125.00	79.95	59.95
Shure V-15 Type III AD-1059, 1 lb.	10-25,000	3.5 mV	25 dB	Elliptical 0.2 x 0.7	¾ to 1¼ gm.	\$103.00	89.95	69.95
Empire 2000E/III ADP-1147, 1 lb.	20-20,000	4.5 mV	28 dB	Elliptical 0.2 x 0.7	½ to 1½ gm.	\$ 85.00	59.95	19.95
Shure M91ED ADP-1062, 1 lb.	20-20,000	5.0 mV	25 dB	Elliptical 0.2 x 0.7	¾ to 1½ gm.	\$ 64.00	54.95	24.95

Keep your records clean, static-free



• Disckit™ by Discwasher helps records sound better and last longer

Keeps records and cartridge clean for better sound and longer life. Includes Discwasher record brush, fluid, anti-static pistol, test light and precision stylus cleaner.

ADP-1286, Shpg. wt. 4 lbs. 49.95

Home and auto tape decks to give you superb stereo listening



Fine enough to include in the Pro-Series

\$799⁹⁵

- Metal tape capability
- 3 heads and dual capstan
- 2-motor/full-logic operation

B-I-C® gives you unmatched reproduction quality in cassette tapes. The T-4M (Heathkit Model No. ATP-1484) is B-I-C's most advanced 2-speed deck, for use with top-quality audio components like the Heathkit Pro-Series. (Mount the T-4M in the Pro-Series rack with optional adapter below). Even at 1 7/8 ips, it produces sound comparable to units costing a thousand dollars or more. When you use high-quality metal particle tape, the T-4M can attain a signal-to-noise ratio of 71 dB at 3 3/4 ips with

Dolby™ noise reduction! Frequency response at 3 3/4 ips is a wide 20-23,000 Hz, ±3 dB. Record calibration, microprocessor control, electronic digital readout and 45 dB peak indicating bar graph display help you maintain better control of recordings. Mic/line mixing, Dolby FM copy, three-head record/play configuration let you make creative recordings. Rosewood vinyl case measures 6 7/8" H x 17 1/2" W x 10 1/4" D. 120 VAC.

ATP-1484, Fully Assembled. Shpg. wt. 22 lbs. 799.95

Optional Rack Mount Adapter to mount ATP-1484 in Pro-Series Rack.

ATA-1484-1, Shpg. wt. 2 lbs. 24.95



Save \$20 when you put the B-I-C C1 2-speed cassette deck in your car

Plays metal tapes. 12W RMS per channel, 40 Hz-20 kHz response, less than 1% THD and .08% WRMS wow and flutter at 3 3/4 ips. 58 dB S/N ratio, 10 dB Dolby NR. Mfr.'s sugg. price \$229.95.

C1P-1541, Assembled, 6 lbs. Was \$219.95, Now 199.95



Make great tapes with this 2-speed deck

The B-I-C T-2 (Heathkit Model No. ATP-1482) is a quality intermediate-priced two-speed cassette deck with Dolby. Frequency response is excellent — 30-21,000 Hz at 3 3/4 ips; wow and flutter a mere 0.04%, and S/N with Dolby is 66 dB. 6" H x 16 1/4" W x 9 3/4" D.

ATP-1482, Fully Assembled, wt. 15 lbs. 329.95

Budget-price but not budget performance

The B-I-C T-1 Deck (Heathkit Model No. ATP-1481) has many features of our higher-priced decks. 35-20,000 Hz response at 3 3/4 ips. 6" H x 15 1/2" W x 9 1/4" D.

ATP-1481, Fully Assembled, wt. 14 lbs. 279.95

Digital AM/FM Stereo/Cassette



You get performance rivaling home stereos from the Clarion PE-958A (Heathkit Model No. CCP-1393). New Magi-Tune™ SASC/PLL FM circuitry drastically reduces static, combining 1.5 μV FM sensitivity with 80 dB selectivity for great reception, optimum clarity. Local/DX FM switch. Seek, scan buttons find stations. AM sensitivity, a good 26 dB. 5 AM, 5 FM pushbuttons.

Cassette unit features 62 dB S/N ratio with Dolby NR, EQ and metal tape; UTC auto-reverse, locking rewind and fast forward. Digital display doubles as accurate quartz clock. Freq. Response, 30 Hz-15 kHz; Wow and Flutter, less than .13% WRMS. Fully assembled and tested, ready to install. Includes CAP-1392 amp. For 12 VDC, neg. gnd. 2.36" H x 7.08" W x 6.61" D. Can use CDP-1395, CEP-1394 at right.

CCP-1393, Assembled, Shpg. wt. 12 lbs., Mfr.'s price \$519.90 Our Price 399.95

Assembled Power Amp for CCP-1393



Clarion GA-302E delivers 30 W RMS/channel into 4 ohms w/less than 1% THD from 40-20,000 Hz. 4.92" H x 5.51" W x 3.94" D.

CAP-1392, 5 lbs., Mfr.'s price \$99.95 79.95

Clarion High-Power Fader



RKA-055 Fader controls front/rear sound balance in 4-speaker systems. For CCP-1393 or CAP-1392 Amps. Dimensions, 1.97" H x 2.71" W x 0.55" D.

CDP-1395, Shpg. wt. 1 lb. 19.95

Assembled Clarion Graphic Equalizer



EE-115 lets you custom mix highs and lows to your personal tastes. Use this assembled unit

with your CCP-1393 or CRP-1391 Car Stereo System. For 12 VDC, negative ground. Dimensions, 1.97" H x 7.09" W x 6.30" D.

CEP-1394, 2 lbs., Mfr.'s price \$54.95 44.95

High-power Stereo/Cassette



Pushbutton car stereo excellence — that's the Clarion PE-751B (Heathkit Model No. CRP-1391). Magi-Tune FM circuitry eliminates static. Local/DX switch. FM noise eliminator plug. 5 pushbuttons.

Cassette unit has Dolby noise reduction, UTC auto-reverse, locking rewind/fast forward. 12 W RMS per channel, into 4 ohms w/less than 1% THD from 40 Hz-20 kHz. Wow and flutter, .13% WRMS. For 12 VDC, neg. gnd. 1.96" H x 7.09" W x 6.30" D. Nose, 1.73" H x 4.13" W. CEP-1394 EQ and CDP-1395 Fader can only be used with CAP-1392 Power Amp, added to CRP-1391.

CRP-1391, Assembled, Shpg. wt. 8 lbs., Mfr.'s price \$389.95 Our Price 299.95

Clarion speakers enhance your music



1 SK-103 8" x 10" 3-Way Deck Mount Speaker Systems fit without custom installation. Mfr.'s price \$174.50.

CSP-1396, 15 lbs. 129.95



2 Same as above, in 4" x 10" size to fit compacts. Mfr.'s price \$156.50. CSP-1397 (SK-102), 12 lbs. 119.95

2 SK-89 8" x 10" 2-Way Deck Flush Mount System. CSP-1261, 10 lbs., Mfr.'s price \$67.95 Our Price 59.95

Clarion In-Dash Cassette Stereo

AM/FM Stereo/Cassette system. FET front end, rewind/fast forward, automatic reverse. 12 VDC, neg. gnd. 2" H x 7 1/8" W x 5 1/2" D.

CRP-1267, 6 lbs., Mfr.'s price \$252.95 169.95

Clarion In-Dash 8-Track Stereo

PE-623B, similar to CRP-1267, except 8-track.

CRP-1266, 5 lbs., Mfr.'s price \$163.95 119.95

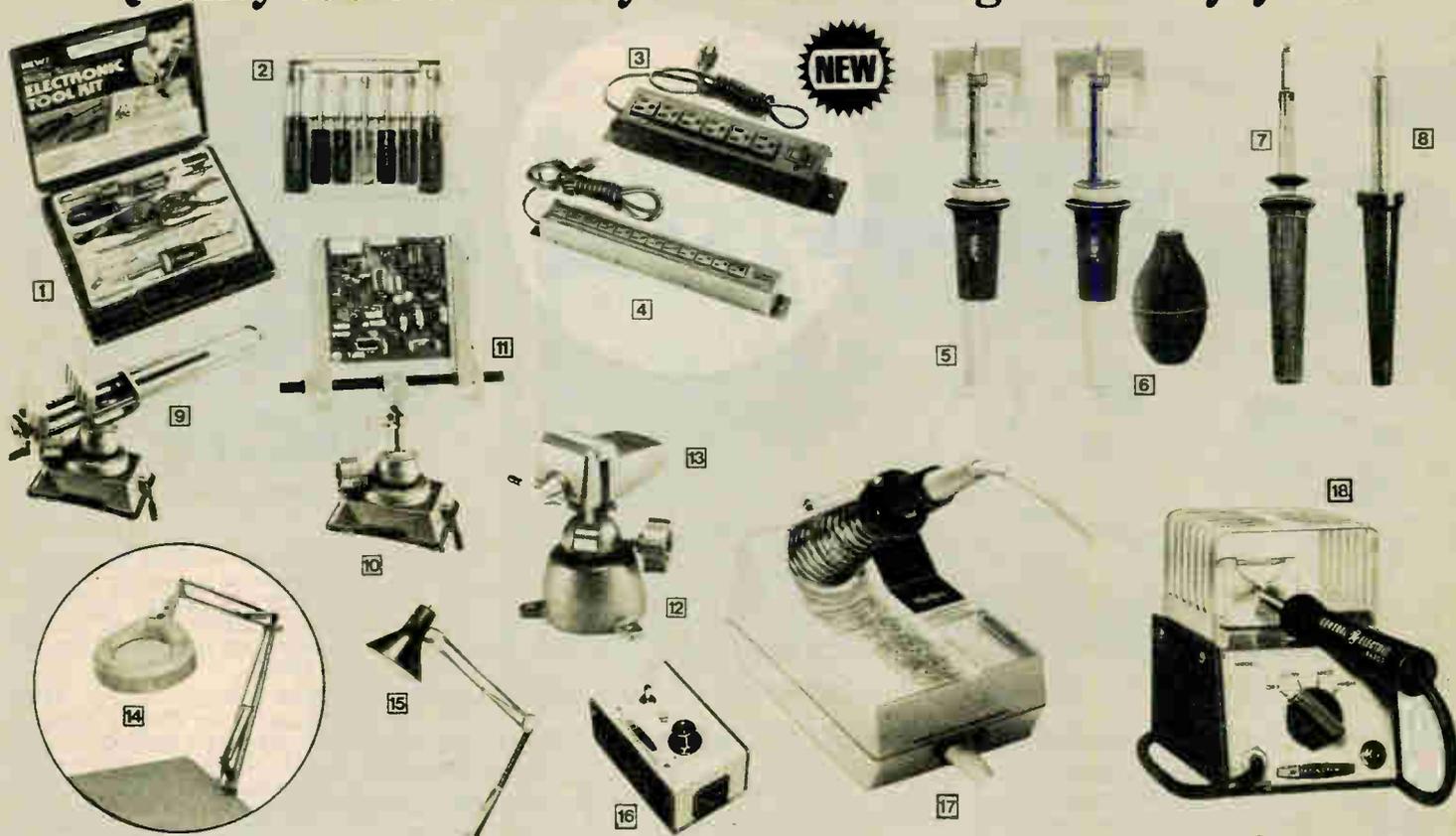
Matching EQ/15 W RMS Amp



The 100EQB3 tailors CRP-1266 and CRP-1267 sound to your preferences. 12 VDC, neg. gnd. 1.85" H x 5.51" W x 6.50" D.

CAP-1264, Shpg. wt. 4 lbs., Mfr.'s price \$124.95 89.95

Quality tools to make your kitbuilding more enjoyable



1 Kitbuilder's Tool Set. Includes wire stripper; diagonal side cutter; small long-nose pliers; three screwdrivers ($\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{3}{16}$ ""); Weller WP-25 soldering iron; nut driver; nut starter; soldering aid; and solder. GDP-1270, Shpg. wt. 3 lbs. 34.95

2 Heathkit Nut Driver Set. $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", and $\frac{3}{4}$ " sizes. GDP-204, Shpg. wt. 2 lbs. 13.95

3 NEW! Six-socket Multiple Outlet Box eliminates long extension cords. Has 6 three-hole outlets — 5 switched for killing power to equipment, 1 unswitched to leave clock running. 10 A max. load. Includes fuse, fuse holder, 6' cord. 120 VAC. Kit HD-1360, Shpg. wt. 2 lbs. 12.95

4 Twelve-socket Multiple Outlet Box. As above, but has 11 switched outlets, 1 unswitched to double your convenience in workshop or garage. 12' cord. Kit HD-1274, Shpg. wt. 4 lbs. 17.95

5 Heath-approved Weller 25-Watt Pencil Soldering Iron. $\frac{1}{8}$ " chisel tip develops 860° heat. GDP-207, Shpg. wt. 1 lb. 13.95

6 Solder/de-Solder Set. As above, with de-solder bulb. Weller 25-watt pencil iron develops 860°. Includes de-solder, bulb. GDP-1009, Shpg. wt. 1 lb. 17.95

7 Soldering Iron for close work. Wall 25-watt pencil soldering iron for work on high-density boards. 3-wire cord. For 120 VAC. GDP-1231, Shpg. wt. 1 lb. 7.95

8 Heath Approved Soldering Iron for use on high-density circuit boards. 40 watts with standard tip. GDP-1105, Shpg. wt. 1 lb. 7.95

9 Vertical Jaw Vise Head — for most standard hobby uses. Nylon jaws open to 2 $\frac{1}{4}$ " to provide a firm grip without marring work objects. GDP-1253, Shpg. wt. 2 lbs. 14.95

10 Vacuum Base — Attaches securely to any smooth, non-porous surface. Powerful rubber suction pad holds without marring tabletop. Perfect where permanent mounting is not practical. Overall height, 3 $\frac{3}{8}$ ". Base dimensions: 5" x 4 $\frac{1}{4}$ ". GDP-1252, Shpg. wt. 2 lbs. 17.95

11 Circuit Board Holder. Holds most any shape or size circuit board. Spring loaded for quick change. Tilts 220 degrees. Fits vacuum or standard base. GDP-1254, Shpg. wt. 2 lbs. 18.95

12 Standard Height Base — Designed for permanent installation. Three mounting lugs let you attach it securely to the work surface. Choose desired vice head from three styles listed. GDP-1251, Shpg. wt. 2 lbs. 13.95

13 Vertical Vise Head — Holds bulkier items — model parts, chassis, etc. Jaws open to 6 $\frac{1}{2}$ ". Neoprene pads are reversible and replaceable. GDP-1255, Shpg. wt. 2 lbs. 13.95

14 Illuminated Magnifier Kit. Fluorescent lighting and 5" diameter 3 diopter lens take the strain out of close work at your bench. Clamps to horizontal surface. 360° movement, 45" reach. Requires 22-watt T-9 Circline fluorescent tube (not included). Easy mechanical assembly only. 120 VAC only. Kit GDP-200, Shpg. wt. 7 lbs. 59.95

15 Extension Lamp Kit. 34" extension arm is pre-assembled. You attach socket, vented shade, cord. 360° sweep; moveable base clamp. Less bulb. Kit GDP-202, Shpg. wt. 4 lbs. 19.95

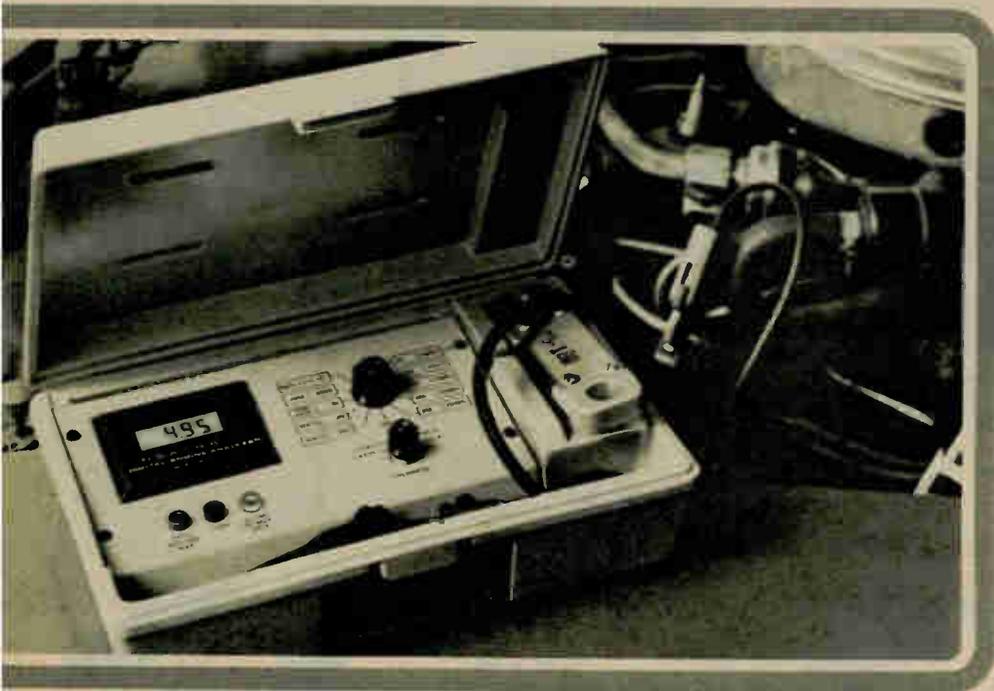
16 Motor Speed Control. Ideal for use with any universal motor rated 15 amps or less. Saves power, blades, bits, etc. Lets you use a large drill on metal at slow speed to keep motor cool. (Not for use with Dremel tools). 120 VAC. 3 $\frac{1}{2}$ " H x 3 $\frac{3}{4}$ " W x 6" D. Kit GD-973A, Shpg. wt. 2 lbs. 29.95

17 Heat Controlled Solder Station. Transformer-powered Weller WTCPN soldering station with "closed loop" control of tip temperature. Has heat shield, indicator lamp, sponge, 700° F tip. GDP-1108, Shpg. wt. 5 lbs. 69.95

Set of Replacement Tips for above (all 700°F). Set includes: $\frac{1}{16}$ " Screwdriver, $\frac{1}{8}$ " Screwdriver, $\frac{3}{16}$ " Screwdriver, $\frac{1}{32}$ " Long Conical, $\frac{3}{4}$ " Long Screwdriver. GDP-1109, Shpg. wt. 1 lb. 12.95

18 3-Heat Soldering Iron Kit. Stand with metal cage keeps iron secure. 3 heat settings. Six-foot power cord. 120 VAC. Cabinet is 5 $\frac{1}{8}$ " H x 3 $\frac{3}{8}$ " W x 5 $\frac{1}{2}$ " D. Kit GH-17A, Shpg. wt. 5 lbs. 39.95

Save energy—tune up with Heathkit auto instruments



This low-priced portable Heathkit Engine Analyzer gives you digital accuracy!

\$94⁹⁵

- Measures dwell, RPMs, DC voltage, resistance and direct current
- Battery-operated — fewer clumsy wires
- Even does 5-cylinder engines

You will like this new CM-1550 Engine Analyzer — a versatile, accurate and portable digital engine analyzer at a price to fit your budget! You get all these critical tune-up measurements: Dwell for 4 through 8-cylinder engines, accurate to $\pm 0.2\%$; RPMs to 10,000 in two ranges, $\pm 0.1\%$; DC Voltage, in two ranges, to 200 Volts, $\pm 1.5\%$; and Resistance to 2.0 megohms, $\pm 1.5\%$, in three ranges.

With the optional CMA-1550-1 Shunt Accessory, the CM-1550 is one of the few analyzers in its price range that can measure starting current and battery

charge and discharge current — up to 400 amps with $\pm 5\%$ accuracy! And the CM-1550 has a large liquid crystal display that's easy to read.

Power is supplied by a 9-volt battery (not included), which means there are fewer clumsy wires under the hood. The CM-1550's inductive pickup for tach readings is simply attached to any spark plug wire with easy-to-use alligator clips. Thermal insulation on the wiring resists melting or burning under high heat conditions.

Assembles easily in two or three evenings, with just one circuit board. The CM-1550 can be easily calibrated from internal references — no special tools are required. For any spark-ignited engine, whether standard or electronic ignition. Convenient, light plastic carrying case included.

Only Heath puts so much versatility, performance and value into a self-powered portable digital engine analyzer! The CM-1550 (with optional CMA-1550-1 Shunt Accessory shown above) can even measure strong starting, battery charging and battery discharging currents safely.

Kit CM-1550, Shpg. wt. 5 lbs. **94.95**

400 Amp Shunt Accessory for CM-1550 Analyzer. Required to use 400 amp range of CM-1550.

CMA-1550-1, Shpg. wt. 1 lb. **14.95**

CM-1550 SPECIFICATIONS: Dwell Meter: Four dwell scales: 4 cylinders, 0° to 90° , $\pm 0.2\%$; 5 cylinders, 0° to 72° , $\pm 0.2\%$; 6 cylinders, 0° to 60° , $\pm 0.2\%$; 8 cylinders, 0° to 45° , $\pm 0.2\%$. Tachometer: Two RPM ranges: 0.00 to 10.0 (x1000), $\pm 0.1\%$ of indication; 0 to 1999, ± 10 RPM. DC Voltmeter: Two voltage scales: 0 to 199.9 V, $\pm 1.5\%$; 0 to 199.9 V, $\pm 1.5\%$. Ohmmeter: Three resistance scales: 0 to 199.9 ohms; 0 to 19.99 kilohms; 0 to 1.999 megohms, all $\pm 1.5\%$. Direct Current: Two current ranges: 0 to 19.99 amperes, $\pm 3\%$ (standard); 0 to 400 amperes, $\pm 5\%$ (requires optional CMA-1550-1 Shunt Accessory). Operating Temperatures: 0° to 140°F (-18° to $+60^\circ\text{C}$). Power Requirement: 9-volt NEDA 1604 battery. Battery Life: up to 200 hours with alkaline battery. Lo-Bat indicated in last 20% of battery life. Overrange Indicator: Most significant "1" lighted, all other digits blank. Dimensions: $3\frac{1}{2}''$ H x $12\frac{1}{2}''$ W x $8''$ D.

Extra-versatile Timing Light with advance meter and built-in tachometer



\$69⁹⁵

Press the trigger to get a super-bright timing flash and a meter indication of distributor advance in degrees. Take your finger off the trigger to measure engine RPMs. Measures mech. or vacuum advance to 60° from 1500 to 4500 RPM, engine speed to 4500 RPM. Works with all ignition systems. 12 VDC. Kit CI-1096, Shpg. wt. 4 lbs. . . . **69.95**

Use this Timing Light in bright daylight!



\$34⁹⁵

Budget-priced, yet powerful!

Recommended for GM HEI and other systems. Features handy inductive pickup that clips directly around #1 sparkplug wire. Super-bright xenon flash lamp can be easily seen, even outdoors. Useful light range up to 2 ft. in daylight. Polarity protected. Powered by your car's battery or a separate 12 VDC supply. With all cables, pickup, clips. $6\frac{1}{2}''$ H x $2''$ W x $10''$ L.

Kit CI-1040, Shpg. wt. 3 lbs. **34.95**

Save \$10 on this Self-powered Timing Light and Tachometer



\$49⁹⁵

The first self-powered, professional-quality timing light — no need for battery connections or clumsy wires! Just connect to #1 spark plug. Bright timing light. Tach measures to 6000 RPM. Includes rechargeable battery and battery pack. For 12 VDC ignition systems. $7\frac{1}{4}''$ H x $2\frac{5}{8}''$ W x $11\frac{1}{2}''$ L. Kit CI-1098, 4 lbs. Was \$59.95, Now . . . **49.95**

Save more with Heathkit professional-quality auto test equipment



Professional-quality Ignition Analyzer assures you of precision auto tuneup

\$479⁹⁵

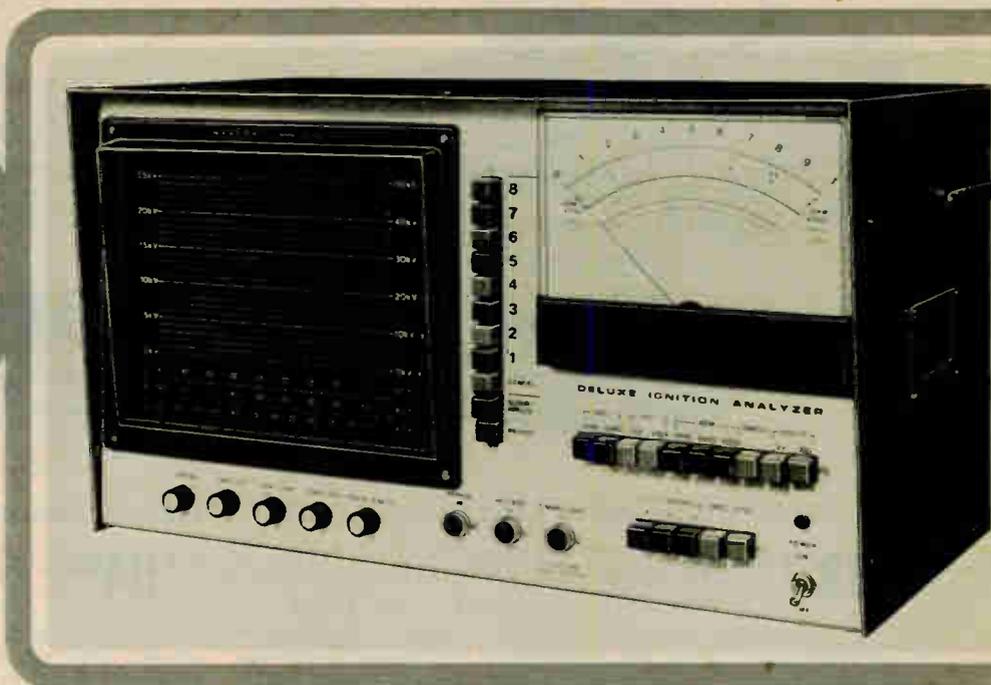
- Pushbutton for individual or multiple cylinders
- Parade and superimpose
- Cylinder shorting for balance

The Heath CO-2600 provides the most asked for features in an ignition analyzer of this quality. Rock steady parade patterns are made possible by the latest design in inductive pickup circuitry and switch selection of number of cylinders — four, six or eight. Dwell, RPM and voltage measurements are indicated on the big eight-inch meter.

Has two voltage ranges — 0-2 V for corroded connections and points measurements and 0-20 V for battery condition and general distribution checks.

Cylinder selection buttons can be pushed in multiple numbers so that banks of cylinders can be shorted for carburetor balance and for display of one or more cylinders. Both parade and super-imposed displays of primary or secondary waveforms at two different amplitudes are available on the 12" diagonal CRT.

Rugged high-temperature oil and gas resistant neoprene cables provide easy, positive connections to



engine. Includes adaptor for GM HEI ignition systems. For use with 4, 6, or 8-cylinder (4-cycle) or 2-rotor Wankel engines and standard, transistorized or C-D ignition systems. With Heath's excellent manuals to guide you, you'll find assembly and operation of the CO-2600 to be a simple matter. This quality instrument measures 12 $\frac{7}{8}$ " H x 25 $\frac{1}{4}$ " W x 14 $\frac{1}{8}$ " D.

Kit CO-2600, Shpg. wt. 83 lbs. 479.95

COA-2600-2, Alternator Test Adaptor, 1 lb. ... 12.95

Kit COA-2600-4, Timing Light/Advance Meter.

Plugs directly into CO-2600 and provides a bright flash that can be seen even in daylight. Has built-in advance meter to measure distributor advance to 60 degrees from 1500 to 4500 rpm. All cables included.

Shpg. wt. 3 lbs. 56.95

WOA-2500-1, Assembled Timing Light.

Shpg. wt. 3 lbs. 29.95

CO-2600 SPECIFICATIONS: For Use With: Standard, transistorized, or C-D ignition systems. 4, 6, or 8-cylinder (4-cycle), or 2-rotor Wankel engines. Signal Pickup: Direct for primary, inductive for parade trigger, and capacitive for secondary. Tachometer and Voltmeter Accuracy: $\pm 3\%$ of full scale on any range. Scope Vertical Expand: Min. 2 to 1. Operating Temp. Range: 32°F to 104°F. Tachometer: 1000 rpm, 3000 rpm, 6000 rpm. Voltmeter: 2 or 20 VDC. Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: 12 $\frac{7}{8}$ " H x 25 $\frac{1}{4}$ " W x 14 $\frac{1}{8}$ " D.



Deluxe Scope Cart

Keeps CO-2600 at ideal viewing angle for easy reading.

COA-2600-3, Shpg. wt. 25 lbs. 44.95

Handy universal Tune-up Meter for most small engines

Tests volts, ohms, dwell, continuity on 1-4 cylinder, 2 & 4 cycle engines

This handy, easy-to-operate meter helps you keep your small engines at top efficiency. Ideal for garden tractor, lawn mower, motorcycle, snowmobile, outboard motors, small cars — all small engines including Briggs and Stratton. Tests volts, ohms, dwell and continuity on 1 to 4 cylinder, 2 and 4 cycle engines. Built-in tach and snap-on pickup for easy setup and use. Requires three 1.5 V cells. (Batteries not included).

Kit CM-2045, Shpg. wt. 4 lbs. 54.95



CM-2045 SPECIFICATIONS: Voltmeter: 0-20 V DC. Ohmmeter: 0-100 k Ω (10 k Ω center scale). Tachometer: 0-3000 rpm, 0-15000 rpm. Dwell Meter: 1 cyl. 90°-360°; 2 cyl. 40°-180°; 3 cyl. 30°-120°; 4 cyl. 20°-90°. Dimensions: 9 $\frac{1}{8}$ " H x 9 $\frac{3}{8}$ " W x 5 $\frac{1}{4}$ " D.

Economy three-in-one Tune-up Meter

Just two leads to connect to the engine; draws its power from car battery

Combines a distributor cam dwell meter, an electronic tachometer and a DC voltmeter in a single, compact unit. Can be used with both 6 and 12-volt electrical systems with positive or negative ground, and with solid-state and high-energy ignition systems. Complete with leads, instructions, case.

Kit CM-1073, Shpg. wt. 5 lbs. 34.95



CM-1073 SPECIFICATIONS: Dwell meter: Three dwell scales: 8 cyl., 10-45 degrees; 4 cyl., 20-90 degrees; 6 cyl. & 3 cyl. x 2, 25-60 degrees. Tachometer: Two RPM ranges; Low range — 0-1500 RPM; High range — 0-2500 RPM. Dimensions: 4 $\frac{1}{4}$ " H x 8 $\frac{1}{2}$ " W x 7 $\frac{1}{4}$ " D.

Get the best from your car with Heathkit auto instruments



Versatile Heathkit Ignition Analyzer makes car tune-ups easier

\$189⁹⁵

- Easier-to-use than meter analyzers
- Built-in rpm indicator for easy measurements
- Designed for four, six or eight-cylinder engines

Locate ignition troubles the scientific way. The Heathkit CO-1015 Ignition Analyzer detects shorted plugs, bad ignition points, defective wiring, worn distributor parts, incorrect dwell angle, plus coil or condenser defects and transistor or capacitive discharge circuitry problems. Can be used with any standard, transistorized or capacitive discharge ignition system on four, six or eight-cylinder engines with distributors. You select one of four different patterns — primary or secondary, in either parade or superimposed display. For detailed analysis, the horizontal sweep can be expanded 10 to 1, vertical sweep 2 to 1. Includes adapter for use with General Motors High Energy Ignition systems. Operation handbook (supplied) illustrates typical auto engine waveforms.

Kit CO-1015, Shpg. wt. 22 lbs. **189.95**

Kit COA-1015-1, 12-Volt Inverter. Lets you operate CO-1015 from your car's 12-volt lighter socket. Shpg. wt. 3 lbs. **34.95**

CO-1015 SPECIFICATIONS: Power Requirement: 120/240 VAC, 60/50 Hz, 16 W. RPM Range: 400-5000. Cylinders: 3, 4, 6 or 8. Connection Cables: 12' pick-up clamp; ground and secondary clip leads extend 2' beyond pick-up clamp. Tachometer: 0-1000 RPM, 0-5000 RPM $\pm 5\%$ of full scale. Dimensions: 7" H x 10½" W x 17½" D.



Low-cost professional-grade Engine Analyzer tests batteries, too

\$94⁹⁵

- Works with any voltage, any 3, 4, 6 or 8-cylinder engine
- With all leads and accessories for complete tuneups
- Accuracy is excellent — $\pm 3\%$ for all settings

This professional-grade instrument tests conventional, magneto, transistorized, and most capacitive discharge ignition systems — both positive and negative ground, any voltage, on any 3, 4, 6 or 8-cylinder engine. Also tests storage battery, generator or alternator, voltage regulator, starter, distributor, ignition circuit (points, condenser and coil), accessories and all the electrical wiring. The large 6" meter is color-coded for easy reading. No need to recalibrate between functions. Easy to connect and use. Needs 3 "C" batteries (not supplied).

Kit CM-1050, Shpg. wt. 8 lbs. **94.95**

CM-1050 SPECIFICATIONS: Voltmeter Ranges: 0-3.2 V DC, 0-32 V DC, $\pm 3\%$ of full scale. Ohm-meter: Two ranges: R x 1 (100 Ω center scale), R x 100 (10 Ω center scale), $\pm 3\%$ arc. Tachometer: Two ranges: 0-1200 rpm, 0-6000 rpm, $\pm 3\%$ of full scale. Dwell Meter: Two ranges: 0-45° (on 0-60° scale), 0-60°, $\pm 3\%$ of full scale. Amperes: -5 to +90 amperes DC, $\pm 3\%$ of full-scale. Spark Output: 0-50. Point Resistance: Good/Bad. Alternator: Good/Bad. Condenser: 0.22 μ F, 10%. Accuracy: $\pm 3\%$ of full scale. Cables: Two 8' test cables. One 2' alligator/alligator lead. One 2' alligator/push-on connector lead. One calibration cable. Accessories: 90-amp shunt. 0.25 Ω resistor assembly. One alligator clip. Two ≈ 10 solder lugs. Dimensions: 7½" H x 10½" W x 8¾" D.



Give your battery instant starting power when you have to get going

1 15-Amp Automatic Battery Charger. has safety turn-off, battery boost

\$79⁹⁵

Charges 12-V car batteries at 15-amp rate; provides a 50-amp boost charge to charge dead batteries fast!

Don't let a dead battery make you miss important work and social commitments ruining your family's plans. The GP-1044's front panel meter monitors the battery and indicates charge rate, current and full charge, or if boost charge is required. When the battery is fully charged, the GP-1044 turns itself off. Complete circuit breaker protection prevents damage to charger or battery. For use on positive or negative ground batteries. All solid-state. Comes with all cables for fast, easy hookup. 6½" H x 11½" W x 7¾" D. For 110-130 VAC, 60 Hz.

Kit GP-1044, Shpg. wt. 22 lbs. **79.95**

2 10-Amp Automatic Battery Charger for quick starts in any weather

\$54⁹⁵

Won't overcharge and ruin your battery, even if you leave it hooked up to this charger for long periods of time!

Your battery may not wait for winter until it needs a charge, so you need the Heathkit 10-amp Automatic Battery Charger. It charges 12-volt car batteries at 10-amp rate, turns off automatically when battery is fully charged. A front panel meter monitors battery to indicate rate of charge and full charge. Easy to use — just connect the battery cables (included) to your car battery terminals and plug charger into AC outlet. Safety circuit prevents sparking until proper hookup. 5½" H x 9" W x 6¾" D. For 110-130 VAC, 60 Hz.

Kit GP-21, Shpg. wt. 13 lbs. **54.95**

Heathkit auto accessories

\$89⁹⁵ Heath/Dana Speed Control increases gas mileage and reduces driving fatigue on long car trips

Just accelerate to your desired speed, set the control and the CS-2048 automatically maintains that pre-set speed uphill or downhill, around curves and on straightaways! You can take your foot off the gas pedal, relax, and pay attention to the road! A touch of the brake pedal releases control and a resume control lets you slow down or pass cars without affecting the set speed, a set button lets you set a new cruise speed as you desire. The CS-2048 can be used with both automatic and manual transmission, with most domestic cars, trucks, light vans. For foreign and front-wheel drive cars, order the appropriate adaptor kit listed below. 12 VDC negative ground only. Save up to 50% by installing it yourself.

CS-2048, Shpg. wt. 6 lbs. **89.95**

CSA-2048-1, Kit contains magnet pair, adhesive and filament tape along with instructions for front-wheel-drive cars or for parts replacement use. For parts replacement or front wheel drive cars not specifically covered in kits below. Shpg. wt. 1 lb. **6.95**

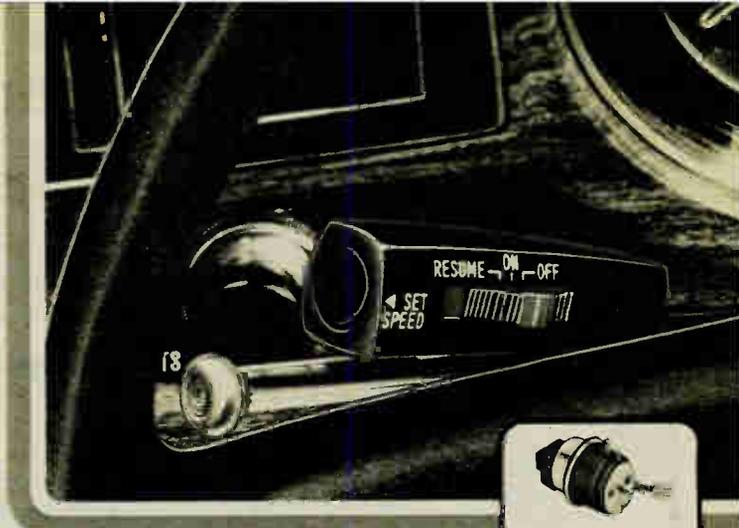
CSA-2048-2, Contains servo cable, throttle linkage adaptor hardware and magnet pair for '73-'75 Honda Civic, '75-'79 Honda CVCC and '77-'79 Honda Accord. Shpg. wt. 2 lbs. **15.95**

CSA-2048-3, Kit contains servo cable, throttle linkage adaptor hardware and vacuum tee for '75-'79 Toyota Corollas. Shpg. wt. 2 lbs. **15.95**

CSA-2048-4, Kit contains throttle linkage adaptor hardware and vacuum tee for '73-'79 Toyota Corona, Celica, Crown and Mark II; '75-'78 Toyota Pickup, '75-'77 Datsun 610/710, '77-'79 Datsun 810, '75-'79 280-Z, ZX. Shpg. wt. 1 lb. **5.95**

CSA-2048-5, Kit contains servo cable, magnet pair, throttle linkage adaptor hardware, vacuum tee and engagement switch mounting post for the following fuel-injected cars: '76-'80 Volkswagen Rabbit, Dasher, Scirocco, Audi Fox. Shpg. wt. 2 lbs. **15.95**

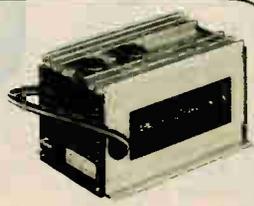
CSA-2048-6, Kit contains servo cable, magnet pair and throttle linkage adaptor hardware for '75-'80 Datsun B-210/210, '77-'80 Datsun F-10/310. Shpg. wt. 2 lbs. **15.95**



IMPORTANT INSTALLATION NOTE: While the CS-2048 Heath/Dana Speed Control comes fully assembled and tested, and includes a fully detailed manual, installation does require a certain amount of mechanical proficiency. Modifications must be made to the throttle linkage of your car, and work must be performed under the vehicle in order to install the speed transducer unit. If you are uncertain of your abilities, you may wish to employ the services of a qualified auto mechanic to install your Speed Control.

The Heathkit Capacitive-Discharge Ignition System saves you gas

- Improves mileage to save you money
- Get longer life from plugs and points



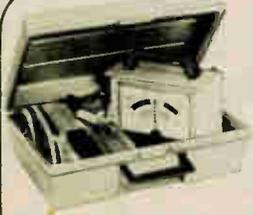
Get up to 50,000 miles between tune-ups on cars, trucks, inboards, I/O & outboard marine engines with 12V battery/distributor/coil negative ground systems. Delivers a larger, more precisely-controlled spark to the plugs to better burn the air-fuel mixture. Reduces problems caused by point bounce and wear. External override button switches to conventional system. Construction and installation are quick and easy. 3 3/8" H x 3 3/4" W x 6" D. Kit CP-1060, Shpg. wt. 3 lbs. **44.95**

Need a tune-up? The Heathkit Exhaust Analyzer will tell you

The CI-1080 monitors your car's exhaust for minimum air pollution and maximum efficiency by measuring thermal conductivity of the exhaust gases. Shows the air-fuel ratio, combustion efficiency and the percentage of carbon monoxide in the exhaust. Ideal for checking a car which must meet

auto manufacturer's specifications or environmental agency requirements for exhaust emissions. The CI-1080 is contained in a rugged carrying case with a foldaway handle and includes all necessary cables and tubing for easy connection. Easy-to-build kit.

Kit CI-1080, Shpg. wt. 6 lbs. **89.95**



Get the Emergency Siren/PA for your volunteer unit

If your community's volunteer emergency unit or rescue squad is trying to make its dollars stretch as far as possible, the GD-18 Emergency Siren/PA will meet your requirements for high quality, convenient features and low cost. It's a 55-watt siren with automatic or manual "wail", a 20-watt Public Address System to amplify your voice, or a radio call alert when you're away from your vehicle. Has push-to-talk noise-cancelling microphone for clear voice reproduction. Select your choice of high output speakers—either concealed or exposed horn. Concealed speaker requires 4 1/2" x 4 1/2" x 13" behind grille. Note: please check standards for mobile sirens in your area.

- Kit GD-18, Shpg. wt. 6 lbs. **74.95**
- WD-5130, Siren/PA amp, assembled, Wt. 6 lbs. **129.95**
- GDA-18-1, Exterior horn, assembled, Wt. 10 lbs. **89.95**
- Kit GDA-18-2, Concealed horn, Wt. 10 lbs. **89.95**
- WDA-5130-2, Concealed horn, assembled, Wt. 10 lbs. **109.95**

SAVE \$20.00 On these Siren/PA systems! If purchased separately, \$164.90.
 GD-18A (Kit GD-18 and Exterior Horn) Shpg. wt. 21 lbs. **144.90**
 GD-18B (Kit GD-18 and Concealed Horn) Shpg. wt. 21 lbs. **144.90**

Avoid costly repairs with our Auto Electrical Program

Learn to spot and repair electrical problems in your car with this self-instruction program



Audio-Visual Learning makes it easy

Heath's Auto Electrical Systems Program uses proven audio-visual instruction techniques that make it easier than ever to learn about automotive electrical systems.

You cover the material in a specially-prepared programmed-instruction textbook that's easy to follow. Then, the material is reinforced three times: First, by clear, easy-to-see color illustrations; by audio cassette tapes that let you hear each step along the way; and finally, by optional experiments that let you take the knowledge you've gained and apply it to your own car or truck.



Winner

Highest award of the Society for Technical Communicators

\$79⁹⁵

- Prepare for the NIASE Electrical Exam
- Learning is more effective, because you see and hear each step

With the help of the Heath Automotive Electrical Systems Self-Instruction Program, you can keep your car running more reliably — and reduce expensive trips to the shop.

Save time and money. Find and fix automotive electrical system problems yourself with the Heath Auto Electrical Program.

This self-instruction program uses proven audio-visual techniques to give you a complete understanding of the principles of automotive electrical systems, along with a practical guide to help you diagnose and correct common automotive electrical system problems. And the preventive maintenance procedures you'll learn with our program will help you keep your automotive electrical system in peak condition all year round.

Clear color visuals, combined with audio cassette tapes, let you see and hear each step for thorough learning. The visuals and cassettes are reinforced by a programmed-instruction textbook with test questions, and by optional experiments and projects which you can perform on your own car or truck.

The Heath Automotive Electrical Systems Self-Instruction Program is professionally designed and carefully organized for fast, efficient learning. You can move at your own pace, as fast or slow as you choose.

What will you learn in the Heathkit Automotive Electrical Systems Program?

You'll learn about Basic Automotive Electrical Principles, including an understanding of positive and negative charges, the relationship between voltage, current and resistance, Ohm's Law and the differences between series and parallel circuits.

You will be able to apply the principles of electricity to your car or truck's electrical system, diagnose and troubleshoot basic circuit problems, and use a

VOM (volt-ohm meter) to measure voltage, current and resistance.

Knowing basic principles and laws of electricity, you'll know how to examine a lead-acid battery for proper operation, locate and repair defective circuits and use preventive maintenance procedures to stop other trouble before it starts.

You'll learn about the Automotive Starting System, the major components which start your car. You will find out how to keep your starting system in good working condition and how to correct common starting system problems.

You will learn how to troubleshoot the starter relay, neutral safety switch, starter solenoid and starter motor. You will be able to describe the relationship between battery voltage and starter motor current, measure starter current draw, test voltage drop on your car or truck's starter motor and locate open or short circuits.

With this knowledge, you'll be able to avoid cold weather starting problems — and when a problem does occur, you will be able to repair or replace components of your starting system yourself.

With the help of audio-visual learning methods, you'll know more about the Automotive Charging System. You will learn about the components of your car or truck's charging system, including the voltage regulator and alternator.

You'll learn to understand the functions of the different components that make up your car or truck's alternator. You'll find out how to energize the alternator field and examine the alternator for correct operation.

You will be able to identify and test the condition of your voltage regulator, use an engine analyzer (such as the CM-1050 on page 46) to test engines, and repair/replace components as necessary.

You will learn about Body and Accessory Electrical Circuits, too. These are the circuits that power the lights and accessories of your car or truck.

You'll learn about testing and replacing parts in the lighting system, seat belt system and instrument panel. You will also find out how to determine if your electrical system can handle another accessory, and how to use wiring diagrams.

After completing the Automotive Electrical Systems Program, you will have the knowledge, experience and confidence to correct almost any auto electrical problem that arises. You'll have the know-how you need to avoid the need for expensive repairs.

We guarantee it. If you're not completely satisfied, or if you fail the NIASE Electrical Systems Exam, we'll refund the purchase price of the program.

When you pass the optional final exam with a 70% or better score, you'll earn 4.0 Continuing Education Units (CEUs) and a Certificate of Achievement.

Includes text, binders, cassette holder, clip leads, electrical parts for optional experiments and a professional hydrometer.

EAC-1, Shpg. wt. 23 lbs. 79.95

NOTE: This Program prepares you to pass the National Institute for Automotive Servicing Excellence professional auto mechanic certification exam on auto electrical systems. Contact NIASE, 1825 K Street, NW, Washington, DC 20006 for information on the exam.

Learn professional tune-up, prepare for NIASE exam

NEW

This complete new Heathkit self-instruction program makes learning easy

The EA-2000 Ignition and Tune-up Self-Instruction Program is a complete package. Just see what you get: more than 900 page text in two handsome, rugged vinyl binders, nearly 200 full-color illustrated flip charts, a set of ignition test components, two pre-recorded audio cassette tapes, final exam and NIASE practice exam. Everything you need to learn professional engine tune-up the easy, Heathkit self-instruction way.

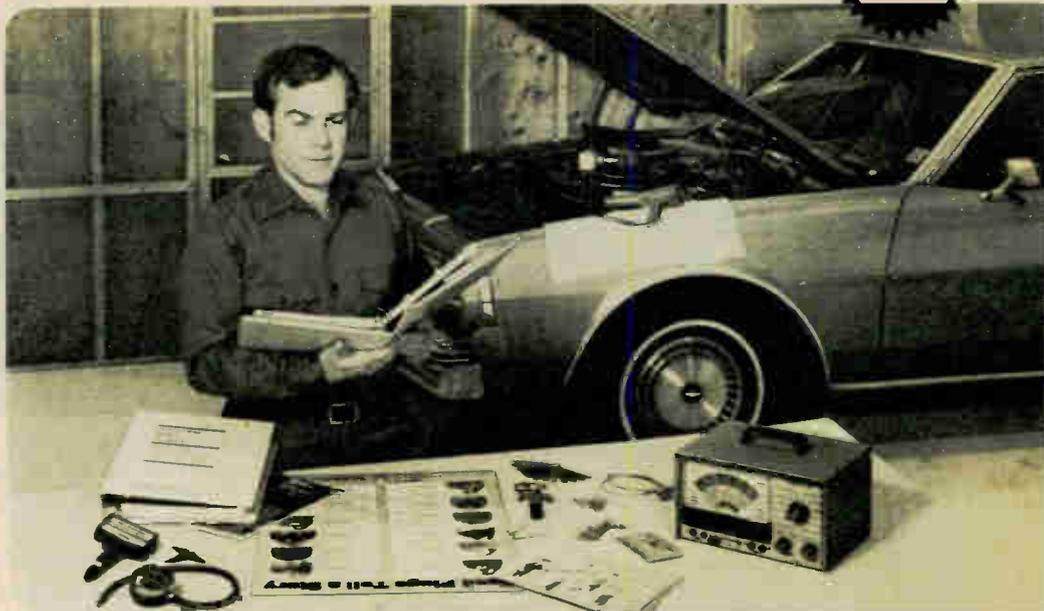


Now you can learn to perform professional engine tune-ups with the new, easy-to-follow Heathkit Ignition and Tune-up Self-Instruction Program. It will prepare you to pass the NIASE tune-up exam, and it will save you money on ignition tune-ups and repair on your own car. Best of all, you'll have the fun and satisfaction of being able to tune it yourself.

The EA-2000 Auto Ignition and Tune-up Program uses audio-visual instruction and programmed learning to assure you of easy, enjoyable learning. Full-color, illustrated flip charts and recorded audio cassettes explain and reinforce the text material. And programmed learning presents new information in bite-sized segments for quicker learning and greater retention. The entire program is designed to give you the knowledge you need and make learning it fun.

The most in-depth study available on GM, Ford and Chrysler electronic ignitions at this price, this new Heathkit program includes standard electronic ignitions, magnetic pick-up types, and even computer-controlled types of ignitions. The program will continue to serve as a valuable reference after you have completed it.

Shop experiments are presented, too. You can perform them on your own car for hands-on, practical experience in tune-up and troubleshooting. The program includes jumper leads, ignition tester, universal coil adapter, spark plug adapter, ignition pliers, plug gauge/gapping tool, feeler gauge set, Champion tune-up chart book, and 24" x 17" Champion plug chart. To complete shop projects you will also need an engine analyzer like the CM-1050 on page 46, a



timing light such as the CI-1096 on page 44, and an ignition analyzer like the CO-2600 on page 45. Also useful is the Small Accessory Auto Instrument Package described at right.

The program is organized into eight units:

- Unit I: Ignition Fundamentals
- Unit II: Components
- Unit III: Instruments
- Unit IV: Tune-up
- Unit V: Fundamentals of General Motors Electronic Ignition Systems
- Unit VI: Troubleshooting, tune-up of GM Systems
- Unit VII: Fundamentals of Ford and Chrysler Electronic Ignition Systems
- Unit VIII: Troubleshooting and tune-ups of Ford and Chrysler Systems

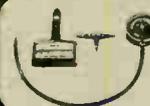
In Unit I you learn about the four-stroke cycle, purposes of the automotive ignition system, primary and secondary ignition circuits, coil principles, dwell and timing.

Unit II covers the ignition coil and points, function of the distributor, identification and characteristics of spark plug types, plug construction, and the purpose and construction of spark plug wires.

In Unit III of the Heathkit Ignition and Tune-up Program, you will learn the use of the automotive oscilloscope, will be able to identify normal and abnormal scope patterns, as well as learn to use a tachometer, timing light and dwell meter.

Tune-up is the subject of Unit IV. Upon completion, you will be able to remove spark plugs, gap and install new plugs, replace ignition points, capacitor, distributor cap and rotor, and be able to locate ignition system problems. You will learn to perform a complete ignition tune-up and power balance.

General Motors electronic ignition systems are covered in Unit V, including the breakerless C-D ignition system, magnetic pulse Unitized system, High Energy Ignition system, and Microprocessed Sensing and Automatic Regulation system.



High-quality Small Accessory Auto Instruments. Compression tester, vacuum pressure gauge and vacuum "T" fitting. EAC-2-1, 1 lb. ...14.95

The information you need to tune or to troubleshoot a General Motors electronic ignition system is contained in Unit VI of the program.

Ford and Chrysler electronic ignition systems are covered in Unit VII, including transistorized and computer controlled systems, magnetic pickup SSI system, Duraspark system, Electronic Engine Control operation, and the Electronic Lean Burn system.

Troubleshooting and tune-up of Ford and Chrysler electronic ignitions are presented in the final unit. Completion of the optional final exam with a grade of 70% or better will earn you 4.0 C.E.U.s

For ease, completeness and cost, this self-instruction program has no equal. It will soon more than pay for itself by freeing you from reliance on expensive ignition tune-ups and repairs. And if you're a mechanic going after the N.I.A.S.E. certification, this program will help you get it.

EA-2000, Shpg. wt. 12 lbs. 80.00

Save \$25.00 on your Ignition and Tune-up Program. Order it with the EAC-1 Automotive Electrical Program (page 48) and the EAC-2-1 Small Accessory Auto Instrument Package (above). If purchased separately, \$174.85.

EAS-2000, Shpg. wt. 32 lbs. 149.85

MONEY-BACK GUARANTEE

If, after completing this program, you fail to pass your N.I.A.S.E. Engine Tune-up exam, your money will be refunded when you return the program materials to Heath with notice of failure.

Digital readout car accessories from Heath



① Tachometer/Speedometer shows speed and engine rpm

As low as

\$49⁹⁵

- Now get instant digital readout of your car's speed and engine RPMs as you drive. Styled to match CI-1525

As a digital readout speedometer, the CI-1265 instantly and continuously monitors your car's speed. The continuous digital readout provides a better degree of accuracy than most conventional speedometers and maintains its accuracy over its entire speed range. Push a front panel button, and the CI-1265 instantly switches to show your engine rpm. The CI-1265 is sensitive enough to indicate changes in speed as little as 1 mph (or 1 kmph) and rpm variations of 100. A single calibration control on either mph or kmph ranges automatically calibrates the other range, so conversion between English and metric speed units is unnecessary. Features an automatic dimming circuit which adjusts display to ambient light, front panel speed/tach switches. For use with any 4, 6, or 8-cylinder, 4-cycle engine with spark ignition. With hardware and mounting bracket for installation in or on your car's dash. For 12 VDC negative ground. Easy kit assembly. Measures 1 $\frac{3}{16}$ " H x 4 $\frac{1}{16}$ " W x 3 $\frac{3}{8}$ " D.

Kit CI-1265-1, For cars without CS-2048 Cruise Control. Shpg. wt. 3 lbs. . . . 59.95

Kit CI-1265-2, For cars with CS-2048 Cruise Control. Shpg. wt. 3 lbs. . . . 49.95

② Car clock/timer with digital quartz precision

\$39⁹⁵

- Clock for accurate time in your car
Timer keeps track of driving time

Display turns off with the car ignition to preserve battery power, but clock continues to keep accurate time. It's compact enough for easy mounting on or under the dash of your car, boat, camper or motorcycle — anywhere a source of 12 VDC negative ground is available (not approved for aircraft use). Display dims automatically for easy and safe viewing at night.

GC-1415 Digital Quartz Clock/Timer displays the time to the minute in easy-to-read fluorescent digits, also includes switch-selectable timing ranges for

0-24 hours for timing trips in hours and minutes and 0-10 minutes for timing minutes and seconds for use as a stopwatch. Timer accumulates for 24 hours and can be stopped to allow actual driving time to be calculated without including stops. Clock and timer functions can be switched back and forth without affecting accuracy of either function. 1.80" H x 4.71" W x 3.12" D.

It's a handsome addition to any car, as well as a useful driving aid.

Kit GC-1415, Shpg. wt. 2 lbs. 39.95

GC-1406, Digital Readout Quartz Clock (Not Shown). Same as GC-1415, but does not include timing functions.

Kit GC-1406, Shpg. wt. 1 lb. 29.95

③ Save \$10.00 on this inside/outside auto thermometer

\$79⁹⁵

- Easy-to-read digital display shows two temperatures — interior and outside temperatures for vehicle or boat

It's ideal for R-Vs, campers, motor homes, any 12-volt vehicle. Two temperature sensors, one for outside your vehicle and one for inside, give you outside and inside temperatures. Outside sensor can alert you to frozen roads. You can even use it in your boat with a sensor placed outside at water level to indicate the surface temperature of the water. The 2 $\frac{1}{2}$ -digit readout indicates temperatures from -20°F to 140°F (-30°C to +60°C). Special IC sensors and a dual-slope A/D converter combine to give you a readout accuracy of $\pm 3^\circ$. A button automatically changes the readout from Fahrenheit to Celsius, and you can alternate inside or outside readings or hold either one. Has automatic brightness adjustment for easy reading in any ambient light.

Includes inside and outside temperature sensors, each with 9 $\frac{1}{2}$ -ft. cable. Sensors are submersible. Easy mounting with sticky-backed tape or with special gimbal bracket, both included. You also get solid-state design for long, reliable performance. 1 $\frac{7}{8}$ " H x 4 $\frac{3}{4}$ " W x 3 $\frac{1}{4}$ " D. For 12 VDC negative ground.

Kit CI-1525, Shpg. wt. 2lbs. Was \$89.95, Now 79.95

Now! Theft security for all vehicles with this burglar alarm



Protects with ultrasonic sound. Detects any interior motion and sounds your vehicle's horn. Designed for use on cars, trucks, vans, motor homes, cruisers, etc. Very easy assembly, installation. No running wire throughout car.

Kit GD-1558, Shpg. wt. 2 lbs. 49.95

Kit GDA-1558-1, Horn Relay Kit, Shpg. wt. 1 lb. 4.95

Windshield Wiper Delay prevents "slapping" in rain or mist



For most single and 2-speed electric wiper systems. Most GMs, AMCs, Fords (except '72-'76 Montego, Torino & '74-'76 Cougar), Chryslers (except with motor reversing parking system). Note: Auto wiring diagrams not supplied for this unit.

Kit CH-1068, Shpg. wt. 2 lbs. 17.95

Save 25% on this handy Cab-to-Camper Intercom

Intercom has 3-position switch on Master for "Standby," "Monitor" or "Talk." Remote can initiate calls. "Radio" position brings music into camper from cab radio. Requires 12V, 250 mA. 3 $\frac{3}{8}$ " H x 7 $\frac{3}{8}$ " W x 3" D. Includes Master, Remote, Cable.

Kit GD-160, Wt. 5 lbs. Was \$39.95, Now 29.95



The Heathkit Car Security System protects your car

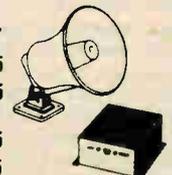
Sounds horn if thieves break in. Kit GD-1157, Wt. 3 lbs. 29.95

Kit GDA-1157-1, Optional Siren Accessory, 2 lbs. 19.95

GDS-1157, GD-1157 and Siren together. 12 lbs.

\$49.90 if purchased separately Our Price 39.95

Kit GDA-1157-2, Relay for cars without horn relay. 1 lb. . . 2.95



Quality Heathkit navigational aids make flying safer

Color-coded areas for keyboard pre-flight, in-flight and navigation functions

14-digit multi-function display (distance and bearing angle shown)



Versatile scientific calculator functions

Easy-to-use, positive action keyboard

Air Navigation Computer helps you reach your destination safely

\$169⁹⁵
Kit

- Three built-in microprocessors for extra power
- Accepts data for up to nine flight leg entries
- Automatically computes in-flight wind

You would have to have an on-board computer to match the versatility, precision and quality of the Heathkit OC-1401 Hand-Held Air Navigation Computer.

One of the most sophisticated and useful instruments of its type, the OC-1401 accepts preflight data and vectors for up to nine separate flight legs. It computes magnetic heading, ground speed, true air speed, time to next checkpoint or destination, and estimated time of arrival — all with single-keystroke callups. And it automatically computes in-flight wind, updating information in flight — including ETAs.

Your Navigation Computer features a multi-function 14-digit display, 36-key keyboard with a built-in clock/timer and a fuel warning indicator. Converts English measures to metrics and statute miles to nautical miles. Also operates as a versatile scientific calculator.

Designed for years of trouble-free service, built-in checks help assure proper operation. Rechargeable batteries included. Complies to FAA Advisory Circular No. 60-11.

Kit OC-1401, Shpg. wt. 3 lbs. 169.95
OCW-1401, Assembled and Tested, Shpg. wt. 4 lbs. 274.95

Convenient Custom Carrying Case

For OC-1401 and accessories. Rechargeable battery power supply operates on 120 VAC, fully charges in 15 hours. Handy pocket for operating guide. 3 1/8" H x 12 1/4" W x 8" D.

Kit OCA-1401-1, Shpg. wt. 5 lbs. 39.95
Factory Assembled and Tested Deluxe Case.
OCW-1401-1, Shpg. wt. 5 lbs. 74.95
Leatherette Carrying Case for OC-1401 only.
OCA-1401-2, Shpg. wt. 1 lb. 4.95



OC-1401 SPECIFICATIONS: Basic Architecture: RPN-5 level stack, Auxiliary Storage-9 addressable registers, last X register. Display Modes: Variable round-off, fixed point, or scientific notation, 9-digit mantissa and 2-digit exponent. Flight Functions: True air speed, wind triangle, up to 9 flight leg calculations, navigation by two VORs and ETA. Dynamic Displays: Clock, elapsed time, fuel remaining, distance and time to checkpoints. Dimensions: 1 3/4" H x 3 3/8" W x 6 3/8" D (4.5 cm H x 7.9 cm W x 16.2 cm D).

Strobe Light/Beacon for Aircraft/Boats/Emergency Vehicles

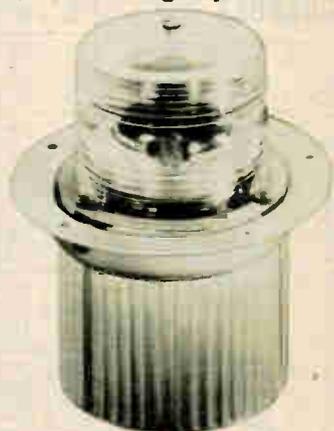
A truly unusual kit-form value, the Heathkit OL-1155 Aircraft Strobe Light is designed for use as an anti-collision or supplemental beacon — or directly replaces a standard 3 3/4" rotating beacon. Operates from a 12 VDC negative ground supply, drawing 1.5 amps nominal current, and includes a built-in line filter. An internal trimmer lets you adjust the flashing frequency.

Use the OL-1155 in most emergency applications. Mount on your boat cabin-top or masthead for marine protection. Mount atop antennas or other tall structures. Meets FAA Reg. No. 23.1401 anti-collision lighting requirements.

FAA Design Approved under STC SA2719WE for all Cessna 182 aircraft prior to S/N 53599, STC SA2720WE for all Cessna 210 aircraft prior to S/N 57481.

Kit OL-1155, 3 lbs. 89.95

NOTE: For the FAA/PMA certification necessary for aircraft installation, return your completed Light to your Heathkit Electronic Center or the Heath factory.



High-accuracy, rugged, low-priced Aircraft Clock/Timer



Gives you the accuracy and reliability you need for any flight timing function at about half the cost of competitive models! Quartz-crystal-controlled timing functions provide exceptional accuracy. Upper display shows 24-hour GMT/ZULU time, lower display shows local time, acts as 24-minute timer, 24-hr. trip timer and has alarm function for fuel management and check-point notification. Both clocks run continuously, but trip timer runs only when plane's master power switch is on. Displays dim automatically for night flying. Fits standard 3 1/8" panel mount, can be easily mounted in almost any aircraft. Operates on either 14 or 28 VDC, draws only 0.5 A.

Kit OL-1154, Shpg. wt. 3 lbs. 129.95

Note: FAA approved for Cessna 172N, STC No. STC SA168GL (requires FAA Form 337). Field approval on FAA Form 337 required for other aircraft. Completed kit must be returned to a Heathkit Electronic Center or factory for DMIR inspection (at no additional charge), before installation by an A & P mechanic (or supervised pilot installation). Heath will adjust for maximum accuracy. Meets DO-160 environmental requirements.

EASY ORDERING INFORMATION

By Phone:

- Use the Heath Hotline
- Anytime, day or night
- 7 days a week

(616) 982-3411



It's faster, more convenient and your order will be handled promptly. Our order desk is open 24 hours a day, 7 days a week. Be sure to have your order written and all information at hand when calling.

Terms:

- **Heath Revolving Charge Plan.** No money down. Up to two years to pay. Two convenient monthly payment plans available. Down payments are encouraged to reduce your monthly payments and finance charges. Follow instructions on the reverse side of order form. Be sure to sign charge agreement.
- **Commercial Accounts.** Net 30-day terms available to well-rated companies.
- **Educational Accounts:** Net 30-day terms available to Patterson listed educational institutions. Authorized purchase order is required.
- **Note:** All credit orders subject to Heath Credit approval.

Quantity Orders:

- **Commercial, Educational, and Industrial Sales:** For quotations on 10 or more of any Heath product, kit or wired, write or phone Marketing Services Department, 616-982-3454.
- **Contract Sales:** For orders of 250 or more of any Heath product, kit or wired, write or phone Contract Sales Department, 616-982-3519. Private labeling, custom packaging, or design modifications can be made to meet your specific needs.
- **Special Educational Product Discount:** For quantities of 100 or more, including special versions of educational products to fit a particular teaching situation, contact Contract Sales Department, 616-982-3519.
- **Note:** Quantity discounts apply to single models only — not combination orders, special offers, or systems.

Zone Chart:

Your zone is indicated by the first three numbers of your Zip Code.

Zip Code	Zone										
Prefixes											
006-009	8	260-261	3	363-369	5	476-477	4	598-599	7	820-822	5
010-069	5	262-278	4	370-386	4	478	4	600-609	2	823-826	6
070-089	4	279	5	387	5	479-489	5	610-615	2	827	5
090-099	5	280-283	4	388	4	490-491	1	620-623	3	828-832	6
		284-285	4	389-397	5	492	2	624-628	1	833	7
100-108	5	286-293	4			493-495	1	629-668	4	834	6
109	4	294-295	5	400-406	3	496-499	3	629-668	4	835-838	7
110-119	5	296-297	4	407-409	4			669-679	5	840-847	6
120-123	4	298-299	5	410-412	3	500-516	4	680-687	4	850-864	7
124-126	5			413-422	4	520-524	3	688-693	5	865-884	6
127-128	4	300-303	4	423	3	525	4	700-722	5	890-898	7
129	5	304	5	424-426	3	526-528	3	723-727	4	833	7
130-152	4	305-307	4	427-432	3	530-534	4	728-768	6	900-921	8
153	3	308-329	5	433-436	2	535-539	3	769	5	922-928	7
154-160	4	330-334	6	437-457	3	540	4	770-778	6	930-934	8
161	3	335-338	5	458	2	541-546	3	779-789	6	935	7
162-163	4	339	6	460-462	3	547-548	4	790-792	5	936-960	8
164-165	3	340	6	463-464	2	549	4	793-799	6	961	7
166-199	4	350-352	4	465-466	1	550-566	4			962-976	8
		354	5	467-469	2	567	5	800-803	5	977-979	7
200-232	4	355-359	4	470-472	3	570-572	4	804-805	6	980-987	8
233-237	5	360-361	5	473	2	573-588	5	806-807	5	988-994	8
238-259	4	362	4	474-475	3	590-597	6	808-816	6	995-999	7

By Mail:

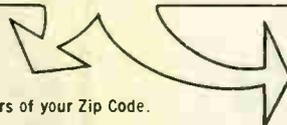
- Use order form on opposite page.
- Always write your name exactly the same way each time you order.
- Give your address with full details including zip code and daytime phone.
- Fill out your order completely with quantity, model number, description, price, and shipping weight exactly as shown in the catalog. Enter shipping and handling charges for each item from the rate chart.



SPECIAL SHIPPING AND HANDLING

- **Motor Freight Items** — Items indicated Motor Freight exceed weight or size limitations of UPS or Parcel Post. Examples are TV's, organs, some speaker systems, garage door mechanisms, antennas, etc. These are shipped with freight charges collect. If one item on your order is Motor Freight, all items will be shipped Motor Freight. Consult your local carrier for charges and type of service available before ordering.
- **APO/FPO Shipments** — Use the following Zones to estimate costs — West Coast, Zone 8; East Coast, Zone 5; Miami, Zone 6. PAL (Airlift Military) carries packages by air transport for a fee of \$1 per package plus postage. Parcel must weigh less than 30 lbs. and not exceed 60" in length and girth.
- **SAM:** Parcel must weigh less than 15 lbs. and not exceed 60" in length and girth. Be sure to check with your local postmaster for exceptions to certain APO or FPO numbers.

USE THESE HANDY CHARTS TO FIGURE SHIPPING AND HANDLING CHARGES



Your shipping and handling charges are indicated in the zone column across from the shipping weight.

Note: Blue Label Service Area Zone A covers: CT, ME, MA, NH, NJ, RI and VT. Zone B covers: AZ, CA, FL, ID, MT, NV, NM, OR, UT, WA, WY.

HEATH PHONE DIRECTORY FOR ASSISTANCE AND INFORMATION

- Replacement Parts Orders:
Please have Heath part no. available when you call **616-982-3571**
- Product Orders **616-982-3411**
- Overseas Orders:
International Division **616-982-3512**
Computer Sales Information **616-982-3285**
General Office (non-order calls) .. **616-982-3200**
- Technical Assistance:
• Stereo, Electronic Organs, R/C **616-982-3310**
• Amateur Radio **616-982-3296**
• Test Equipment, Weather Instruments, Home Clocks **616-982-3315**
• Television **616-982-3307**
• Home Products, Aircraft, Appliances, Automotive, Marine, Scanners, Security **616-982-3496**
• Computers **616-982-3309**
- 8:00 A.M. to 12:00 M. and 1:00 P.M. to 4:30 P.M., Eastern Time, Weekdays only

Rate Chart: Heath Shipping and Handling Charges, mailable items only. See special shipping & handling information for motor freight items.

Shpg. Wt.	Zone 1 & 2		Zone 3		Zone 4		Zone 5		Zone 6		Zone 7		Zone 8		BLUE LABEL AIR SERVICE CHARGE	
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	Zone 12	Zone 13	Zone 14	Zone 15	Zone 16
1	\$1.20	\$1.27	\$1.39	\$1.58	\$1.64	\$1.72	\$1.83	\$1.55	\$1.61							
2	1.35	1.39	1.56	1.72	1.84	1.98	2.22	2.17	2.28							
3	1.45	1.53	1.73	1.86	2.04	2.24	2.61	2.78	2.95							
4	1.56	1.65	1.82	2.00	2.23	2.50	3.00	3.39	3.62							
5	1.66	1.77	1.92	2.14	2.43	2.77	3.39	4.00	4.28							
6	1.71	1.84	2.01	2.28	2.62	3.03	3.78	4.62	4.96							
7	1.76	1.90	2.11	2.41	2.82	3.29	4.17	5.24	5.83							
8	1.80	1.97	2.20	2.55	3.02	3.56	4.56	5.85	6.30							
9	1.85	2.03	2.29	2.69	3.21	3.82	4.95	6.46	6.97							
10	1.89	2.10	2.39	2.83	3.41	4.08	5.34	7.07	7.64							
11	1.94	2.17	2.50	3.00	3.65	4.42	5.73	7.69	8.32							
12	1.98	2.22	2.56	3.09	3.77	4.57	6.12	8.31	8.99							
13	2.02	2.27	2.65	3.17	3.89	4.72	6.41	9.51	9.65							
14	2.07	2.36	2.79	3.25	3.94	4.86	6.62	9.93	10.32							
15	2.15	2.46	2.92	3.42	4.15	4.99	6.80	10.14	10.99							
16	2.23	2.57	3.06	3.59	4.37	5.20	6.98	10.76	11.67							
17	2.31	2.67	3.19	3.76	4.59	5.46	7.15	11.38	12.34							
18	2.39	2.78	3.32	3.92	4.80	5.73	7.31	11.98	13.01							
19	2.47	2.88	3.45	4.09	5.01	6.00	7.47	12.60	13.68							
20	2.55	2.98	3.59	4.25	5.23	6.26	7.62	13.21	14.34							
21	2.64	3.09	3.73	4.43	5.45	6.53	7.77	13.83	15.02							
22	2.72	3.19	3.86	4.59	5.66	6.80	8.09	14.45	15.69							
23	2.81	3.29	3.99	4.76	5.88	7.07	8.42	15.05	16.36							
24	2.89	3.39	4.12	4.92	6.10	7.33	8.74	15.67	17.03							
25	2.97	3.49	4.25	5.10	6.31	7.60	9.07	16.28	17.70							
26	3.05	3.61	4.40	5.26	6.52	7.87	9.40	16.90	18.38							
27	3.13	3.71	4.53	5.43	6.75	8.13	9.72	17.51	19.04							
28	3.21	3.81	4.66	5.59	6.96	8.41	10.05	18.12	19.71							
29	3.29	3.91	4.79	5.76	7.17	8.67	10.37	18.74	20.38							
30	3.37	4.01	4.92	5.93	7.38	8.93	10.70	19.35	21.05							
31	3.46	4.12	5.07	6.10	7.61	9.21	11.03	19.97	21.73							
32	3.55	4.22	5.20	6.26	7.82	9.47	11.36	20.58	22.40							
33	3.63	4.33	5.33	6.43	8.03	9.75	11.68	21.19	23.07							
34	3.71	4.43	5.46	6.59	8.26	10.01	12.00	21.81	23.73							
35	3.79	4.53	5.59	6.77	8.47	10.27	12.33	22.42	24.40							
36	3.87	4.64	5.73	6.93	8.58	10.55	12.66	23.04	25.08							
37	3.95	4.74	5.87	7.10	8.90	10.81	12.99	23.65	25.75							
38	4.03	4.84	6.00	7.26	9.12	11.08	13.31	24.26	26.42							
39	4.11	4.94	6.13	7.44	9.33	11.33	13.63	24.88	27.09							
40	4.19	5.04	6.26	7.60	9.54	11.61	13.96	25.49	27.76							
41	4.28	5.16	6.40	7.77	9.77	11.88	14.29	26.11	28.43							
42	4.37	5.26	6.53	7.93	9.98	12.15	14.62	26.72	29.10							
43	4.45	5.36	6.67	8.10	10.19	12.42	14.94	27.33	29.77							
44	4.53	5.46	6.80	8.27	10.41	12.68	15.27	27.95	30.44							
45	4.61	5.56	6.93	8.44	10.63	12.95	15.59	28.56	31.11							
46	4.69	5.67	7.07	8.60	10.84	13.22	15.92	29.17	31.79							
47	4.77	5.77	7.20	8.77	11.06	13.48	16.25	29.79	32.46							
48	4.85	5.88	7.33	8.93	11.27	13.76	16.57	30.40	33.13							
49	4.93	5.98	7.47	9.11	11.49	14.02	16.90	31.02	33.79							
50	5.01	6.08	7.60	9.27	11.70	14.28	17.22	31.63	34.46							
Add'l	.08	.10	.13	.16	.21	.26	.32	.40	.46							
lbs.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.							

IMPORTANT: 1. Shipping weights listed for model numbers shipped in more than one carton have been adjusted to provide correct postage.

M-101-101-101

ORDER FORM/Agreement

1 BILLING ADDRESS (Print or write plainly — always use same name)

Name _____
 Apt./Lot/Bldg. _____
 Street Address _____
 City _____ State _____ Zip _____

2 SHIPPING ADDRESS (If different from above)

Name _____
 Apt./Lot/Bldg. _____
 Street Address _____
 City _____ State _____ Zip _____

3 ADDRESS CHANGED SINCE LAST ORDER? Please indicate old address.

Name _____
 Apt./Lot/Bldg. _____
 Street Address _____
 City _____ State _____ Zip _____

IMPORTANT ORDERING INFORMATION

1. Please use separate sheet to order parts, manuals or for any correspondence.
 2. All prices are net FOB Benton Harbor, Michigan and apply to the U.S., APO and FPO areas only.
 3. Prices and specifications are subject to change without notice.
- SPECIAL BOOK ORDERING INFORMATION** — There is a \$10 MINIMUM for a book-only purchase. No minimum if books are ordered with kits. Do not calculate postage on books, simply add 50¢ for each book to the postage columns on the order blank.

4 METHOD OF SHIPPING

Mailable Items. We ship UPS for fastest delivery. Include Zone from Zone Chart

Indicate other Preference _____
 Blue Label Zone Customers: Please indicate UPS Blue Label Air Service if desired.

Motor Freight Items. Shipped transportation charges collect. If a single item is Motor Freight, all items will be shipped Motor Freight.

5 If merchandise is ordered from another catalog, please indicate catalog no. _____ (from front cover)

6 Please give daytime phone number.

 (Area) (Number)

7 What new kits would you like us to make? _____

WHEN ORDERING, PLEASE REMOVE ENTIRE ORDER FORM PAGE

8 QUAN.	MODEL NO.	KIT DESCRIPTION	UNIT PRICE	UNIT TOTAL PRICE	SHPG. WT.	SHPG. CHARGES*

9 METHOD OF PAYMENT (check one)

Cash — Check or money order only. If the charge for merchandise and transportation is less than the amount you send, we will refund the difference.

C.O.D. — For orders of \$10 or more only. 20% deposit (check or money order) must accompany order. You pay balance (by cash, money order or certified check) along with C.O.D. fees, at delivery time.

Heath Revolving Charge

New Acc't. (Please fill out on reverse side.)
 Add to my existing Account
 No. _____

Signature _____
 (necessary to send merchandise)

C.O.D. ORDERS

TOTAL AMOUNT OF ORDER	
Less 20% Deposit	
Net Amount C.O.D.	

REVOLVING CHARGE ORDERS

TOTAL AMOUNT OF ORDER	
LESS: Down Payment	
TOTAL AMOUNT less Down Payment	

TOTAL

less allowance, if any	
Merchandise TOTAL	
Add 4% sales tax for all Michigan deliveries	
Shpg. Charges from above	
Plus amount due from previous order: Invoice # _____	
TOTAL AMOUNT OF ORDER	

TOTAL SHPG. CHARGES

*Shipping Charges are for mailable items only. Figure charges for each item individually. See Rate Chart on page 52.

TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022: REVOLVING CHARGE SECURITY AGREEMENT

I hereby purchase the total amount of merchandise listed on the reverse side plus shipping charges and tax, if any, less down payment, if any, plus the **FINANCE CHARGE** which, in lieu of being added to this contract in total as of the date hereof will be added monthly on the previous month's ending balance of my account before deducting payments and credits or adding purchases made during the current billing period. **FINANCE CHARGE** will be assessed on the balance according to the following schedule or in accordance with the laws of the State of my residence which ever is the lesser.

Account Balance Amount: ALL BALANCES. Periodic Percentage Rate: 1½%

ANNUAL PERCENTAGE RATE: 18%

The minimum **FINANCE CHARGE** assessed will be 50¢ on any small balances. If within 30 days from my billing date I pay the full outstanding balance shown on my statement, no **FINANCE CHARGE** on such balance, will be charged on any subsequent statement. The highest level of my balance reflected by the payment chart will govern my monthly payment, beginning 30 days from the cycle closing date shown on the statement, until such time as the total unpaid balance of each purchase is fully paid (minimum \$10). Regular or Extended Terms are the two plans available for my use. To use the extended plan, the balance of my account must be at least \$500.00. The amount of my monthly installment is determined from charts below.

REGULAR REVOLVING CHARGE

Charge up to:	\$150	200	250	300	350	400	450	500
Pay Monthly:	\$10	15	20	25	30	35	40	45

EXTENDED REVOLVING CHARGE

Charge up to:	\$600	700	800	900	1000	1100	1200	1300	1400	1500
Pay Monthly:	\$30	35	40	45	50	55	60	65	70	75

Add \$5 per month for every \$100 or fraction thereof over \$1500.

I hereby grant to the above named creditor a security interest in all goods purchased until the purchase price and **FINANCE CHARGE** have been paid in full. I will not sell, transfer possession of, remove or encumber the property without your written consent. The account may be declared in default and the matters regarding default, right to cure (if any) and acceleration of account balances will be governed by the consumer protection laws of the state of my residence. My installments shall be applied as follows. In case of items purchased on different dates, the first purchase shall be deemed first paid for. In case of items purchased on the same date, the lowest price shall be deemed first paid for. We intend to obtain a consumer report in connection with the processing of your credit application. Upon request you will be informed of the name and address of the consumer reporting agency that furnished the report. You may inspect your report by contacting the reporting agency that made it. Subsequently consumer reports may be obtained from time to time in connection with the maintenance of your account.

NOTICE TO BUYER: 1. Do not sign this agreement before you read it or if it contains blank spaces. You are entitled to a copy of the agreement you sign. 2. The other side of this page is part of this contract. Notice: See accompanying statement for important information regarding your rights to dispute billing errors.

3. NOTICE: ANY HOLDER OF THIS CONSUMER CREDIT CONTRACT IS SUBJECT TO ALL CLAIMS AND DEFENSES WHICH THE DEBTOR COULD ASSERT AGAINST THE SELLER OF GOODS OR SERVICES OBTAINED PURSUANT HERETO OR WITH THE PROCEEDS HEREOF. RECOVERY HEREUNDER BY THE DEBTOR SHALL NOT EXCEED AMOUNTS PAID BY THE DEBTOR HEREUNDER.

TYPE OF ACCOUNT <input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> JOINT	Sign here _____ Date _____ (Customer's Signature)	Check Revolving Charge Plan Desired <input type="checkbox"/> Regular <input type="checkbox"/> Extended
	Sign here _____ Date _____ (Spouse's Signature) If Joint Account	

FILL IN IF YOU ARE A NEW ACCOUNT, OR IF YOUR PREVIOUS ACCOUNT HAS BEEN PAID UP FOR 12 MONTHS OR MORE.

CREDIT APPLICATION TO: HEATH COMPANY, BENTON HARBOR, MICHIGAN 49022 Former Account No. _____

IMPORTANT: Please fill in completely. Omissions and errors cause delays

ACCOUNT To Be In The Name Of

First	Initial	Last	AGE	No. of Dependent Children
Present Residence: Address — Street			Area Code + Phone Number	
City		State	Zip	How Long YRS _____ MO _____
<input type="checkbox"/> OWN <input type="checkbox"/> RENT <input type="checkbox"/> BOARD	<input type="checkbox"/> MARRIED	TYPE OF ACCOUNT		Social Security Number
Monthly Rent or Mortgage Payments \$ _____	<input type="checkbox"/> UNMARRIED <input type="checkbox"/> SEPARATED	<input type="checkbox"/> INDIVIDUAL	<input type="checkbox"/> JOINT	
Former Address If Less Than 3 Yrs. At Present Address			How Long YRS _____ MO _____	
Street		City	State	Zip

COMPLETE FOR PERSON REQUESTING ACCOUNT:

Employer's Name (Give Firm's Full Name)	How Long YRS _____ MO _____	Position	Salary (Monthly) \$ _____	Business Phone
Employer's Address	(Child support, alimony and separate maintenance optional.) Other Income — Source(s)			Amount (Monthly) \$ _____
Former Employer — Name-Address	Position	How Long YRS _____ MO _____	Salary (Monthly) \$ _____	
Bank — Branch Address	City	State	Zip	<input type="checkbox"/> Check <input type="checkbox"/> Loan <input type="checkbox"/> Savings

CREDIT REFERENCE: (Give Merchants, Firms, or Finance Companies with whom you do or have done business)

Firm Name	Address — Street, City, State	Account No.	Balance

Name Nearest Relative Not At Your Present Address	Relationship	Relative's Address

COMPLETE FOR SPOUSE IF JOINT ACCOUNT REQUESTED:

Spouse's Full Name (First, Initial, Last)	Age	Social Security Number
Employer's Name (Give Firm's Name)	Employer's Address	Business Phone
How Long YRS _____ MO _____	Position	Salary (Monthly) \$ _____
Bank — Branch	<input type="checkbox"/> Check <input type="checkbox"/> Savings <input type="checkbox"/> Loan	

WHEN ORDERING, BE SURE TO REMOVE ENTIRE PAGE.

MONEY-BACK MANUAL PREVIEW

MONEY-BACK MANUAL OFFER. All kits come with manuals, but if you'd like to see how easy kitbuilding is, you can order the manual first. And we'll deduct the price of the manual when you buy the kit. Simply include manual invoice with your order.

Be sure to send manual orders on a separate sheet of paper. Manuals are \$3 each except for the following: color TV's, organs, H9, H8-18, WH8, WH11A, HW-101, AR-1515, AA-1515, AJ-1600, AP-1800, AA-1640, SO-4105, SO-4235, IP-2711, and ET series, which are \$7 each. Add 50¢ postage and handling for each manual ordered. Write Heath Company, Parts Dept., Benton Harbor, MI 49022.

SEE HEATHKIT PRODUCTS ON EXHIBIT AT THE FOLLOWING SHOWS:

Apr. 24-26	Dayton Ham Show	Dayton, OH
Apr. 26-May 1	American Society for Training and Development	Anaheim, CA
May 19-22	NCC Computer Show	Anaheim, CA
May 28-30	National Assoc. of Trade and Technical Schools	Hollywood, FL
June 22-26	American Society of Engineering Education	Amherst, MA
July 25-27	National ARRL Convention	Seattle, WA

Visit our Factory Store in Michigan

A Heath Customer Center is located alongside our production facility on Hilltop Road in Saint Joseph, Michigan. Stop in and take advantage of our MAIL ORDER PRICES, IMMEDIATE DELIVERY and expert SERVICE! Store hours are 9 AM to 5 PM Monday through Friday and 9 AM to 4 PM on Saturdays. Free Plant Tours Start May 30. And while you're there, why not take a free guided tour of our plant? It's fun and educational and you'll see firsthand how the best electronic kits in the world are made. Tours are given Monday through Friday, at 10 AM and 1:30 PM from May 30 to Sept. 1. (special group tours arranged upon written request). From Interstate 94, take Exit 23 (Business Loop 94, Red Arrow Highway) N. to Hilltop Road. Take Hilltop ¼ mi. E. to Heath Company.

Modification kits for SB-104 Transceiver and HP-1144 Power Supply. Last call: Modification kit updates SB-104 to SB-104A. Kit 830-24, \$40 plus \$3.50 shipping and handling. Mod kit updates HP-1144 Power Supply to HP-1144A. Kit 830-33, \$8.95 plus 90¢ shipping and handling. Quantities limited.

ATTENTION: GR-2001 or GR-2000 TV Owners and Photograph Buffs.

CLOSEOUTS: We have a limited number of Mediterranean cabinets with doors for the GR-2001 or GR-2000 Color TV's. Measures 29 $\frac{1}{2}$ " H x 48 $\frac{3}{4}$ " W x 26 $\frac{1}{4}$ " D (including cup). GRA-605-25, 108 lbs. \$299.95. Shipped motor freight collect. Limited quantities of PT-15 Electronic Darkroom Timer kit. 3 $\frac{1}{4}$ " H x 6 $\frac{3}{8}$ " W x 6 $\frac{1}{2}$ " D. \$36.95 plus \$2.00 shipping & handling.

The following notice is required by the Fair Credit Billing Act:

IN CASE OF ERRORS OR INQUIRIES ABOUT YOUR BILL

The Federal Truth in Lending Act requires prompt correction of billing mistakes.

1. If you want to preserve your rights under the Act, here's what to do if you think your bill is wrong or if you need more information about an item on your bill:

a. Do not write on the bill. On a separate sheet of paper write (you may telephone your inquiry but *doing so will not preserve your rights under this law*) the following:

- Your name and account number (if any).
- A description of the error and an explanation (to the extent you can explain) why you believe it is in error.

If you only need more information, explain the item you are not sure about and, if you wish, ask for evidence of the charge such as a copy of the charge slip. Do not send in your copy of a sales slip or other document unless you have a duplicate copy for your records.

iii. The dollar amount of the suspected error.

iv. Any other information (such as your address) which you think will help the creditor to identify you or the reason for your complaint or inquiry.

b. Send your billing error notice to the address on your bill which is listed after the words: "Send Inquiries to."

Mail it as soon as you can, but in any case, early enough to reach the creditor within 60 days after the bill was mailed to you. If you have authorized your bank to automatically pay from your checking or savings account any credit card bills from that bank, you can stop or reverse payment on any amount you think is wrong by mailing your notice so the creditor receives it within 16 days after the bill was sent to you. However, you do not have to meet this 16-day deadline to get the creditor to investigate your billing error claim.

2. The creditor must acknowledge all letters pointing out possible errors within 30 days of receipt, unless the creditor is able to correct your bill during that 30 days. Within 90 days after receiving your letter, the creditor must either correct the error or explain why the creditor believes the bill was correct. Once the creditor has explained the bill, the creditor has no further obligation to you even though you still believe there is an error, except as provided in paragraph 5 below.

3. After the creditor has been notified, neither the creditor nor an attorney nor a collection agency may send you collection letters or take other collection action with respect



The President's Corner

Dear Friends,

In reviewing the many letters written for this column, it struck me that there is a trend on my part to reminisce. The unlikely thought crossed my mind that this might be an indication of my thinking process somehow related to my advancing years... until I realized it is due exclusively to the fact I have more to remember.

I do like to recall what made Heath the success it is today. Without doubt it has a direct bearing on a worldwide group of individuals who are amateur radio operators. We introduced our first product for amateurs in 1948—a 1-watt 80 meter CW Transmitter. Seven years later the DX-100 appeared in our catalog, with over 4,000 units sold in the first year. More than a few are still operating. Today we have close to 50 amateur radio products.

Amateurs, perhaps better than most people, have an appreciation for the best in design, quality components, and meaningful operational features of a product. They have a sizable investment in their Ham equipment and a keen sense of cost/value relationship. They are also an important buyer of our test instruments. The sum of amateur radio and test instruments is close to one-third of our total business.

Our amateur radio friends will recognize a major change in this catalog. For the first time in fifteen years, an SB series of transceivers is absent. In its place, on page 26 we announce the coming of the SS-8000 as our new, top-of-the-line transceiver. To those of you who are not yet Hams, we suggest this might just be what is necessary to kindle your interest in the hobby. And to those of you who already have a license, the SS-8000 may rekindle that urge for a new, state-of-the-art rig. Yes, remembering is enjoyable, especially when the memories of the past are so pleasant as they are of the Apache and the DX and SB products. Thoughts of the future are even better with the SS-8000.

D.W. Pearce

President, Heath Company, W8GCD

NOTE: From time to time we make our mailing lists available to reputable businesses with offers we think would be of interest to you. If you do not wish to receive such offers, please send us the address label from your catalog with your request to: Heath Company, Dept. 597-999, Benton Harbor, MI 49022.

Copies of the Heathkit warranty or warranties for any other consumer product in this catalog costing more than \$15 may be obtained free of charge by writing the Manager of Marketing Services, Heath Company, Benton Harbor, MI 49022.

to the amount in dispute; but periodic statements may be sent to you, and the disputed amount can be applied against your credit limit. You cannot be threatened with damage to your credit rating or sued for the amount in question, nor can the disputed amount be reported to a credit bureau or to other creditors as delinquent until the creditor has answered your inquiry. However, you remain obligated to pay the parts of your bill not in dispute.

4. If it is determined that the creditor has made a mistake on your bill, you will not have to pay any FINANCE CHARGES on any disputed amount. If it turns out that the creditor has not made an error, you may have to pay FINANCE CHARGES on the amount in dispute, and you will have to make up any missed minimum or required payments on the disputed amount. Unless you have agreed that your bill was correct, the creditor must send you a written notification of what you owe; and if it is determined that the creditor did make a mistake in billing the disputed amount, you must be given the time to pay which you normally are given to pay undisputed amounts before any more FINANCE CHARGES or late payment charges on the disputed amount can be charged to you.

5. If the creditor's explanation does not satisfy you and you notify the creditor *in writing* within 10 days after you receive his explanation that you still refuse to pay the disputed amount, the creditor may report you to credit bureaus and other creditors and may pursue regular collection procedures, but the creditor must also report that you think you do not owe the money, and the creditor must let you know to whom such reports were made. Once the matter has been settled between you and the creditor, the creditor must notify those to whom the creditor reported you as delinquent of the subsequent resolution.

6. If the creditor does not follow these rules, the creditor is not allowed to collect the first \$50 of the disputed amount and FINANCE CHARGES, even if the bill turns out to be correct.

7. If you have a problem with property or services purchased with a credit card, you may have the right not to pay the remaining amount due on them, if you first try in good faith to return them or give the merchant a chance to correct the problem. There are two limitations on this right:

- You must have bought them in your home state or if not within your home state within 100 miles of your current mailing address; and
- The purchase price must have been more than \$50.

However, these limitations do not apply if the merchant is owned or operated by the creditor, or if the creditor mailed you the advertisement for the property or services.

Heathkit Test Equipment gives you great value and performance

Heathkit Test Equipment is among the best you can buy anywhere at any price. Care in engineering and top quality materials mean that the test equipment you buy from Heath will perform up to the highest standards for years to come. Thousands of amateur and professional technicians around the world can attest to Heath reliability. Heathkit Test Instruments are more than just a purchase;

they are an investment in your future as you continue to grow in your electronics hobby or career.

When you purchase a Heathkit Instrument you purchase years of engineering expertise in the field of test equipment design. Order your first piece of test gear from Heath and you'll agree; Heath is truly the best there is.

Heathkit Power Supplies to meet your special testing or design requirements

1 Tri-Output Power Supply combines fixed 5 VDC output with two continuously adjustable 0-20 VDC outputs for circuit designs requiring more than one voltage supply. The outputs of the two 20V supplies and the 5V output can be interconnected in any combination to provide both positive and negative voltages with a fixed reference, or they can be allowed to "float." 4½" H x 10¾" W x 9" D.

Kit IP-2718, Shpg. wt. 12 lbs. 99.95
Assembled SP-2718, Shpg. wt. 12 lbs. 185.00

IP-2718 SPECIFICATIONS: Outputs: 5 VDC @ 1.5A; A & B: 0-20 VDC @ 0.5A. Regulation: Load: less than 0.1% variation from no load to full load on 20V supplies; less than 3% variation from no load to full load on 5V supply. Line: less than 0.2% variation for line voltage change of 10V on 20V supplies; less than 0.15% variation for line voltage change of 10V on 5V supply. Power Requirement: 120/240 VAC, 60/50 Hz, 100W full load.

2 Power Supply/Battery Eliminator is clean, accurate voltage source for servicing Ham, Marine and CB communications gear. Two easy-to-read front panel meters continuously variable voltage selection from 9 to 15 VDC.

Kit IP-2715, Shpg. wt. 31 lbs. 149.95

IP-2715 SPECIFICATIONS: Output Voltage: variable from 9-15 VDC. Output Current: 12 amps continuous, 20 amps intermittent (per derating curve in manual). Ripple: less than 1% at full load. Regulation: less than 2% variation from no load to full load. Fuses: 7A, 3 AG slow-blow pri-

mary; 20A, 3 AG output. Power Requirement: 110-130 VAC, 7A or 220-260 VAC, 3.5 A, 60/50 Hz. Dimensions: 5¼" H x 11" W x 11" D.

3 General-Purpose Power Supply. 0-400 VDC output at 0-100 mA continuous (125 mA intermittent). 120/240 VAC, 50/60 Hz.

Kit IP-2717, Shpg. wt. 19 lbs. 139.95
SP-2717, Assembled, tested. 19 lbs. 210.00

4 Variable Isolated AC Power Supply. Continuously variable 0-140 VAC output, with complete isolation from AC line. Input voltage is 120 VAC, 60 Hz. Output current is 3 A max.

Kit IP-5220, Shpg. wt. 28 lbs. 139.95

Reliable General-Purpose Power Supplies to fill a special place on your bench

Kit IP-2710, 30V @ 3A analog.
Shpg. wt. 34 lbs. 169.95

Assembled SP-2710, 30V analog.
Shpg. wt. 34 lbs. 280.00

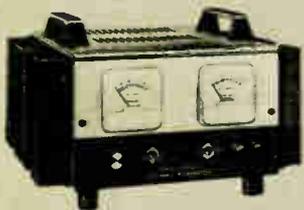
Kit IP-2711, 30V @ 3A digital.
Shpg. wt. 36 lbs. 229.95

Assembled SP-2711, 30V digital.
Shpg. wt. 35 lbs. 350.00

Kit IP-2728, 1-15 VDC regulated.
Shpg. wt. 5 lbs. 28.95



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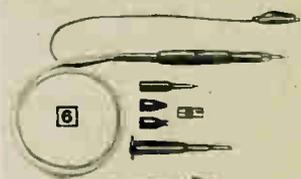
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Get more versatility and convenience from your Heathkit Instrument with these Probes and Accessories

1 50-ohm Termination. Used to eliminate improperly terminated cables which can cause incorrect display in frequency counters and distorted waveforms in scopes. DC to 1 GHz; power rating, 1 watt. VSWR; 250 MHz, 1.2:1, 600 MHz, 2:1.

Assembled SU-511-50, Shpg. wt. 1 lb. 19.00

2 RF Fuse in UHF BNC-to-BNC connector. Prevents burnout. DC to 500 MHz range; 50 ohms; 1.2:1 VSWR (max.); insertion loss 1.80 dB max. at 500 MHz. With spare fuses.

Assembled SU-512-50, Shpg. wt. 1 lb. 50.00

3 Low capacitance scope probe provides direct or X10 attenuated operation; options for 3.3 or 1 megohm

input resistance. Banana-plug/BNC wiring option.

Kit PK-1, Shpg. wt. 1 lb. 9.95

4 Scope demodulator probe for distortion checks, RF & IF display. 30 V rms max., 500 VDC max. Banana plug/BNC wiring option.

Kit 337-C, Shpg. wt. 1 lb. 7.95

5 RF Probe provides RF voltage measurement capability for any 10 or 11 megohm DC input voltmeter. Frequency response is linear from 1000 Hz to over 100 MHz. Includes banana plug for 10 megohm input and phone plug for 11 megohm input.

Kit PK-3A, Shpg. wt. 1 lb. 9.95

Assembled PKW-3A, Shpg. wt. 1 lb. 14.95

6 Combination X1, X10 Scope Probe. Has 2-position multiplier for X1 and X10 probe tip. DC to 15 MHz (X1) and DC to 80 MHz (X10) bandwidths. X10 risetime, 4.0 nS. Compensation range of 15-50 pF. Includes probe with 3-position slide switch, 4½ ft. cable.

Assembled PKW-105, Shpg. wt. 1 lb. 29.95

Accessory cables...for inter-connecting scopes, counters, etc. All cable is RG-58/U, 50 ohm impedance. Shpg. wt. (each), 1 lb.

Assembled SU-501-3, 3 ft., BNC/BNC 7.50

Assembled SU-501-6, 6 ft., BNC/BNC 7.50

Assembled SU-503-3, 3 ft., BNC/Banana 7.50

Build your own test bench—and save—with our 5280 Series

The 5280 Series of test instruments is designed for the beginning hobbyist, student or serviceman. It's an excellent way to assemble a truly versatile test bench, without spending a lot of money. The 5280 Series will let you work on many types of electrical and electronic equipment. Whether you're doing service work or just experimenting, each 5280 Series instrument represents real value for your test equipment dollar.

5280 Series instruments —
designed to work together

1 Multimeter for volts/ohms/DC current

The Heathkit IM-5284 high performance solid state multimeter gives you 4 different functions and a large easy-to-read panel meter. Features include AC and DC voltage measurement to 1000 volts and DC current measurement to 1000 mA full scale. The ohmmeter function is divided into four ranges, X1, X100, X10k, and X1MΩ. Power requirements are met by internal batteries or by the optional IPA-5280-1 power supply and 1 "C" cell. Includes test probes. Kit IM-5284, Shpg. wt. 5 lbs. 42.95

IM-5284 SPECIFICATIONS: DC Voltmeter: Ranges: 0-1, 0-10, 0-100, 0-1000 volts full scale. Accuracy: ±3% of full scale. AC Voltmeter: Ranges: 0-1, 0-10, 0-100, 0-1000 volts full scale. Accuracy: ±5% of full scale. DC Milliammeter: Ranges: 0-1, 0-10, 0-100, 0-1000 mA full scale. DC Input Resistance: 10 megohms. AC Input Resistance: 1 megohm. Ohmmeter: Ranges: X1, X100, X1k, X1MΩ. Power requirements: Two 9-volt batteries and 1 "C" cell or IPA-5280-1 Power Supply and 1 "C" cell. Dimensions: 5¾" H x 11" W x 7¾" D (14.6 cm H x 27.9 cm W x 19.7 cm D).

2 RF Oscillator for radio/TV alignment

This unit, which includes probes, is suitable for use in alignment of tuned stages in AM, FM, and television receivers. Output is divided into five bands, from 310 kHz to 110 MHz, and features an extra 100 to 220 MHz band of calibrated harmonics. An added feature of the IG-5280 is its 1000 Hz audio output. This signal, available at a front panel jack, is ideal for tracing and isolation of circuit defects in receiver audio stages and also serves as a source of internal AM modulation. Includes test leads.

Kit IG-5280, Shpg. wt. 5 lbs. 42.95

IG-5280 SPECIFICATIONS: RF Output: Frequency Range: 310 kHz to 110 MHz in five bands, 100 MHz to 220 MHz on harmonics. Output voltage: 100 mV approx. Internal Modulation: 1000 Hz. AF Output: Frequency: 1000 Hz. Output Voltage: 2.0 volts rms (open circuit). Power Requirements: Two 9-volt batteries or IPA-5280-1 power supply. Dimensions: 5¾" H x 11" W x 7¾" D.

3 Sine/Square Wave Audio Oscillator

The IG-5282 Audio Oscillator is an instrument that you'll find useful in many audio test applications. Frequency output is in four ranges, from 10 Hz to 100 kHz, in either sine or square wave modes. Use the IG-5282 as an audio signal source during signal tracing or, with the appropriate associated equipment, use the sine wave output for audio stage gain and distortion analysis. If you're interested in determining frequency response, you'll find the IG-5282's square wave output ideal for your purposes (with appropriate associated equipment). Construction is rugged and assembly time is greatly reduced by single circuit board assembly. A great addition for your test bench.

Kit IG-5282, Shpg. wt. 5 lbs. 42.95

IG-5282 SPECIFICATIONS: Frequency Output: 10 Hz to 100 kHz in four ranges. Sine Wave Output Voltage: 0-3 volts rms. Square Wave Output Voltage: 0-3 volts peak. Power Requirements: Two 9-volt batteries or the optional IPA-5280-1 Power Supply. Dimensions: 5¾" H x 11" W x 7¾" D (14.6 cm H x 27.9 cm W x 19.7 cm D).

4 RCL Bridge ideal for design work

The IB-5281 RCL Bridge is priced right for your pocket book and has the features that you can appreciate. Solid-state circuitry lets you easily determine unknown values of resistance, inductance and capacitance. Resistance is indicated in three ranges from 10Ω to 10MΩ, inductance in three ranges from 10 μH to 10H and capacitance, also in three ranges, from 10 pF to 10 μF. Easy single circuit board construction speeds assembly. Housed in a tough 5280 Series cabinet. With component clips.

Kit IB-5281, Shpg. wt. 5 lbs. 42.95

IB-5281 SPECIFICATIONS: Resistance Ranges: 10Ω to 10MΩ in three ranges. Inductance Ranges: 10 μH to 10H in three ranges. Capacitance Ranges: 10 pF to 10 μF in three ranges. Oscillator Frequencies: 1 kHz, 10 kHz, 100 kHz. External Standard Range: 1:1 to 10:1. Power Requirements: two 9-volt batteries, or IPA-5280-1 power supply. Dimensions: 5¾" H x 11" W x 7¾" D.

5 Signal Tracer for audio circuits

If you have been waiting to add an audio signal tracer to your bench because the price was just too high...look again. The IT-5283 Signal Tracer makes a great, low-priced addition to your trouble-shooting arsenal. A diode-equipped RF probe (furnished with the kit) lets you quickly trace radio and television receiver and transmitter circuits to reveal component and stage failures. When you flip the probe to its straight through (DC) position, you are able to locate defective circuitry in all types of audio components and systems with ease. By placing the IT-5283 in the audible position, the Signal Tracer emits a tone that changes in frequency depending on the test point voltage or resistance, thereby allowing you to easily trace signal flow through logic circuits to isolate problems.

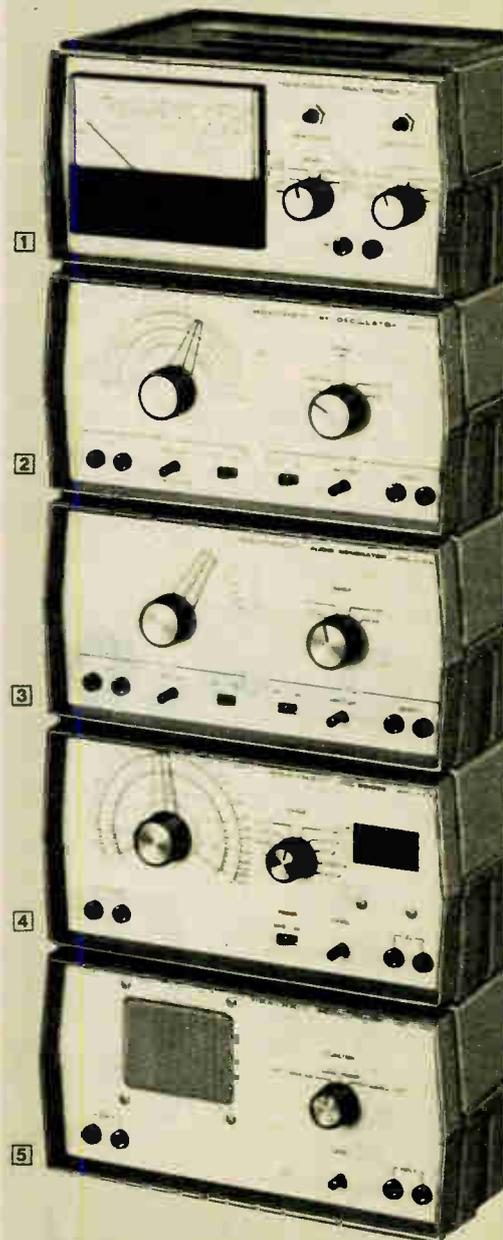
Kit IT-5283, Shpg. wt. 5 lbs. 42.95

IT-5283 SPECIFICATIONS: Functions: Substitute speaker, AF signal tracing, RF signal tracing, Audible volt/ohmmeter. Speaker: 3" permanent magnet. Power Requirements: Two 9-volt batteries and/or IPA-5280 power supply. Cabinet Dimensions: 5¾" H x 11" W x 7¾" D (14.6 cm H x 27.9 cm W x 19.7 cm D).

5280 Series 120/240 VAC Power Supply

Not shown. Provides all voltages required by 5280 Series instruments from 120 or 240 VAC, can power all five instruments simultaneously.

Kit IPA-5280-1, Shpg. wt. 3 lbs. 24.95



Use our top-value starter test instruments
to set up your test bench, using the IPA-5280-1
Power Supply to power your 5280
Series instruments

Quality Heathkit test instruments make service fast and easy

High-performance logic probe for TTL/CMOS digital circuits

The Heathkit IT-7410 detects and indicates both high and low logic levels in TTL or CMOS digital circuitry. It detects logic signals to 100 MHz, as well as the polarity and presence of single pulses as short as 10 nSec duration. And it shows intermediate or "bad" logic levels.

Simply touch the probe tip to an IC pin to observe the following conditions: Both indicators off shows open circuit or abnormal level between thresholds. The low (white) indicator on shows constant logic zero. The high (red) indicator on shows constant logic one. Both indicators flash at a 5 Hz or lower rate to show signal pulses. One indicator flashing shows normal to abnormal logic levels. A separate manually reset memory indicator lights whenever any transition in logic levels occurs.

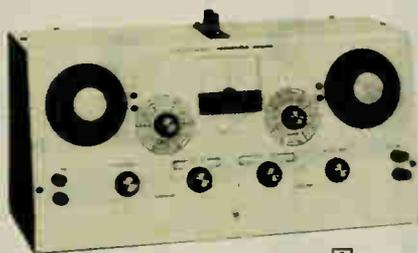
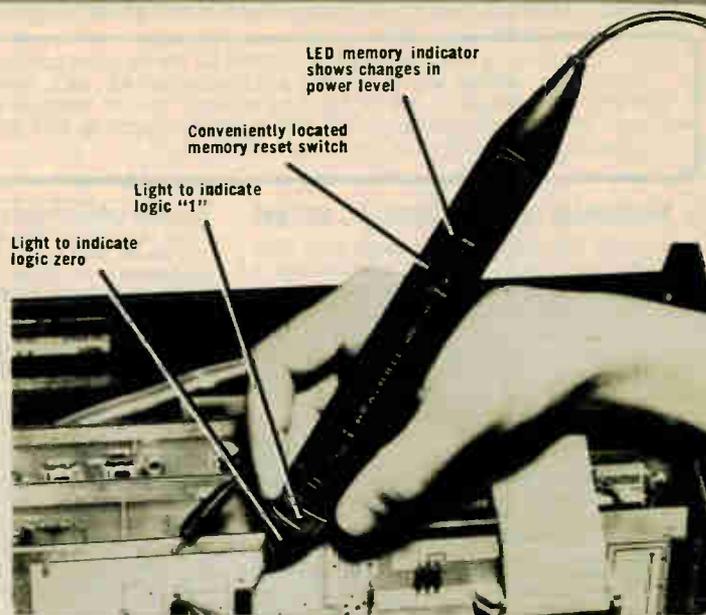
The IT-7410 is equipped with strain-relieved 34" power leads, color-coded mini-clips and a detachable high-frequency ground clip. The unit is powered by the circuit under test, or by a separate regulated DC power supply.

Kit IT-7410, Shpg. wt. 1 lb. 39.95

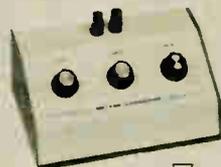
Factory Assembled and Tested Version of above.

ST-7410, Shpg. wt. 1 lb. 64.95

IT-7410 SPECIFICATIONS: DC Threshold Levels: Switch-selected, TTL logic "zero", 8V \pm 1.5, logic "one", 2.1V \pm 0.25 @ 5VDC. CMOS logic "zero", 30% \pm 10% of supply voltage, logic "one", 70% \pm 10% of supply voltage. Input Impedance: 400k ohms, parallel with 10pF. Response Limits: TTL or CMOS at 5VDC - single pulse or pulse train, 10 nS min. Square wave, 100 MHz max. CMOS at 15 VDC - single pulse or pulse train, 10 nS min. Square wave, 80 MHz max. Power Requirement: TTL - 4.75 to 5.5VDC @ 75 mA max. CMOS - 4.75 to 15VDC @ 115 mA max. Dimensions: 3/4" H x 1" W x 9/4" L.



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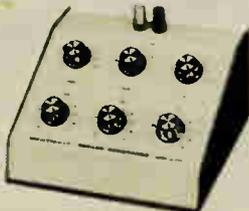
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1 High-Accuracy Impedance Bridge makes resistance, inductance and capacitance measurements easier. The IB-3128 features four separate bridge circuits for more accurate measurement of resistance, capacitance, low and high inductance, dissipation factor of capacitors and quality factor of inductors. Also has direct reading 100-0-100 microammeter, front panel binding posts for easier test setups, a built-in DC power supply and 1000 Hz AC generator. Requires headphones or oscilloscope for alignment. For 120/240 VAC, 50/60 Hz.
Kit IB-3128, Shpg. wt. 11 lbs. 159.95

IB-3128 SPECIFICATIONS: Detector: Vacuum tube detector and amplifier, using built-in meter. Terminals for external detector. Resistance: 0.1 ohm to 10 megohms. Capacitance: 100 pF to 100 μ F. Inductance: 0.1 mH to 100 H. Dissipation Factor: (D) 0.002 to 1. Storage Factor: (Q) 0.1 to 1000. Accuracy: 0.5% decade resistors used. Dimensions: 8" H x 17" W x 6" D.

2 Decade Capacitance Box functions as a wide-range variable capacitor for design work. The Heathkit IN-3127 helps you determine unknown capacitance values without complicated calculations. This decade capacitance box covers 100 pF to 0.111 μ F in 100 pF increments. Rated at 400 VDC.
Kit IN-3127, Shpg. wt. 2 lbs. 26.95

3 Capacitor Substitution Box provides switch selection of 18 EIA standard capacitors from 100 pF to 0.22 μ F. All capacitors are rated at 600 VDC - except the three lowest and two highest values, which are rated at 500 and 400 V respectively.
Kit IN-3147, Shpg. wt. 2 lbs. 17.95

4 Resistor Substitution Box provides switch selection of 36 10% tolerance, 1-watt resistors from 15 ohms to 1 megohm. Make-before-break switches permit switching resistances without shorts.
Kit IN-3137, Shpg. wt. 2 lbs. 17.95

5 Decade Resistance Box can be used as a variable multiplier/shunt, a variable resistor or as an arm with AC and DC bridges. Use with the IN-3127 Decade Capacitance Box to solve complex resistance and capacitance network problems. Covers 1 ohm to 999,999 ohms in 1-ohm steps. Precision resistors are rated at 1 watt with 0.5% tolerance.

Kit IN-3117, Shpg. wt. 3 lbs. 49.95

Heathkit Instrument Test Probes simplify your work



IMA-100-10 30 kV High-Voltage Probe multiplies DC ranges of any 10-megohm meter by 100. 1000 megohm input measures voltages as low as 1V in high-impedance circuits. With banana plug connector.

Kit IMA-100-10, Shpg. wt. 1 lb. 11.95

IMA-100-11 Probe provides x100 measurement for meters with 11-megohm input impedance (including probe resistance). 30 kV HV probe includes phone plug, ground clip.

Kit IMA-100-11, Shpg. wt. 1 lb. 11.95

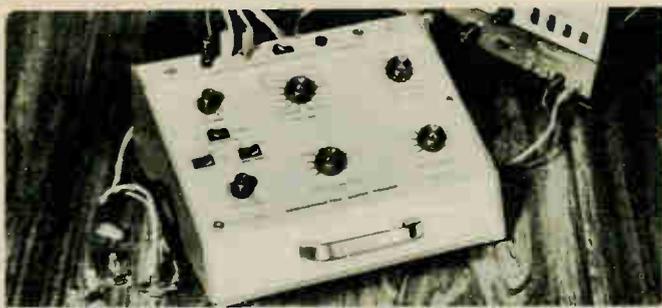
Factory Assembled Version of Above.

SMA-100-11, Shpg. wt. 1 lb. 17.95

IMA-1000-1 Probe provides x1000 attenuation for meters with 1-megohm input impedance. 30 kV. Banana plug connector.

Kit IMA-1000-1, Shpg. wt. 1 lb. 11.95

High-performance test equipment for semiconductors & IC's



Negative resistance and inter-base resistance (R_{bb}) for unijunction transistors.

Thermal runaway, leakage, linearity, beta, output admittance, saturation for bipolar transistors.

Typical field effect transistor display showing drain current versus drain voltage.

Field effect transistor breakdown.

Curve Tracer makes semiconductor testing faster and simpler

Take the guesswork out of semiconductor testing with the Heathkit IT-3121 Curve Tracer. An invaluable tool for the designer, technician or the serious electronic hobbyist. Just connect the IT-3121 to any oscilloscope with horizontal sensitivity of 0.5 V/div. and vertical sensitivity of 1 V/div. and adjustable horizontal gain. Devices such as bipolar transistors, diodes, SCRs, triacs, FETs, etc. can be inspected or tested for specific applications. Plug-in cables are supplied for fast, easy scope hookup. A calibration switch permits fast and accurate scope calibration. You can display most fundamental parameters (see insets for typical displays). The extensive manual included in each kit tells how to interpret each display. Low profile styling and the sloped front panel permit the Curve Tracer to sit in front of most oscilloscopes without blocking the CRT. Extra leads (included) allow you to test large devices or make in-circuit tests.

Kit IT-3121, Shpg. wt. 10 lbs. 119.95

IT-3121 SPECIFICATIONS: Sweep Voltage Ranges: 0-40 volts at 1 ampere max. 0-200 volts at 200 mA max. Sweep Voltage Sampling: .1, .2, .5, 1, 2, 5, 10, 20 and 50 V/div. $\pm 3\%$. Sweep Current Sampling: .5, 1, 2, 5, 10, 50, 100 and 200 mA/div. $\pm \%$. Sweep Dissipation Resistors: 0, 10, 50, 100, 500, 1000, 5000, 10k, 50k, 100k, 500k, 1 meg $\pm 10\%$. Step Currents: .002, .005, .01, .02, .1, .2, 2, 5, and 10 mA/step, $\pm 3\%$, ± 250 nA offset current max. Step Voltages: .05, .1, .2, .5, and 1 volt/step, $+3\%$, $\pm 5\%$ mA maximum offset voltage. Calibration Source: 9 volts $\pm 2\%$ in 1 volt steps. Polarity: PNP and NPN (P Channel - N Channel). Oscilloscope Requirements: Bandwidth to 20 kHz or greater. (DC-coupled oscilloscope is recommended). Power Requirement: 110 to 130 or 220 to 260 VAC. Dimensions: 4 1/2" H x 11 1/4" W x 10" D.

Low-cost Heathkit Testers add convenience and versatility to your bench

1 Heathkit deluxe Digital IC Tester gives you fast, easy IC checks

A "must for anyone working with digital integrated circuits. Lets you determine functions of IC's, check operation against your own data sheets. Features a special high-quality "zero-force" insertion socket — the same as used in expensive production-line testers — that lets you make thousands of insertions and extractions without worrying about bent pins. Exclusive "bounce-free," mercury stepping switch allows safe and easy "exercising" of multi-function IC's such as flip-flops. Has input-output jacks for each pin; neon indicators. Exceptionally easy to operate — 14- or 16-pin IC's can be installed in any position. Ideal for use with the Digital Techniques Program (see page 91).

Kit IT-7400, Shpg. wt. 6 lbs. 79.95

IT-7400 SPECIFICATIONS: Pull-up Resistors: externally connected, with patch terminals. Patch Terminals: one at each pin. Selector Switches: two at each terminal, one for +5V, step, or off; the other for gas discharge or ground. Gas Discharge: allows direct driving of neon indicator lamp for high voltage decoder driver. Power Supply: 5 VDC regulated, $\pm 5\%$, 300 mA and 3.6 VDC, switch selected. Power Requirement: 100-135/200-270 VAC, 60/50 HZ. Dimensions: 4 5/8" H x 11 3/8" W x 9 1/4" D.

2 High-accuracy FET/Transistor Tester for in or out-of-circuit tests

For quick, accurate tests of conventional (bi-polar) transistors, diodes, FETs, SCRs, triacs and unijunction transistors. Tests components either in-circuit using color-coded test leads supplied or out-of-circuit using built-in sockets. Shows gain (DC Beta), trans-conductance (G_m) and leakage directly on the large easy-to-read meter. Five current ranges permit leakage measurements as low as 1 μ A and collector currents as high as 1 ampere. Has easy-to-use push-button function switches, special battery testing circuit that shows the condition of batteries' power supply, two-color front panel design with black lettering for conventional (bipolar) transistors and red lettering for FET's. Batteries not included.

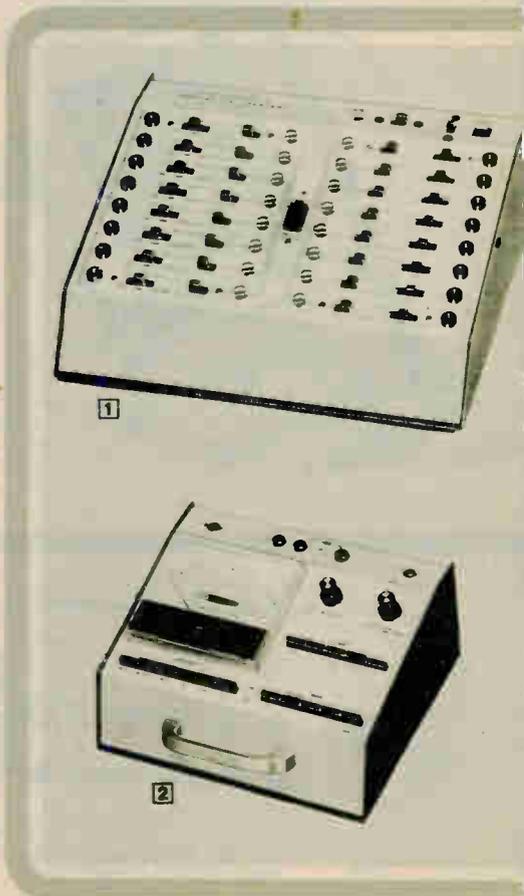
Kit IT-3120, Shpg. wt. 5 lbs. 69.95

IT-3120 SPECIFICATIONS: Out-of-Circuit Accuracy: $\pm 5\%$ for DC beta and leakage. In-Circuit Accuracy: Indicates good or bad transistor, FET, diode, SCR or triac. Diode Test: Tests for forward conduction and blocking. Unijunction Transistor Test: Measures I_{eb3}, I_{eb1s} and emitter current. Power Requirement: Two 1 1/2" V cells, (alkaline for best performance, not supplied). Dimensions: 5" H x 9 1/8" W x 8 1/8" D.

Take this portable Transistor/Diode Checker with you anywhere for field checks

Transistor/Diode Checker. (Not shown). Checks high and low power transistors (NPN and PNP) for shorts, opens, leakage and current gain. Checks diodes for forward and reverse current; also can be used as a continuity tester. Has switches for FOR-REV/PNP-NPN, DIODE/HI-LO,

LEAKAGE-GAIN. Easy-to-read calibrated meter. Metal cabinet can be placed so that switches are on top or either side for most convenient operation. Uses two 1.5-volt "C" cells for easy portability. 3 1/8" H x 3 1/8" W x 3 3/4" D. Less batteries. Kit IT-3127, Shpg. wt. 2 lbs. 12.95



Heathkit TV service instruments save you time and money



Low-Cost CRT Tester/Rejuvenator brings your old and worn TV picture tubes back to life — even in-line gun types!

Test, clean and rejuvenate almost all current CRT's including in-line-gun types. Positive action pushbuttons control all tests and processes for easy operation. Individual guns can be cleaned, tested and rejuvenated by using the front panel pushbuttons. And separate meters for each gun allow easy tracking of the individual grid currents. The main power control also sets control grid voltage level. A separate heater voltage meter allows monitoring of the heater voltage supplied to the cathode of the CRT. An indicator lamp gives visual confirmation of CRT short-circuits and the visual display restore indicator glows brighter as the rejuvenating current is increased. A separate cleaning process is applied after rejuvenation to assure proper tube operation. With 4' heavy-duty test cable.

Kit IT-5230, Shpg. wt. 9 lbs. 119.95
 Factory Assembled Version of above.
 ST-5230, Shpg. wt. 9 lbs. 160.00

IT-5230 SPECIFICATIONS: Sockets Supplied: 14-pin for 90° color tubes; 13-pin for in-line color tubes; 8-pin for black-and-white tubes; 7-pin for black-and-white tubes. Heater Supply Voltage: Variable from 2 volts to 12 volts at 1 ampere. Power Requirement: 120/240 VAC (ST-5230: 120 VAC.) Dimensions: 5.12" H x 13.5" W x 10" D.



Portable Color Alignment Generator for in-the-field service

The IG-5240 offers outstanding performance, with crystal-controlled carrier and color oscillator for real precision, accuracy and stability. Its convenient "shirt-pocket" size makes it the one to take along for in-the-field service calls every time. It's a versatile, low-cost service tool for hobbyists, too. The IG-5240 is really easy to operate. Simply connect its output cable to the VHF terminals of any color TV. The RF carrier frequency is calibrated for channel 4. An "on" pushbutton turns the IG-5240 on, four program slide switches select any of the 16 displays available. A color level control adjusts the color intensity of the three color patterns. A special "battery saver" timing circuit turns the display "off" automatically after a minimum of five minutes "on". This conserves battery power and lets you get the most efficient operation from your batteries. The unit uses two inexpensive 9-volt transistor batteries for a minimum of 8 hours continuous operation. For features, convenience and versatility, we don't think you can find a better color alignment generator than the IG-5240. Put this truly portable color alignment generator in your service shop today!

Kit IG-5240, Shpg. wt. 2 lbs. 69.95
 SG-5240, Factory Assembled Version of above. Shpg. wt. 1 lb. 95.00

IG/SG-5240 SPECIFICATIONS: Chroma Carrier: 3563.795 kHz $\pm 0.005\%$ crystal-controlled. Master Timer: 377.616 kHz $\pm 0.005\%$ crystal-controlled. RF Carrier: Channel 4, 67.250 MHz $\pm 0.01\%$ crystal-controlled. RF Output Level: 5000 μ V min. into 300 ohms. Video Modulation: 50% (approx.) On-Time Interval: 5 minutes min. OFF pushbutton can override time out. Power Requirement: Two 9-volt transistor batteries; with 180 mA capacity (NEDA #1604). Dimensions: 5.4" L x 2.75" W x 1.15" D.



1 Color Bar and Dot Pattern Generator for easy service

Provides 12 patterns plus a clear raster for purity adjustments, and patterns are available in the exclusive Heath 3x3 display or the familiar 9x9. Has RF output for channels 2 through 6, variable up to 50,000 μ V, variable plus and minus going video, front panel gun shorting switches and lead piercing grid jacks, front panel sync output, 4.5 MHz sound carrier oscillator, two 500W AC receptacles. For 120/240 VAC, 50/60 Hz. 5½" H x 13½" W x 8" D.

Kit IG-5228, Shpg. wt. 8 lbs. 134.95

2 Versatile combination Vectorscope/Color Generator

Accurately shows the chroma signal being fed to the CRT to indicate missing or weak colors, proper adjustment of the burst phase transformer, 3.58 MHz oscillator, reactance coil, bandpass transformer, color demodulation angle. Provides 12 patterns plus a raster for purity adjustments in 9x9 or 3x3.

Kit IO-4101, Shpg. wt. 13 lbs. 189.95

Heathkit TV/radio test equipment gives you top quality

Get world-famous Heathkit reliability in a high-quality Yoke/Flyback Tester — and spend a lot less money — with the new portable IT-5235

\$89⁹⁵
Kit

- Simple good/bad ring test checks yokes, flybacks and coils
- Quick, reliable measurement of drive signals in horizontal circuits
- Portable and lightweight with easy one-knob tuning

Why spend twice as much for a comparable model when you can get world-famous Heathkit quality at an affordable price? The new IT-5235 Yoke/Flyback Tester offers simple and reliable performance in a portable, lightweight package designed for TV service technicians.

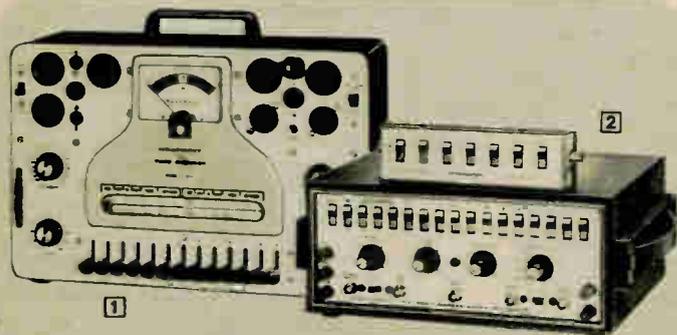
A dynamic good/bad ring test checks horizontal and vertical windings of yokes, flybacks, horizontal linearity coils, efficiency coils and general mid-frequency (10 to 100 kHz) coils. Testing can be conducted in or out of circuit. You can get measurements of drive signals in horizontal circuits, as well

as focus and anode voltage measurements with the optional IMA-100-10 HV probe (listed below).

Use the IT-5235 on solid-state and tube-type TV's anywhere! It's lightweight (just 6 pounds) and portable, and can be operated on 110 or 240 VAC. One-knob tuning with color-coded controls, jacks and inputs provide easy, accurate measurements. Calibration requires only an oscilloscope. Test leads and convenient storage compartment included.

Kit IT-5235, Shpg. wt. 8 lbs. 89.95
ST-5235, Assembled, Shpg. wt. 7 lbs. 130.00
IMA-100-10, High-Voltage Probe, 1 lb. 11.95

IT/ST-5235 SPECIFICATIONS: Yoke/Flyback Accuracy: ± 1 ring at 10 mark on highest reading range. Drive Voltage Scales: 0-30 V P-P AC, 0-300 V P-P AC. Drive Voltage Accuracy: $\pm 5\%$ of full scale, 100 Hz to 200 kHz. High-Voltage Scales: 0-10 k VDC, 0-40 k VDC. High-Voltage Accuracy: $\pm 3\%$ of full scale (including optional IMA-100-10 HV probe). Dimensions: 6 $\frac{7}{8}$ " H x 5 $\frac{3}{4}$ " W x 10 $\frac{3}{4}$ " D.



[1] Low-Cost Heathkit Tube Checker. Essential for radio-TV servicing! Tests tubes on the basis of total emission, for shorts, leakage, open elements, and filament continuity. Has good/bad indicator to show relative quality, neon bulb indicator for filament continuity and leakage or shorts between elements.
Kit IT-3117, Shpg. wt. 12 lbs. 159.95

IT-3117 SPECIFICATIONS: Sockets: 4-pin, 5-pin, 6-pin combination and pilot light. 7-pin miniature, octal, loctal, 10-pin miniature, 9-pin novar, 9-pin miniature, 12-pin compactron, 5-pin nuvistor, 7-pin nuvistor. Power Requirement: 120 VAC, 50/60 Hz. Dimensions: 8 $\frac{1}{2}$ " H x 13" W x 5 $\frac{1}{2}$ " D.

[2] Deluxe Post Marker/Sweep Generator. The IG-5257 makes receiver alignment fast and easy. It features 15 selectable markers, carrier markers for channels 4 and 10, a diode modulator for Video Sweep Modulation, a 400 Hz tone for FM receiver alignment.
Kit IG-5257, Shpg. wt. 16 lbs. 229.95

IG-5257 SPECIFICATIONS: Marker frequency: 100 kHz. Marker frequencies, crystal-controlled: 3.08, 3.68, 4.08, and 4.50 MHz $\pm 0.01\%$. 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, $\pm 0.005\%$; 67.25 and 193.25 MHz $\pm 0.01\%$. Modulation frequency: 400 Hz. Input impedance: 75 ohms. Trace In — 220 k ohms. Output impedance: 75 ohms. Scope Vert. — 1 k ohms. Bias voltage: Positive or negative polarity. Sweep frequency ranges: LO Band — 2.5 to 5.5 MHz ± 1 dB. IF Band — 39 to 49 MHz ± 1 dB. RF band — 64 to 72 MHz ± 1 dB. Attenuator: Total of 70 dB in seven steps.

FM Deviation Meter helps check FM transmitters

\$149⁹⁵
Kit

- Measures peak deviation of transmitters and signal generators
- Easy-to-read, easy-to-operate, accurate to ± 3 percent
- Two front panel jacks for easy oscilloscope hookup



Measures peak FM deviation of transmitters and signal generators between 25 and 1000 MHz Coarse and fine-tune controls for easy setup. Can be connected to a transmission line. Battery operated (batteries not included).

Kit IM-4180, Shpg. wt. 7 lbs. 149.95
SM-4180, Assembled and Tested, Shpg. wt. 6 lbs. 250.00
Kit IMA-4180-1, Battery Charger/Eliminator, 2 lbs. 29.95
SMA-4180-1, Assembled and Tested, Shpg. wt. 2 lbs. 40.00
SU-510, Telescoping Antenna for IM-4180, 1 lb. 9.95

IM/SM-4180 SPECIFICATIONS: Deviation Ranges: 0-2, 0-7.5, 0-20 and 0-75 kHz peak. Accuracy: $\pm 3\%$ of full scale. Input Impedance: 50 ohms. Maximum Safe Input: 5 volts. Scope Output: 13 mV/kHz peak. Dimensions: 5" H x 10 $\frac{1}{4}$ " W x 7 $\frac{3}{4}$ " D.

High-Voltage Probe Meter
for fast, easy TV Tube Measurements



Makes TV high voltage measurements fast and convenient. It's lightweight, portable and measures DC voltages up to 40 kV with $\pm 3\%$ accuracy. Easy operation and assembly.

Kit IM-5210, Shpg. wt. 2 lbs. 22.95

Heathkit test instruments offer top

1 Solid-State Taut-Band FET VOM. Provides the input characteristics and measuring capabilities of a VTVM with the versatility and portability of a VOM. The $4\frac{1}{2}$ " taut-band meter is diode-protected for outstanding ruggedness and reliability. Has 9 AC and DC voltage ranges; 6 current ranges; seven resistance ranges and 9 dB ranges. Extra-wide frequency response is useful for audio measurements and in many other applications where conventional VOMs can't be used. Easy kit assembly.

Kit IM-1104, Shpg. wt. 4 lbs. 114.95

IM-1104 SPECIFICATIONS: Frequency Response: 0.1 to 30 volt ranges, $\pm 3\%$, 20 Hz to 20 kHz, $\pm 5\%$, 20 Hz to 50 kHz, 100-300 volt ranges, $\pm 3\%$, 20 Hz to 10 kHz, $\pm 5\%$, 20-Hz to 20 kHz, 1000 volt range, $\pm 3\%$, 20 Hz to 1 kHz. DC VOLTAGE RANGES: 0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V. Accuracy: $\pm 2\%$ of full scale. AC VOLTAGE RANGES: 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000 V. Accuracy: $\pm 3\%$ full scale. DC MILLIAMETER: 0-0.1, 0.1, 1, 10, 100, 1000 mA. Accuracy: $\pm 2\%$ to 100 mA, $\pm 3\%$ to 1000 mA. AC MILLIAMETER: Same as DC mA; accuracy, $\pm 3\%$ to 100 mA; $\pm 4\%$ to 1000 mA. OHMMETER: Rx10, Rx100, Rx1000, Rx10K, Rx100K. (10 ohm center scale). Rx1M (10 megohm center scale) dB: (0 dB = 1 mW into 600 ohms) -40 to -18, -30 to -8, -20 to +2, -10 to +12, 0 to +22, +10 to +22, +20 to +42, +30 to +52, +40 to +62. Operating Temperature: 0 to 50°C. Batteries (not supplied): one 1.5 V D-cell (NEDA =13); four 1.5 V AA cells (NEDA =15). Dimensions: 6.95" H x 4.95" W x 2.25" D.

2 General-Purpose VOM for easy service. The IM-105 is a high-accuracy VOM that's really designed to take it. Accurate enough for engineering, design and R & D work, the IM-105 features a low-friction, taut-band meter with diode and fuse-protected movement. Calibrated controls, DC polarity reversal switch, front panel ohms adjustment plus a strong, truly dropable case. Less batteries.

Kit IM-105, Shpg. wt. 3 lbs. 99.95

IM-105 SPECIFICATIONS: DC VOLTAGE RANGES: -0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: $\pm 3\%$ of full scale. Input resistance: 20,000 ohms V full scale. AC VOLTAGE RANGES: -2.5, 10, 50, 250, 500 V, 1 kV & 5 kV full scale. Accuracy: $\pm 4\%$ of full scale. Input resistance: 5000 ohms V. Input capacity: Less than 20 pF. Frequency response: 2.5, 10, and 50 V ranges, $\pm 5\%$, 10 Hz to 100 kHz; 250, 500 V ranges: $\pm 5\%$, 10 Hz. DC CURRENT RANGES: -0.05, 1.0, 10, 100, 500 mA & 10 A full scale. Accuracy: $\pm 3\%$ of full scale. RESISTANCE RANGES: $\times 1$ (20 center scale), $\times 10$, $\times 100$, $\times 1k$, $\times 10k$. Accuracy: ± 3 degrees of arc. DECIBEL RANGES: (0 dB = 1 mW in 600 ohms). -10 to +56 dB. Dimensions: 7" H x 5" W x 2 $\frac{1}{4}$ " D.

3 Quality FET Multimeter. Measures AC and DC volts, current and resistance. Features auto-polarity for added convenience, high and low voltage/ohms functions for in and out of circuit checks of semiconductor devices and resistance measurements.

Kit IM-5225, Shpg. wt. 8 lbs. 129.95
SM-5225, Assembled, 8 lbs. 185.00

IM-5225 SPECIFICATIONS: DC Volts: nine ranges 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, and 1000 full-scale. AC Volts: nine ranges 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, and 1000 volts full-scale. DC Current: six ranges 0-0.1, 0.1, 1, 10, 100, 1000 milliamperes full-scale. AC Current: six ranges 0-0.1, 0.1, 1, 10, 100, 1000 milliamperes full-scale. Ohms: seven ranges X1, X10, X100, X10k, X100k, X1M. Power Requirement: 120/240 VAC, 50/60 Hz, 5 watts. Dimensions: 6 $\frac{7}{8}$ " H x 5 $\frac{3}{4}$ " W x 11 $\frac{1}{4}$ " D.

4 Deluxe AC Voltmeter. Has excellent frequency response and sensitivity high-accuracy measurements. And it's one of the only instruments around to feature linear scales for both volts and decibels!

Kit IM-5238, Shpg. wt. 8 lbs. 99.95
SM-5238, Assembled, Shpg. wt. 8 lbs. 160.00

IM/SM-5238 SPECIFICATIONS: Voltage Range (full scale): 1 millivolt to 300 volts AC, 12 ranges. Decibel Range: -70 dB to +40 dB, 12 ranges in 10 dB steps with variable offset. Input: 10 megohms, 30 pF, negative input grounded to chassis. Frequency Response: Voltage Range, 10 Hz to 1 MHz, ± 2 dB, 10 Hz to 500 kHz ± 1 dB, dB range, 10 Hz to 250 kHz ± 1 dB. Outputs: DC (proportional to input volts), 1 volt full scale. DC (proportional to log of input volts), 3 volts full scale. AC (amplified output), 1 volt peak, full scale. Scales: 0-10 volts; 0-3.16 volts; -20 to +10 dB. Accuracy: Voltage Ranges, 4% of full scale at 1 kHz plus accuracy of calibration standard. dB ranges, ± 0.5 dB at 1 kHz plus accuracy of calibration standard. Power Requirement: 100-135 VAC, 200-270 VAC, 50/60 Hz, 20 watts. Dimensions: 6 $\frac{3}{4}$ " H x 5 $\frac{3}{8}$ " W x 10 $\frac{7}{8}$ " D.

5 Lin/Log Swept Function Generator. The IG-1275 is a reliable lab-grade function generator that provides sine, square and triangle waveforms PLUS swept-function waveforms for convenient frequency response tests. This Lin/Log Swept Function Generator also has pen lift and chart control signals, for use with Heathkit chart recorders and others. The IG-1275 provides a 50 dB switch attenuator, variable between ranges, adjustable symmetry from 5 percent to 95 percent, and analog, sweep and sweep gate outputs for convenient system control. Start and stop frequencies are set independently; sweep modes can also be triggered externally.

Kit IG-1275, Shpg. wt. 15 lbs. 299.95

IG/SG-1275 SPECIFICATIONS: Output: 50-ohm source - short circuit protected. ± 10 volts open circuit. ± 5 volts into 50-ohm load. Output Flatness: ± 0.1 dB to 300 kHz. ± 0.5 dB to 3 MHz. Frequency: 0.003 Hz through 3 MHz in 6 range steps on primary decade. Sine Distortion: Less than 1%, $\times 10^3$. Less than 0.5%, $\times 10^2$, 10^3 , 10^4 . Less than 0.75%, $\times 10^5$. Harmonics 30 dB down $\times 10^4$. Triangle Linearity: No deviation greater than 1% to 300 kHz. Square-Wave Rise and Fall: Less than 60 nS. Sweep Generator: 6 ranges, 10 μ s through 100 sec. Sweep Output: Supplies 0 to 4.5-volt linear ramp at sweep generator rate from a 1000-ohm source. *Applicable only on top decade of each frequency range. The IG-1275 requires a triggered sweep oscilloscope for calibration. Power Requirement: 100 to 135 volts, 50-60 Hz, 20 watts maximum. (200 to 270 volts, 50-60 Hz, switch selectable.) Dimensions: 5 $\frac{3}{8}$ " H x 15" W x 11 $\frac{7}{8}$ " D.



• Easy to Operate front panel controls

- Short-circuit-proof output amplifier
- Rugged case with carrying handle

performance, high reliability and build-it-yourself value

1 Popular, low cost VTVM. A single test probe that makes all measurements; seven practical AC, DC volts and ohms ranges; a precision 4½" color-coded 200 µA meter. 1% precision network resistors provide excellent accuracy; wide ±1 db, 25 Hz to 1 MHz frequency response permits a variety of AC measurements. Measures both rms and p-p AC volts. Separate full-scale ranges for 1.5 and 5 volts makes low-voltage readings really easy, ideal for work with solid-state and latest digital equipment. Can be wired for 120 or 240 VAC.

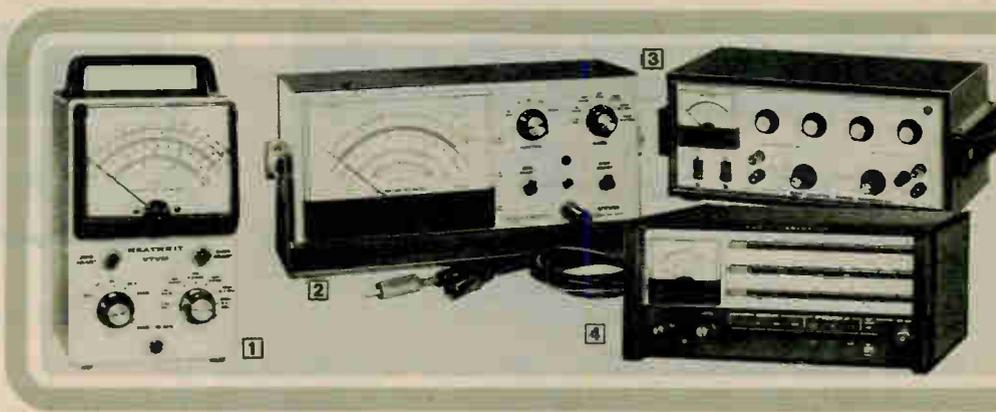
Kit IM-5218, Shpg. wt. 5 lbs. 59.95
Assembled SM-5218, Shpg. wt. 5 lbs. 75.00

IM/SM-5218 SPECIFICATIONS: Meter Scales: DC & AC (rms): 0-1.5, 15, 50, 150, 500, 1500 V full scale. AC Peak-to-Peak: 0.4, 14, 40, 140, 1400, 4000 V full scale. Resistance: 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures 1 ohm to 100 megohms. Meter: 4½", 200 µA movement. Input Resistance: 11 megohms (1 megohm in probe) on all DC ranges; 1 megohm shunted by 35 pF on all AC ranges. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: DC ±3%, AC ±5% of full scale. Frequency Response: ±1 dB, 25 Hz to 1 MHz (600 ohm source). Battery Requirements: 1.5 V, size "C" cell (not supplied). Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: 7¾" H x 4¼" W x 4¼" D.

2 Pro-feature bench VTVM. Bench-type version of IM-5218. All calibration controls are conveniently adjustable from the front panel. 120 or 240 VAC.

Kit IM-5228, Shpg. wt. 6 lbs. 69.95
Assembled SM-5228, Shpg. wt. 7 lbs. 120.00

IM/SM-5228 SPECIFICATIONS: DC VOLTMETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale; up to 30,000 V with accessory probe. Input Resistance: 11 megohm (1 megohm in probe) on all ranges: 1100 megohms with accessory probe. Circuit: Balanced bridge (push-pull) using twin triode. Accuracy: ±3% of full scale. AC VOLTMETER — Ranges: 0-1.5, 5, 15, 50, 150, 500, 1500 rms scales. Frequency Response (5 V range): ±1 dB 25 Hz to 1 MHz (800 ohm source, referred to 60 Hz). Accuracy: 5% of full scale. Input Resistance & Capacitance: 1 megohm shunted by 40 pF measured at input terminals (200 pF at probe tip). OHMMETER — Ranges: Scale with 10 ohm center, X1, X10, X100, X1000, X10k, X1 meg. Measures 0.1 ohm to 1000 megohms with internal battery. Meter: 6", 200 µA movement, polystyrene case. Battery: 1½ V, "C" cell (not supplied). Power Requirement: 120/240 VAC, 60/50 Hz, 10 W. Dimensions: 5" H x 12¼" W x 4¾" D.



3 Sine-square wave Audio Generator. Ideal for gain and frequency response measurements in audio amplifiers, as a signal source for harmonic distortion measurements or as an external modulator for RF signal generators. A meter, calibrated in both volts and dB, monitors the sine wave output.

Kit IG-5218, Shpg. wt. 10 lbs. 99.95
Assembled SG-5218, 10 lbs. 185.00

IG/SG-5218 SPECIFICATIONS: Frequency Range: 1 Hz to 100 kHz. Sine Wave Output: Output Voltage: 8 ranges, 0.003 to 10 V rms (full-scale) with 10 k ohm or higher external load. 6 ranges, 0.003 to 1 V (full-scale) with 600 ohm internal or external load. dB Ranges: -62 dB to +22 dB, -12 dB to +20 dB on amplitude switch in 10 dB steps. +2 dB max. into 600 ohm load. (0 dB = 1 mW in 600 ohm). Output Variation: +1 dB 10 Hz to 100 Hz. Output Impedance: 10 V range: 0-1000 ohm, 3 V range: 800-1000 ohm; 1 V range and lower: 600 ohm. Square Wave Output: Output voltage (peak-to-peak): 0-1, 1, 10 V into 2000 ohm load or higher. Output Impedance: 0.1 and 1 V ranges: 52 ohm; 10 range: up to 220 ohm. Power Requirement: 105-125 or 210-250 VAC, 60, 50 Hz, 6 watts. Dimensions: 5½" H x 13¼" W x 7" D.

PKW-4, Wired Replacement Probe for IM-5228, 5218, 18 or 28. Wt. 1 lb. 10.95
Convert your IM-5228, 5218, 18 or 28 to instant-on solid-state operation.
IMA-18-1, Wt. 1 lb. 19.95

4 IG-1272 Audio Frequency Generator. The Heathkit IG-1272 provides a low-distortion sine wave output over a frequency range from less than 5 Hz to 100 kHz. Pushbutton select first 3 significant digits of desired frequency; also control frequency multiplier. Perfect for the serious audiophile, audio service shop or audio designer.

Kit IG-1272, Shpg. wt. 11 lbs. 159.95
Assembled SG-1272, 10 lbs. 170.00

IG/SG-1272 SPECIFICATIONS: Output Voltage: 0.003 to 10 volts RMS. Output Load: 600 ohms. Hum and Noise: 0.01% or less. Frequency Accuracy: Pushbuttons; ±4%, ±1 Hz, typical ±1.5%. Variable; Depends on accuracy of counter being used. Attenuation: 10 to 70 dB. Power Requirement: 120 VAC or 240 VAC, 50 or 60 Hz, 10 watts maximum. Dimensions: 5½" H x 11" W x 12½" D.



Solid-State portable VOM is ideal for fast, in-the-field checks

\$44⁹⁵

- Value-priced
- Easy-to-build

Our lowest-priced portable VOM is ideal for car buffs, boaters, campers — any away-from-the-bench situation. Has four AC, DC and ohms ranges for most common measurements, high impedance to minimize circuit loading, wide frequency response for audio measurements. A special 1½-volt ohmmeter is ideal for checking semiconductors. Function switch gives you both AC and DC readings without changing test lead connections. Less batteries.

Kit IM-5217, Shpg. wt. 4 lbs. 44.95

IM-5217 SPECIFICATIONS: DC VOLTMETER: Ranges: 0-1.5, 0-15, 0-150, 0-500 volts full scale. Input Resistance: 10 megohms on all ranges. Accuracy: ±3% full scale. AC VOLTMETER: Ranges: 0-1.7, 0-15, 0-150, 0-500 volts full scale. Input Resistance: 1 megohm on all ranges. Input Capacitance: approx. 100 pF (40 pF on 500-volt range). Accuracy: ±5% full scale. Frequency Response: 1 dB, 10 Hz to 1 MHz. OHMMETER: Rx1, Rx100, Rx10k, Rx1M (10 ohms center scale). Meter: 4½". 100 µA, 100 degree movement. Batteries: (not supplied): two 9-volt, one 1.5 V "C" cell. Dimensions: 5¾" H x 9¾" W x 9" D.

Versatile, low-cost Heathkit 1 Hz-1 MHz Function Generator

Generates highly accurate sine, square or triangle waveforms over a frequency range of 1 Hz to 1 MHz. The frequency multiplier and front panel tuning control set any frequency fast and easy. The output amplifier supplies a 10 volt (p-p) signal into a 50 ohm load. A calibrated step attenuator adjusts from 0 to 50 dB (10V p-p to 30 mV p-p) in 10 dB steps. An attenuator control provides up to 20 dB additional attenuation. A triggered scope is necessary for calibration.

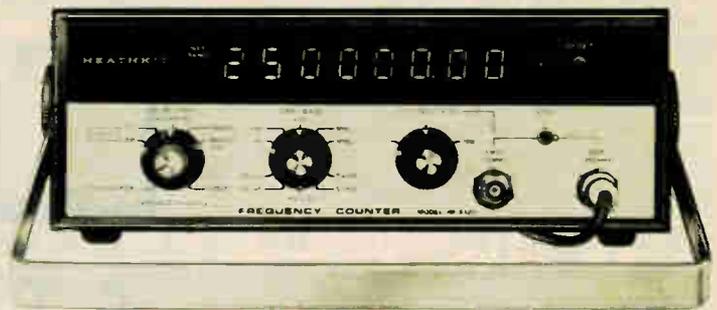
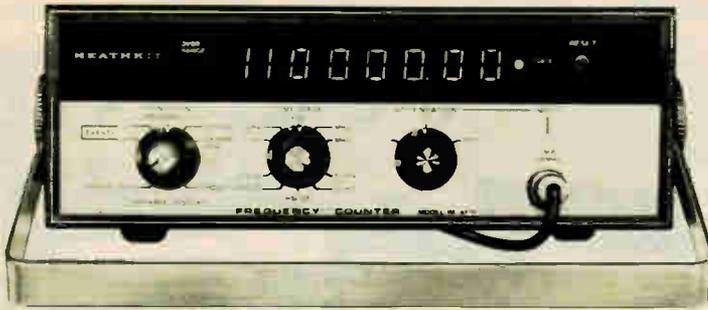
Kit IG-1271, Shpg. wt. 7 lbs. 134.95

Assembled Version of the IG-1271.

SG-1271, Shpg. wt. 7 lbs. 195.00

IG-1271 SPECIFICATIONS: Frequency Range: 1 Hz to 1 MHz. Functions: Triangle Waveform: Nonlinearity, 5% maximum. Symmetry within 10% of 50% duty cycle. Square Waveform: 100 nanosecond maximum rise or fall time. Symmetry within 10% of 50% duty cycle. Sine Waveform: Harmonic distortion; 3% max., 5 Hz to 100 kHz. Attenuator: 0 to 50 dB in 10 dB steps. 0 to 20 dB minimum variable, ±1 dB accuracy. Output: 10 volts peak-to-peak into 50 ohms. ±1.5 dB flatness from 0.1 Hz to 1 MHz. 50 ohms impedance ±5%. Power Requirement: 105-130 volts or 210-260 volts, rms, 60/50 Hz. 15 watts max. Operating Temperature: 0 to 40°C. Dimensions: 3" H x 7¼" W x 8¾" D (with handle removed).

High-performance, budget-minded frequency counters



Heathkit Deluxe Frequency Counters — now with price savings up to \$40.00

These Heathkit Frequency Counters give you the accuracy and reliability you need — plus features you just won't find on other counters in their price ranges. Features like a switchable attenuator on the 110 MHz input to divide the input signal x1, x10 or x100 to accurately measure high-amplitude signals. Or a time base switch to select the gate time and the resolution of the display. The IM-4120 time base is controlled by a high-quality TCXO (temperature-controlled crystal oscillator) with a temperature stability of ± 1 part per million and an aging rate of 5 parts per million per year for excellent stability. The IM-4110's crystal oscillator has a temperature stability of ± 10 parts per million and an aging rate of 10 parts per million per year. To maintain a low VSWR (voltage standing wave ratio), separate 50-ohm inputs are used for frequency ranges above 110 MHz, while inputs in frequency ranges below 110 MHz are 1 megohm shunted by less than 25 pF. To connect an external time base, there's a rear panel oscillator input/output jack.

Both counters include additional functions — events, period and period averaging.

The counters also feature rugged metal cases with non-marring front panels and a 12-position handle which rotates a full 360 degrees for easy storage and handling. The frequency counter circuitry can operate completely free of the metal case, which makes servicing your counter much easier. And you

can calibrate your counter without instruments!

Kit assembly is easy, with a Heathkit construction manual to guide you every step of the way. And there's no better way to learn how to service your counter (and save on service costs) than building it yourself!

The counters operate on 120 or 240 VAC, 50/60 Hz (switch-selectable), 12 VDC (with optional IMA-4130-1 12-Volt Converter below) or 12 optional SMA-4130-2 rechargeable nickel-cadmium batteries (order below; can be recharged by optional IMA-4130-1 12-Volt Converter). Cables are not included with counter.

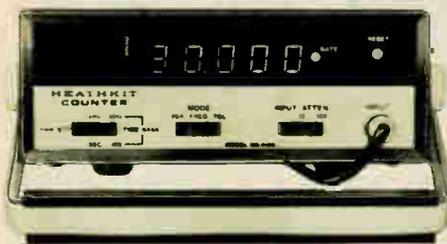
5 Hz to 110 MHz Frequency Counter. Applications include CB radio, low-band AM and FM radio, AM and FM broadcast bands, crystals, video tape systems, musical instruments and much more. Accepts any input between 5 Hz and 110 MHz.

Kit IM-4110, 12 lbs. Was \$199.95, Now 179.95

5 Hz to 250 MHz Frequency Counter. Same applications as IM-4110, plus marine and aircraft radios, 2-meter FM radio, 220 MHz FM radio, general laboratory and research work, and much more. Accepts inputs from 5 Hz to 110 MHz, and from 5 MHz to 250 MHz. Withstands 25 VRMS. For 120/240 VAC, 50/60 Hz; or 9-14 VDC with optional converter at right.

Kit IM-4120, 12 lbs. Was \$299.95, Now 259.95

Price reduced on our lowest-priced Frequency Counter to give you top value



\$89⁹⁵

- Full five-digit frequency counter
- Built-in input attenuation
- Internal or external time bases

The Heathkit IM-4100 gives you almost unbelievable value in a low-priced frequency counter. It's a full five-digit counter that also functions in period and totalize modes. And it provides built-in input attenuation and 12-volt operation.

The front panel attenuator switch allows the amplitude of input signals to be divided by 1, 10 or 100. The pushbutton reset switch quickly resets the LED display to zero in any mode.

A rear panel switch easily selects internal or external time base. The rear panel connector can be used as an input for an external time base signal and for frequency ratio measurements. Display includes overrange indicator and gate lamp. The IM-4100 operates on 120/240 VAC, or 12 VDC (mating connector supplied). Cables not included.

Kit IM-4100, 6 lbs. Was \$99.95, Now 89.95

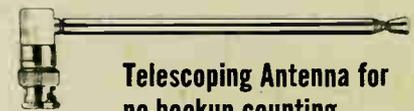
IM-4100 SPECIFICATIONS: Sensitivity: 20 mVrms (50 mV, 5 Hz to 50 Hz). Risetime: 1 ms for signals less than 10 Hz. Input Impedance: 1 megohm shunted by less than 35 pF. Protection: 240 Vrms at 60 Hz. **TIME BASE:** Frequency: 10 MHz. Stability: ± 10 ppm, maximum, 0° to 40°C ambient. **OSCILLATOR CONNECTION:** External Input Frequency: DC to 20 MHz. Dimensions: 2 3/4" H x 7 1/4" W x 10 1/2" D (less handle).

	IM-4110	IM-4120
Frequency Range	5 Hz to 110 MHz	5 Hz to 250 MHz
Inputs	5 Hz to 110 MHz	5 Hz to 110 MHz 5 MHz to 250 MHz
Input Sensitivity	25 mV RMS	25 mV RMS
Input Impedance	1 meg shunted by < 25 pF	50 ohms, VSWR less than 1.5:1 at 110 MHz
Protection	250 V (DC + peak AC) to 100 kHz	5 Vrms
Time Base Freq.	10 MHz	4 MHz TCXO
Aging Rate	< 10 ppm/yr	< 5 ppm/yr
Temp. Stability (0 to 40°C ambient)	± 10 ppm	± 1 ppm

OTHER SPECIFICATIONS: FUNCTIONS: Events: 1 to 99,999,999. Period Resolution: 0.1 μ s. Period Average: 1,000 periods. Period Pulse Width: 100 ns minimum. Low Frequency Signal Risetime: 1 ms to signals less than 10 Hz. **OSCILLATOR CONNECTION: External Input Frequency:** 1 MHz. Sensitivity: TTL or 2.5 Vrms for 50-ohm source. Protection: -5 V peak to +10 V peak. Internal Output: >1.5 V p-p into 50 ohms at 1 MHz. **GATE INTERVAL:** Frequency: 1 mS to 10 S. Period: determined by period of input frequency. Power Requirement: 105-130 VAC or 210-260 VAC (switch-selectable), 50-60 Hz, 35 watts; or 9-14 VDC at 2.5 A max. Dimensions: 4" H x 10 1/4" W x 13 1/4" D (less handle).

12-Volt Converter for IM-4110 and IM-4120 Counters. Mounts inside counter cabinet, allows counter to operate from a 12 VDC source to facilitate mobile operation. Can also be fitted with 12 optional SMA-4130-2 rechargeable nickel-cadmium batteries (order below).
Kit IMA-4130-1, Shpg. wt. 3 lbs. 29.95

Set of 12 rechargeable nickel-cadmium batteries. Powers IM-4110 and IM-4120 Frequency Counters for portable use. Recharge with optional IMA-4130-1 12-Volt Converter (above).
SMA-4130-2, Shpg. wt. 4 lbs. 89.95



Telescoping Antenna for no-hookup counting

Hooks up to Heathkit 4100-series frequency counters to determine frequencies without direct connection to the unit(s) being tested. For any device where direct counter connection is either inconvenient or inaccessible.

SU-510, Shpg. wt. 1 lb. 9.95

Heathkit test equipment gives you reliable measurements

Accurate, reliable Strip Chart Recorder

\$339⁹⁵
Kit

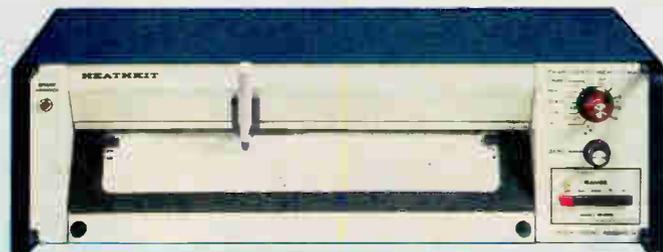
- Less than 0.5% error, full scale
- Rear panel connector for total recorder control from a remote location



Now available in both kit and assembled versions, the IR-5204/SR-204 belongs in your lab. Digital chart drive provides 10 chart speeds, English or Metric. Select four calibrated input spans. And you get extras that others charge more for — remote capability, pushbutton chart advance, electric pen lift with disposable pens, a built-in switchable input filter.

Kit IR-5204, Shpg. wt. 22 lbs. 339.95
Assembled and Tested SR-204, Shpg. wt. 22 lbs. 465.00
Dual-Pen Lab-Quality Recorder. Uses ONLY pens listed with IR-5207 below.
Assembled and Tested SR-206, Shpg. wt. 39 lbs. 1450.00

IR-5204/SR-204 SPECIFICATIONS: Chart Width: 10 inches (25 cm with optional metric drive). Chart Speeds: 10, 5, 2, 1, 0.5, 0.2, 0.1, 0.05, 0.02, 0.01 in/min (cm/min with metric conversion installed). Balance Time: 0.5 sec for full scale (filter out). Overshoot: Less than 1% of full scale. DC Input Ranges: 10 mV to 100 V full scale (12.5 mV to 125V full scale, metric). Maximum Common Mode Input Voltage: 400 V. Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: 5 1/2" H x 17 1/2" W x 12 3/4" D (13.5 x 44.2 x 31.3 cm).



Pens for IR-5204/SR-204 Strip Chart Recorder. Disposable nylon tip.
SU-406-92, Red Pen, Shpg. wt. 1 lb. 3.00
SU-406-93, Blue Pen, Shpg. wt. 1 lb. 3.00

Chart Paper for IR-5204/SR-204 and SR-206 Recorders. All 120' long.
Inch-calibrated paper with 0.1" divisions, 0-100 R to L.
SU-445-17, Shpg. wt. 2 lbs. 4.75
Centimeter-calibrated paper, offset 4 cm on R, 0-100 R to L.
SU-445-18, Shpg. wt. 2 lbs. 4.75
Centimeter-calibrated paper, 2 cm divisions, 0-250 R to L.
SU-445-21, Shpg. wt. 2 lbs. 4.75

Precision X-Y Chart Recorder gives you extra versatility, extra accuracy for the most demanding uses

\$479⁹⁵
Kit

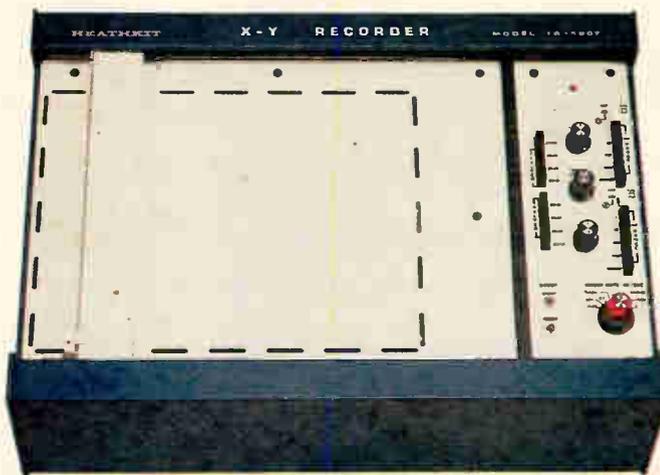
- Accurate to ±0.5 percent of full scale
- Adjustable line frequency filtration
- Electric pen lift to zero coordinates
- Complete front panel controls for easy operation

Precise enough for your most demanding measurements, the IR-5207/SR-207 is easy to set up and operate. Front-panel controls assure easy-operating convenience in any application. Front panel input filters with pushbutton controls let you tailor filtering to your exact requirements. Select ranges from 1 mV to 10 V. The integral paper holddown can be used in horizontal and vertical positions, and accepts any paper that fits the graph table. Electric pen lift. For 120/240 VAC, 50/60 Hz.

Kit IR-5207, Shpg. wt. 28 lbs. 479.95
Assembled and Tested SR-207, 30 lbs. Was \$960, Now 795.00

Disposable Nylon Tip Pens for IR-5207/SR-207 Chart Recorder.
Red Pen for chart speeds under 1 in/min. SU-205-6, 1 lb. 3.00
Blue Pen for chart speeds over 1 in/min. SU-205-7, 1 lb. 3.00

IR-5207/SR-207 SPECIFICATIONS: Chart Size: 8 1/2" x 11" (21.59 x 27.94 cm). Sweep Speeds: 0.02, 0.1, 0.2, 1 and 2 in/S (0.04, 0.2, 0.4, 2 and 4 cm/S). Balance Time: >1 sec. for full-scale deflection. Range: 1 mV to 10 V. Maximum Common Mode Input Voltage: 400 V. Dimensions: 5 5/8" H x 17 5/8" W x 12 1/4" D.



Professional-quality Heathkit Distortion Analyzers



Outstanding sensitivity and bandwidth to let you measure Total Harmonic Distortion at levels as low as 0.03%, from 5 Hz to 100 kHz, with 5% full scale accuracy. Can also function as an AC voltmeter, with 1 mV to 300 V full scale capability. Not for use in strong

RF fields. For 120/240 VAC, 50/60 Hz. 5 5/8" H x 15" W x 11 1/2" D.
Kit IM-5258, Shpg. wt. 17 lbs. 229.95
Intermodulation Distortion Analyzer. Same as above, except measures IMD instead of THD. Also features dB measurement capability.
Kit IM-5248, Shpg. wt. 14 lbs. 119.95
Assembled and Tested SM-5248, Shpg. wt. 15 lbs. 190.00

Rugged Heathkit Bi-Directional Wattmeter for servicing

\$99⁹⁵
Kit

- Covers 100 mHz to 1 GHz without costly slugs or elements
- Ideal for servicing radios and communications equipment

The Heathkit IM-4190 Bi-Directional Wattmeter can help you service two-way radios, as well as VHF and UHF communications equipment. This rugged meter measures forward and reflected power in transmission lines between 100 mHz and 1 GHz. Features easy-to-read front panel meter, N-type coax connectors for easy hookup and N to PL-259 adapters. Dimensions, 4 1/2" H x 4 1/4" W x 4 3/8" D (11.4 x 10.8 x 11.8 cm). Requires 9-volt battery (not included).

Kit IM-4190, Shpg. wt. 3 lbs. 99.95
Assembled and Tested SM-4190, Shpg. wt. 3 lbs. 120.00



High-accuracy 3½-digit auto-ranging Multimeter

\$289⁹⁵



- Automatically selects proper voltage, current or resistance range for easier, more accurate measurements
- Bright, easy-to-read 3½-digit display
- Input protection on all functions prevents overloads

The IM-2212 is a laboratory-grade instrument featuring automatic range selection along with exceptionally high accuracy. It features five AC and DC voltage ranges to 1000 volts; five AC and DC current ranges to 2000 mA; and ten resistance ranges (low-voltage and high-voltage) up to 20 megohm. Basic DC accuracy is $\pm 0.2\%$; Basic AC accuracy is $\pm 0.4\%$ when calibrated to laboratory standards. Has automatic polarity indication, automatic decimal point placement, automatic k-ohms or megohms indication. Normal mode rejection of 80 dB assures highly

stable DC readings. A hold switch inhibits the auto-ranging function when measuring one range. Operates on 120/240 VAC, or with optional battery pack (order below). Compact low-profile cabinet with detent positions to hold the IM-2212 at the best viewing angle.

Kit IM-2212, Shpg. wt. 10 lbs. **289.95**

IMA-2212-1, Optional Rechargeable Battery Pack for in-field use.

Shpg. wt. 4 lbs. **39.95**

IM-2212 SPECIFICATIONS: DC Voltage Ranges: 0-0.2-2.0-20-200-2000. Maximum Input: 1000 VDC on any range. Input Resistance: 10 megohm on all ranges. Accuracy: $\pm[0.05\%$ (.50%*) of reading, +0.10% of range]. AC Voltage Ranges: 0.2-2.0-20-200-2000. Maximum Input: 700 VAC (1000 volts peak) on any range. Accuracy (40 Hz to 10 kHz): $\pm[0.25\%$ (1.0%*) of reading, +0.15% of range]. Input Impedance: 10 meg shunted by 90 pF on all ranges. DC mA Ranges: 0.2-2.0-20-200-2000. Accuracy: $\pm[0.15\%$ (.50%*) of reading +0.10% of range]. AC mA Ranges: 0.2-2.0-20-200-2000. Accuracy (40 Hz to 10 kHz): $\pm[0.30\%$ (1.0%*) of reading +0.15% of range]. Ohmmeter Ranges: Low-voltage, 0.2K-2.0K-20K-200K-2 meg. High-voltage 2.0K-20K-200K-2.0 meg-20 meg. Overvoltage protection: 350 VDC (250 VAC) on all ranges. Accuracy: $\pm[0.10\%$ (.50%*) of reading +0.10% of range]. Display: 3½-digit (1999 maximum count), 0.5", 7-segment planar LED. Polarity Indication: Automatic + or - on VDC and mA DC range only. Display Rate: 3½ per second. Overrange Indication: flashing display on highest range, or when using RANGE HOLD switch. Power Line Isolation: COM input may be floated 500 VDC/350 VAC from ground. Battery Operating Time: (with optional IMA-2212-1 battery pack) 5 hours typ., 4 hours minimum after 16-hour charge period with unit off. Operating Temperature Range: Line operation, 10° C to 40° C (50° F to 104° F). Portable Operation: 20° C to 40° C (68° F to 104° F). Power Requirement: 100-135 VAC or 200-270 VAC (internally selectable); 50/60 Hz, 10 watts. Dimensions: 3.1" H x 7.5" W x 11" D. Net Weight: 6 lbs., 8 lbs. with battery pack installed.

*Numbers in parentheses indicate built-in specifications. Other numbers indicate laboratory standard specifications.

Our low cost, high performance Digital Multimeter



- Overload protection on all ranges
- 120 or 240 VAC operation

\$69⁹⁵
Kit

Here's a low-cost, high performance DMM for hams, hobbyists and service techs. Its full-function capability includes AC voltage measurements up to 700 volts. Has four overlapping AC & DC voltage & current ranges and five resistance ranges. Features overload protection on all ranges, 120 or 240 VAC operation, isolated floating ground, attractive heavy-duty case to withstand rugged use, universal banana jack inputs for easy testing of electronic equipment.

Kit IM-1210, Shpg. wt. 5 lbs. **69.95**

SM-1210, Factory Assembled and Calibrated, 5 lbs. **120.00**

IM-1210 SPECIFICATIONS: Ranges: (Full-Scale): DC volts: 0-2, 20, 200, 1,000 V; DC current: 0-2, 20, 200, 2,000 mA; AC volts: 0-2, 20, 200, 700 V rms (50 Hz to 10 kHz). AC current: 0-2, 20, 200, 2,000 mA rms (60 Hz to 10 kHz). Ohms: 0-200, 2K, 20K, 200K, 2M ohms. Overrange: 25% on all functions, within maximum input limits. Maximum Input: 3 amperes into AC or DC mA, and Ohms (fuse protected.) 700 VAC rms into Volts (except 2V range: 250 VAC rms). 1000 VDC into Volts (except 2V range: 350 VDC). "—" input may be floated 1000 VDC (700 VAC) above earth ground. Resolution (Low Range): Volts: 10 mV. Current: 10 μ A. Ohms: 1 ohm. Accuracy (Full Scale, ± 1 Digit): DC volts: $\pm 1\%$. DC current: $\pm 1.5\%$. AC volts: $\pm 1.5\%$. AC current: $\pm 2\%$. Ohms: $\pm 1.5\%$. Input Impedance: 1 megohm on all voltage ranges. Power Requirement: 100-135 VAC, 200-270 VAC 50/60 Hz, 8 watts. Dimensions (overall): 3.00" H x 8.69" W x 10.54" D. Weight: 3.3 pounds (1.5 kg). **NOTE:** Specifications are based on 30-minute warmup.



Portable Digital
Multimeter — ideal
for in-the-field uses

\$219⁹⁵

Lightweight, compact, highly accurate. Features 26 ranges — measures AC and DC volts, DC current and resistance. Has 100% overrange capability, separate voltage and current inputs for circuit protection. 2-volt full scale measurement on 1k, 10k and 1 meg ranges allow forward biased junction testing of semi-conductor devices. Has 3½-digit display with leading zero suppression, automatic polarity indication and decimal placement.

Kit IM-2202, Shpg. wt. 8 lbs. **219.95**

IM-2202 SPECIFICATIONS: DC VOLTAGE — Overload Capability: 300 V on 100 mV & 1V ranges; 1000 V on 10 V & 1000 V ranges; Accuracy: $\pm 0.5\%$, ± 1 digit. AC VOLTAGE — Overload Capability: 250 V on 100 mV & 1 V ranges; 750 V on 10 V, 100 V & 750 V ranges. Accuracy: $\pm 1.5\%$, ± 3 digits; 50 Hz to 1 kHz (except 50 Hz to 10 kHz on 100 mV and 1 V ranges). DC CURRENT — Range/Voltage Drop: 100.0 μ A/100 mV, 1.000 mA/100 mV, 10.00 mA/100 mA/150 mV, 100.0 mA/300 mV. Accuracy: $\pm 0.5\%$, ± 1 digit (except $\pm 1\%$, ± 1 digit on 1000 mA range). AC CURRENT — Range/Voltage Drop: 100 μ A/100 mV, 1.000 mA/100 mV, 10.00 mA/150 mV, 100.0 mA/300 mV. Accuracy: $\pm 1.0\%$, ± 3 digits except $\pm 1.5\%$, ± 3 digits on 1000 mA range; 40 Hz to 10 kHz. RESISTANCE — Range/Test Current: 100.0 Ω /1.0 mA, 1.000 k Ω /1.0 mA, 10.00 k Ω /0.1 mA, 100.0 k Ω /10 μ A, 1000 k Ω /10 μ A. Accuracy: $\pm 2\%$, ± 1 digit. GENERAL — Normal Mode Rejection: 35 dB. Common Mode Rejection: 80 dB. Power Requirement: 110 to 130 VAC, or 220 to 260 VAC (internal selectable); 60/50 Hz; (Accuracy specs use built-in references.) Size 3" H x 8¼" W x 8" D.

Portable hand-held Multimeter

You get easy one-hand operation and top performance in a hand-held DMM that gives you more for your money

\$94⁹⁵

- Measures AC and DC voltage, current and resistance
- Large, easy-to-read Liquid Crystal Display (LCD)
- Built-in references make in-the-field calibration easy

The features you need in a hand-held DMM, and a great low price, are yours in the IM-2215. Measures AC and DC voltage, AC and DC current and resistance. Special alternating high-to-low resistance test voltage make it ideal to test semiconductors and in-circuit resistance. The IM-2215 is great for in-field use — pushbutton switches permit easy one-hand operation, leaving your other hand free for probe placement — and calibration references are built-in. A pivoting stand is included to place the IM-2215 at a convenient angle for bench use.

The 3½-digit LCD features easy-to-read digits and automatic decimal point placement. Battery condition is continuously monitored and a "Lo-Bat" is displayed for the last 20% of battery life. And with the special low-drain circuitry, a typical 9-volt alkaline battery (not supplied) can last up to 200 hours! Easy one-evening assembly. Also operates on 120 or 240 VAC with optional cords (below).

IM-2215, Shpg. wt. 2 lbs. 94.95

Rugged Leather Carrying Case for IM-2215. Includes belt loop.

IMA-2215-1, Shpg. wt. 1 lb. 14.95

PS-2350, 120 VAC Outlet Cord, Shpg. wt. 1 lb. 4.95

PS-2450, 220 VAC Outlet Cord, Shpg. wt. 1 lb. 14.95

IM-2215 SPECIFICATIONS: DC VOLTAGE: Ranges: ±200 mV, ±2 V, ±20 V, ±200 V, ±1000 V. Accuracy: Lab standards, ±.25% of reading ±1 count. AC VOLTAGE: Ranges: 200 mV, 2 V, 20 V, 200 V, 750 Vrms. Accuracy (50 and 60 Hz): Lab standards, ±.5% of reading ±3 counts. DC CURRENT: Ranges: ±2 mA, ±20 mA, ±200 mA, ±2000 mA. Accuracy: ±.75% of reading ±1 count. AC CURRENT: Ranges: 2 mA, 20 mA, 200 mA, 2000 mA. Accuracy: ±1.5% of reading ±3 counts. Frequency Response: 2 mA range, 40 to 200 Hz; all other ranges, 40 Hz to 1 kHz. RESISTANCE: Ranges: 200 ohms, 2 kilohms, 20 kilohms, 200 kilohms, 2 megohms, 20 megohms. Accuracy: 200 ohm range, ±.3% of reading +3 counts; 20 megohms range, ±2% of reading +1 count; all other ranges, ±.25% of reading +1 count. Dimensions: 2" H x 3½" W x 7½" L.



Loaded with convenience features, the IM-2215 is your best buy in a hand-held, solid-state multimeter!

Informative books that will help you get more from your instruments

Understanding/Using Oscilloscopes. A helpful guide, covering functions, circuits and more. EDP-139 5.95

101 Ways to Use Your Oscilloscope. Practical applications in troubleshooting and design work. EDP-149 5.50

101 Ways to Use Your VOM/VTVM. Practical applications in an easy to understand text. EDP-150 4.95

How to Use Color TV Test Instruments. Practical information on servicing color TV sets. EDP-138 5.95



See page 53 for book ordering information.

Visit your Heathkit Electronic Center (Units of Veritechnology Electronics Corporation) and see our complete product line.

Parts and service available. (Retail prices on some items may be slightly higher.)

ARIZONA — Phoenix, 85017

2727 W. Indian School Rd. 602-279-6247

CALIFORNIA — Anaheim, 92805

330 E. Ball Rd. 714-776-9420

El Cerrito, 94530

6000 Potrero Ave. 415-236-8870

Los Angeles, 90007

2309 S. Flower St. 213-749-0261

Pomona, 91767

1555 N. Orange Grove Ave. 714-623-3543

Redwood City, 94063

2001 Middlefield Rd. 415-365-8155

Sacramento, 95825

1860 Fulton Ave. 916-486-1575

San Diego (La Mesa), 92041

8363 Center Dr. 714-461-0110

San Jose (Campbell), 95008

2350 S. Bascom Ave. 408-377-8920

Woodland Hills, 91364

22504 Ventura Blvd. 213-883-0531

COLORADO — Denver, 80212

5940 W. 38th Ave. 303-422-3408

CONNECTICUT — Hartford (Avon, 06001)

395 W. Main St. (Rte. 44) 203-678-0323

FLORIDA — Miami (Hialeah, 33012)

4705 W. 16th Ave. 305-823-2280

Tampa, 33614

4019 West Hillsborough Ave. 813-886-2541

GEORGIA — Atlanta, 30342

5285 Roswell Rd. 404-252-4341

ILLINOIS — Chicago, 60645

3462-66 W. Devon Ave. 312-583-3920

Chicago (Downers Grove, 60515)

224 Ogden Ave. 312-852-1304

INDIANA — Indianapolis, 46220

2112 E. 62nd St. 317-257-4321

KANSAS — Kansas City (Mission, 66202)

5960 Lamar Ave. 913-362-4486

KENTUCKY — Louisville, 40243

12401 Shelbyville Rd. 502-245-7811

LOUISIANA — New Orleans (Kenner, 70062)

1900 Veterans Memorial Hwy. 504-467-6321

MARYLAND — Baltimore, 21234

1713 E. Joppa Rd. 301-661-4446

Rockville, 20852

5542 Nicholson Lane 301-881-5420

MASSACHUSETTS — Boston (Peabody, 01960)

242 Andover St. 617-531-9330

Boston (Wellesley, 02181)

165 Worcester Ave.

(Rt. 9 just west of Rt. 128) 617-237-1510

MICHIGAN — Detroit, 48219

18645 W. Eight Mile Rd. 313-535-6480

E. Detroit, 48021

18149 E. Eight Mile Rd. 313-772-0416

MINNESOTA — Minneapolis (Hopkins, 55343)

101 Snady Oak Rd. 612-938-6371

St. Paul, 55106

1645 White Bear Ave. 612-778-1211

MISSOURI — St. Louis (Bridgeton) 63044

3794 McKelvey Rd. 314-291-1850

NEBRASKA — Omaha, 68134

9207 Maple St. 402-391-2071

NEW JERSEY — Fair Lawn, 07410

35-07 Broadway (Rte. 4) 201-791-6935

Ocean (Ashbury Park), 07712

1013 State Hwy. 35, 201-775-1231

NEW YORK — Buffalo (Amherst, 14226)

3476 Sheridan Dr. 716-835-3090

Jericho, Long Island, 11753

15 Jericho Turnpike 516-334-8181

Rochester, 14623

937 Jefferson Rd. 716-424-2560

White Plains

(North White Plains, 10603)

7 Reservoir Rd. 914-761-7690

OHIO — Cincinnati (Woodlawn, 45215)

10133 Springfield Pike 513-771-8850

Cleveland, 44122

28100 Chagrin Blvd. 216-292-7553

Columbus, 43229

2500 Morse Rd. 614-475-7200

Toledo, 43615

48 S. Byrne Rd. 419-537-1887

OKLAHOMA — Oklahoma City, 73112

2727 Northwest Expressway, 405-848-7593

PENNSYLVANIA — Philadelphia, 19149

6318 Roosevelt Blvd. 215-288-0180

Frazer (Chester Co.), 19355

630 Lancaster Pike (Rt. 30) 215-647-5555

Pittsburgh, 15235

3482 Wm. Penn Hwy. 412-824-3564

RHODE ISLAND — Providence (Warwick, 02886)

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TEXAS — Dallas, 75201

2715 Ross Ave. 214-826-4053

Houston, 77027

3705 Westheimer 713-623-2090

San Antonio, 78216

7111 Blanco Road 512-341-8876

UTAH — Salt Lake City (Midvale, 84047)

58 East 7200 South. 801-566-4626

VIRGINIA — Alexandria, 22303

6201 Richmond Hwy. 703-765-5515

Norfolk (Virginia Beach, 23455)

1055 Independence Blvd. 804-460-0997

WASHINGTON — Seattle, 98109

505 8th Ave., N. 206-682-2172

WISCONSIN — Milwaukee, 53216

5215 W. Fond du Lac 414-873-8250 67

Our finest scope—the IO-4235 Deluxe DC-35 MHz Oscilloscope



No other oscilloscope offers performance like this at such a low price:

- Dual-trace capability for simultaneous monitoring of two separate signals
- Single-sweep function to observe random signals
- Triggering to twice the specified vertical bandwidth
- Vertical delay lines to observe the leading edge of input signals
- Less than 10 nS rise time for complex fast-rise signals
- Sweep speeds from 50 nS/cm to 0.2 S/cm, plus 5 times expansion, for effective sweep speed of 10 nS/cm at the highest sweep rate
- Smooth rolloff for observation of signals above 50 MHz
- Algebraic ADD can invert either channel to observe differential signals
- Unique TV coupling triggers alternate fields for a steady display of VITS
- 8x10 cm mesh CRT with internal graticule for parallax-free measurements
- 10 kV post-acceleration voltage for our brightest scope display

This deluxe delayed-sweep dual-trace oscilloscope is one of the most versatile oscilloscopes anywhere!

- Ideal for measuring and observing virtually any type of waveform, from simple sine wave signals of high-fidelity components and television to highly complex waveforms of state-of-the-art devices

The Heathkit IO-4235 is the most advanced oscilloscope we've ever developed! Nearly 10 man-years of development have produced a scope which is unmatched in performance, features and quality in its price range. You can compare the sophistication and versatility of the IO-4235 with other scopes that cost hundreds of dollars more.

This laboratory-quality oscilloscope fulfills the requirements of the service technician, electronics designer and serious hobbyist. It's the perfect addition to your service desk, at a price you can afford.

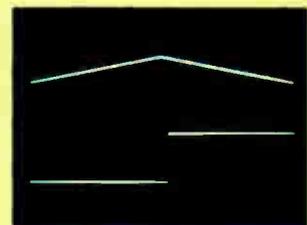
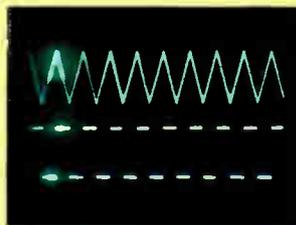
The IO-4235's delayed-sweep circuit uses a separate time base to generate a faster sweep, which displays a selected portion of the normal waveform. The start and length of the delayed sweep are user-controlled, so any given portion of the normal waveform can be displayed at a much higher rate. In fact, the IO-4235 is bright enough to pick up the fast, narrow signals other scopes might miss. This CRT is among the finest available for this application.

The 8 x 10 cm mesh features 10 kV post acceleration voltage — 2½ times greater than any other scope we've offered — to give you greater writing speeds and a truly bright display. And the CRT has an internal graticule for parallax-free measurements.

The IO-4235 also has fully-regulated power supplies, a front panel 1-volt square wave output, a variable hold off control and much, much more. Calibration requires a precise source of square waves like the Heathkit IG-4505 (see page 69), and a DC voltmeter.

Kit IO-4235, Shpg. wt. 52 lbs. **949.95**

68



The delayed sweep takes the user selected portion of the waveform (intensified portion in the left picture) and magnifies it the desired number of times for closer examination (right picture).

IO-4235 SPECIFICATIONS: VERTICAL: Sensitivity: 2 mV/cm to 10 V/cm, 12 steps in 1-2-5 sequence. Variable: continuous between steps to approx. 30 V/cm. Accuracy: within 3% (20°C to 30°C); 5% (10°C to 50°C), referred to 1 V/cm. Vertical Response: DC coupling, DC to 35 MHz (-3 dB). AC Coupling, 1 Hz to 35 MHz. Rise Time: 10 nS. Overshoot, less than 3%. Delay Line, allows display of at least 20 nS of pre-triggered waveform. Vertical Input: Impedance, 1 meg shunted by 30 pF. Vertical Modes: Y₁, Y₂, Y₁ and Y₂ chopped, Y₁ and Y₂ alternate, algebraic add (±Y₁, ±Y₂). HORIZONTAL: Time Bases: Ranges, 0.2 S/cm to 50 nS/cm. Positions, 21 steps in 1-2-5 sequence. Variable: continuous between ranges to approx. 0.6 S/cm. Accuracy, within 3% (20°C to 30°C); 5% (10°C to 40°C) referred to 1 mS/cm. EXTERNAL: Sensitivity: approx. 0.1 V/cm. Impedance: 1 meg. Polarity: positive input causes right hand deflection. Frequency Response: DC to greater than 2 MHz (-3 dB). TRIGGER: Source, ±channel Y₁, ±channel Y₂, ±line, ±external. Coupling: AC, DC, AC Fast, TV (flip-flop). Modes: automatic baseline, normal, single-sweep. Hold Off: variable, including an "A" ends "B" position. External Trigger: Sensitivity: 100 mV at 50 MHz. Power Requirement: 120/240 VAC, 85 watts. Dimensions: 7¾" H x 13¾" W x 19¾" D (without handle).

Build a test bench with Heathkit scopes and accessories



Save \$60 on our Dual-trace, DC-15 MHz laboratory-quality Oscilloscope kit

WAS
\$649⁹⁵

- Excellent vertical sensitivity
- Internal delay lines for complete waveform display

NOW
\$589⁹⁵ Kit

The IO-4510 gives unmatched quality and versatility at a low price. Vertical input sensitivity of 1 mV/cm over the entire bandwidth lets you read a x10 probe or waveforms to 10 mV — not 50 or 100 mV, as on other scopes.

The IO-4510 typically triggers on signals greater than 45 MHz and is guaranteed to 30 MHz, with only 1 cm deflection. And with digitally controlled triggering circuits, no stability control is needed.

Use either normal or automatic sweeps, with 20 time bases to choose from. Internal delay lines insure the start of a horizontal sweep before the beginning of the vertical signal, insuring complete waveform display. And fully regulated power supplies ensure stable voltages. Calibration requires precise source of square waves (see IOA-4510-1 or IG-4505, below).

Kit IO-4510, 36 lbs. . . Was \$649.95, Now only 589.95

Factory Assembled and Calibrated IO-4510.

SO-4510, Shpg. wt. 28 lbs. 840.00

IO/SO-4510 SPECIFICATIONS: VERTICAL: Sensitivity: 1 mV/cm to 5 V/cm in 12 steps. Variable: Continuous to approx. 15 V/cm. Rise Time: 24 nS. Overshoot: Less than 3%. Impedance: 1 megohm shunted by approx. 40 pF. HORIZONTAL: Time Base: Ramp: 0.2 sec/cm to 0.3 μsec/cm in 20 steps. Variable: Continuous between ranges to approx. 0.6 sec/cm. External Sensitivity: Approx. 0.2 V/cm. External Impedance: Approx. 200 kilohms. Power Requirement: 120/240 VAC, 75 watts. Dimensions: 6.4" H x 12.9" W x 19.3" D (handle extended).

Dual-trace DC-10 MHz Oscilloscope — ideal for service or design work

\$399⁹⁵ Kit

- Two vertical input channels
- Bright, easy-to-read trace

An excellent choice for electronic testing. The Heathkit IO-4550's extra-bright trace can easily be read — even in high ambient light

conditions. And the two vertical input channels have a good 10 mV/cm sensitivity for more sensitive measurements. Display, chop or alternate input channels with a time base switch. The time base can be precisely triggered at any point on the positive or negative slope of the signal with a trigger select switch and level control.

The IO-4550 operates to specifications on line voltages from 100 to 270 VAC, thanks to a fully-regulated power supply. Mu-metal shielding helps prevent interference. Calibration requires precise source of square waves, such as the Heathkit IOA-4510-1 or IG-4505 (see below).

Kit IO-4550, Shpg. wt. 27 lbs. 399.95

Factory Assembled and Calibrated IO-4550.

SO-4550, Shpg. wt. 25 lbs. 650.00

IO/SO-4550 SPECIFICATIONS: VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. Accuracy: Within 3%. Rise Time: 35 nS. Overshoot: Less than 5%. Maximum Input: 400 V. HORIZONTAL: Time Base: Ramp: 0.2 S/cm to 200 nS/cm. Sensitivity: Approx. 0.1 V/cm. Frequency Response: DC to 1 MHz. Power Requirement: 120/240 VAC, switch-selected, 70 watts. Dimensions: 6.9" H x 12.9" W x 19.3" D (without handle).

Save \$60 on our Single-Trace DC-10 MHz Oscilloscope

WAS
\$349⁹⁵

- Digitally controlled trigger circuits
- Two input channels

NOW
\$289⁹⁵

The Heathkit IO-4555 represents an unparalleled price/performance value — especially at its new low price. The IO-4555 is one

of the few single-trace scopes available with two input channels. The Y-input and calibrated X-input can be used together for true X-Y capability. High or low-frequency waveforms can be observed easily, since the IO-4555's horizontal time bases can be easily switched from 0.2 S/cm to 0.2 μS/cm.

The digitally controlled trigger circuits require only a level control and a slope switch. The IO-4555 can trigger automatically or normally, over the complete 8 cm span. The extra-bright trace can even be seen in high ambient light conditions.

Kit construction is straightforward, with circuit boards and wiring harnesses to simplify assembly. And our performance-oriented engineering means you'll enjoy years of trouble-free operation.

Kit IO-4555, 29 lbs. . . Was \$349.95, Now only 289.95

IO-4555 SPECIFICATIONS: VERTICAL: Deflection Factor: Sensitivity: 10 mV/cm to 20 V/cm. Accuracy: Within 3%. Rise Time: 35 nS. Overshoot: Less than 5%. Maximum Input: 400 V. HORIZONTAL: Time Base: 0.2 S/cm to 0.2 μS/cm. Variable: Continuous between ranges to approximately 0.6 S/cm. Impedance: 1 megohm shunted by 40 pF. Dimensions: 6.9" H x 12.9" W x 19.3" D (without handle).

Quality accessories to make your Heathkit oscilloscope even more versatile

1 Scope Switch for dual-trace capability. Gives any single-trace scope with external trigger dual-trace versatility. Simultaneous display of two separate input signals for comparison, observing phase relationships or other uses. Also use as impedance coupler, preamp or square wave generator in experimental circuits. Sync output on each channel locks sweep to either signal. DC coupling adds versatility. The inexpensive way to get dual-trace.

Kit IO-4101, Shpg. wt. 5 lbs. 54.95

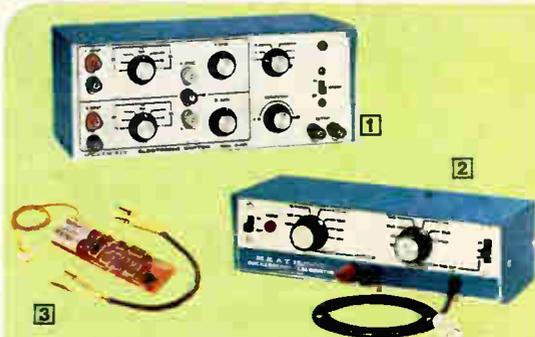
2 Deluxe Calibrator for oscilloscopes to 35 MHz bandwidth. A practical oscilloscope calibrator at a sensible price. Provides all the waveforms necessary to adjust sweep speeds, vertical calibration, delay

line terminations, high-frequency compensation and attenuator compensation for oscilloscopes with bandwidth up to 35 MHz. Round out your test bench today with an accurate source of square waves — order the Heathkit IG-4505 Deluxe Calibrator.

Kit IG-4505, Shpg. wt. 4 lbs. 49.95

3 Low-priced Scope Calibrator for IO-4510, IO-4530. Easy-to-build, easy-to-use crystal-controlled time base for oscilloscope calibration. Provides everything you need to accurately calibrate your IO-4510 or other scope to 15 MHz. Draws operating power from IO-4510 or external 6V source.

Kit IOA-4510-1, Shpg. wt. 1 lb. 14.95



Better quality and value...because you build them yourself



\$279⁹⁵ Heathkit DC to 5 MHz Oscilloscope offers dual-trace versatility at a single-trace price!

The Heathkit IO-4205 brings you controls and features not usually found in other scopes in this price range, plus dual-trace versatility! The dual-trace feature is essential for the sophisticated servicing required by many of today's modern electronic devices. It lets you compare two signals simultaneously for input-output comparisons, checking phase relationships and other timing functions. This dual-trace feature combined with the IO-4205's DC to 5 MHz bandwidth and excellent vertical input sensitivity of 10 mV/cm let you use it for nearly all waveform applications.

A stable triggering circuit is used for solid waveform displays — not the recurrent type sweep usually found on other scopes in this price range. A special TV position on the trigger selector control allows low frequencies to pass while high frequencies are rejected, so the IO-4205 will easily trigger on the vertical component of a complex TV signal. Any one of seven calibrated time bases, from 200 mS/cm to 0.2 μ S/cm, can be selected with the time/cm switch.

Vertical input sensitivity is 10 mV/cm, and 11 calibrated attenuator positions, up to 20 V/cm, will accommodate a wide range of input signals.

Accurate measurements can be easily made on the bright, easy-to-read 8 x 10 cm CRT screen. The fully-regulated low-voltage power supply provides accurate voltage and current even under varying line and load conditions. Power consumption is only 50 watts! Partial mu-metal shielding helps eliminate display errors caused by stray magnetic fields.

The dual-trace capability of the IO-4205 makes it ideal for any comparison or timing functions on solid-state digital equipment. Its easy-to-operate controls and front panel inputs make it one of the most versatile oscilloscopes you'll find anywhere. And when you build it yourself, you get the economy of kit value, too! Dimensions: 8" H x 13" W x 17" D.

Kit IO-4205, Shpg. wt. 29 lbs. 279.95
Assembled and Tested SO-4205, Shpg. wt. 20 lbs. 450.00

IO-4205 SPECIFICATIONS: VERTICAL: Bandwidth: DC to 5 MHz, -3 dB. Sensitivity: 10 mV/cm. Attenuator: 1-2-5 sequence, calibrated and variable. Rise Time: 70 nS. Overshoot: <5% at 1 kHz. Impedance: 1 megohm/38 pF. SWEEP: Type: Triggered. Range: 200 mS to 0.2 μ S in 7 steps, plus variable. Trigger Source: Y, Y, External/Line. Trigger Modes: AC/DC/TV/+/- Slope/Auto/Normal. HORIZONTAL: Sensitivity: 0.1 V/cm. Bandwidth: DC to 1 MHz. Impedance: 1 megohm/50 pF. External Horizontal Input: X1 and X10 attenuator and variable. GENERAL: CRT: 5DEP31F, 8 x 10 cm viewing area, blue-green medium persistence phosphor, 5" round flat-face tube. Accelerating Potential: approximately 1.6 kV. Graticule: screened, 8 x 10 centimeters. Power Requirement: 120/240 VAC, 50/60 Hz, 50 watts. Dimensions: 8" H x 13" W x 17" D.



\$199⁹⁵ Heathkit professional DC-5 MHz Oscilloscope that's priced right for the hobbyist, too!

- 10 mV/cm vertical input sensitivity — ideal for most applications
- Built-in calibration circuitry
- Your choice of internal or external time bases for more versatility
- High-brightness CRT for easy reading, even on complex signals
- Fully-regulated low-voltage power supply for stability
- Partial mu-shielding to reduce display errors

The IO-4105 DC-5 MHz Single-Trace Oscilloscope puts professional capabilities on your bench at a price you can afford! A stable triggering circuit is used for solid waveform displays. And the IO-4105 can trigger on the vertical component of a television signal — thanks to a special feature of the trigger selector control that allows low frequencies to pass while high frequencies are rejected.

Either internal or external time bases can be used with the IO-4105. Internal time bases can either be variable or in one of seven steps from 0.2 μ S/cm to 200 mS/cm. External inputs from DC to 1 MHz are accepted by the horizontal amplifier. Excellent sensitivity — 10 mV/cm — combined with attenuation up to 20 V/cm in 11 calibrated steps — mean the IO-4105 accepts a wide range of input signals. And accurate control between settings is accomplished by a variable gain control. A bright, easy-to-read CRT screen provides clear displays.

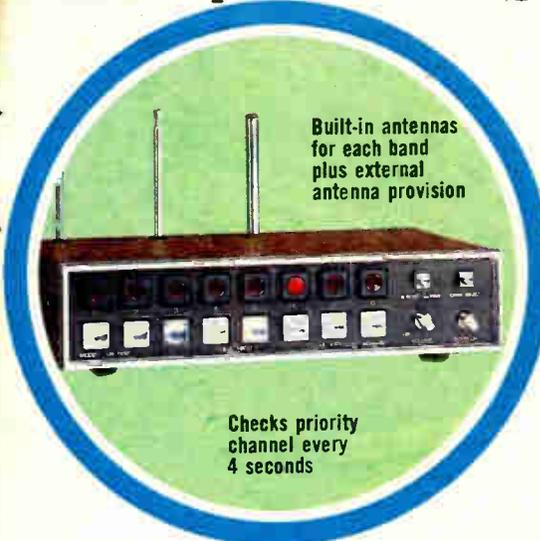
The IO-4105 draws only 50 watts, and can operate on 120/240 VAC. A fully-regulated low-voltage power supply ensures accurate voltage and current — even under varying conditions. And partial mu-metal shielding helps eliminate display errors caused by stray magnetic fields.

The versatility and professional design of this scope make it ideal for virtually any single-trace scope application.

Kit IO-4105, Shpg. wt. 31 lbs. 199.95
Assembled and Tested SO-4105, Shpg. wt. 19 lbs. 375.00

IO-4105 SPECIFICATIONS: VERTICAL: Bandwidth: DC to 5 MHz, -3 dB. Sensitivity: 10 mV/cm. Attenuator: 1-2-5 sequence, calibrated and variable. Rise Time: 70 nS. Overshoot: <5% at 1 kHz. Impedance: 1 megohm/38 pF. SWEEP: Type: Triggered. Range: 200 mS to 0.2 μ S in 7 steps, plus variable. Trigger Source: Y, Y, External/Line. Trigger Modes: AC/DC/TV/+/- Slope/Auto/Normal. HORIZONTAL: Sensitivity: 0.1 V/cm. Bandwidth: DC to 1 MHz. Impedance: 1 megohm/50 pF. External Horizontal Input: X1 and X10 attenuator and variable. GENERAL: CRT: 5DEP31F, 8 x 10 cm viewing area, blue-green medium persistence phosphor, 5" round flat-face tube. Accelerating Potential: approximately 1.6 kV. Graticule: screened, 8 x 10 centimeters. Power Requirement: 120/240 VAC, 50/60 Hz, 50 watts. Dimensions: 8" H x 13" W x 17" D.

Action-packed listening



Built-in antennas
for each band
plus external
antenna provision

Checks priority
channel every
4 seconds

VHF/UHF Monitor puts you right in the
action on three high-traffic bands

\$89⁹⁵

- Built-in antenna for each band
- Automatically scans channels
- AC and 12 VDC power supplies

Monitor fire calls, police, ambulances, Amateur 2-meter FM, marine, weather stations, more. Covers any combination of 8 channels in the 30-50 MHz and 146-174 MHz VHF bands, and the 450-500 MHz UHF band. It automatically scans each channel, stopping on any signal, then resumes scan after broadcast. Priority feature—checks priority channel every 4 seconds even when locked on another channel. 4-pole crystal filter (for even better selectivity in crowded signal areas, order the optional 8-pole filter, below); channel lockout buttons; extra-large lighted channel indicators. Telescoping antennas for each band, provision for external antenna. Built-in speaker, volume and squelch controls, manual channel selection too. AC and 12 VDC power supplies. Rugged walnut-grain metal case. Easy kit assembly, easy no-instrument alignment. Order crystal certificates below at right.

Kit GR-1132, Shpg. wt. 9 lbs. 89.95
Crystal Certificate. You send one to crystal mfr. for each specific frequency. Crystal returned postpaid.
GRA-1100-1 each 6.95
Outdoor Scanner Antenna (Antenna Specialists MONR 31). Tri-band base- and center-loaded base station ground plane antenna. For masts to 1½" dia. SO-239 receptacle. GRA-1132-1, 2 lbs. ... 29.95
GRA-1131-1, Mobile Mounting Bracket, 1 lb. ... 4.95
GRA-1100-2, 8-pole crystal filter, 1 lb. 11.95

GR-1132 SPECIFICATIONS: Scanning Range: LO-VHF, any 10 MHz segment of 30-50 MHz frequency range. HI-VHF, any 8 MHz segment of 146-174 MHz frequency range. UHF, any 8 MHz segment of 450-500 MHz frequency range. Sensitivity: Lo and Hi VHF: 0.5 μV or less for 12 dB SINAD. UHF: 0.7 μV or less for 12 dB SINAD. Adjacent Channel Rejection: (30 kHz channel spacing) —40 dB typ. (—55 dB typ. with optional 8-pole filter). Antenna Impedance: 50 ohms. Audio Output: AC operation, 1 watt; DC operation, 2 watts; less than 10% distortion. Power Requirement: 120 VAC, 60 Hz. 12 watts or 13.8 VDC, 300 mA squelched; 500 mA at full output. Dimensions: 3¼" H x 8½" D x 11¼" W.



4-Band Shortwave Receiver — just right for the beginning kit builder —
your introduction to the fascinating world of shortwave listening

\$99⁹⁵

- A great introduction to the fun of kit-building — and great listening, too
- Complete coverage from 550 kHz to 30 MHz in four bands
- Built-in AM rod antenna plus connection for external shortwave antenna
- Built-in speaker plus front panel jack for external speaker or headphone

If you have been looking for a great first-time electronic kit — or simply a great low-priced shortwave receiver — search no more! The Heathkit SW-717 Shortwave Receiver is the one for you. It's an ideal introduction to the fun and fascination of electronic kit construction. And from the moment you tighten the final screw and turn it on, your assembled receiver will bring you many years of shortwave listening enjoyment.

The SW-717 offers you complete coverage all the way from 550 kHz through to 30 MHz in four bands. With it you will tune in foreign broadcasts from the four corners of the globe — Amateur Radio transmissions — CB radio bands — local and marine weather reports — ships at sea — plus standard AM broadcasts. In other words, this great receiver puts a world of exciting listening right at your fingertips. This attractive receiver is loaded with the features that will help you snare the rare DX (distant) finds — features like a wide slide-rule tuning dial with logging scale; bandspread tuning for easy separation of crowded stations; a variable BFO for CW (Morse code) reception; a built-in speaker; a front panel jack for the addition of an optional external speaker or a set of headphones like the GD-396 Suporex phones described in the righthand column.

The Heathkit SW-717 also features switchable automatic noise limiting; a signal-strength tuning meter; a built-in AM rod antenna, and a connection for adding an external SWL (shortwave listening) antenna such as the GRA-72 listed at right.

This amazing receiver features up-to-date, completely solid-state circuitry. Following the detailed instructions, you will mount most of the components on a single printed circuit board designed for ease of assembly and years of reliable performance. The SW-717's rugged, built-in power supply is transformer-operated, and you can wire it for use with either 120 VAC or 240 VAC. Power supply design incorporates four silicon diodes in a full-wave bridge circuit.

Once you've completed your SW-717 kit, you can align your receiver without the need for instruments. However, the thorough Heathkit assembly manual

includes complete instructions for performing instrument-alignment, should you prefer.

As soon as you turn on your SW-717, you will be in for a barrel of excitement and fun in the increasingly-popular hobby of shortwave listening. Did you know there are even SWL clubs you can join to enhance your enjoyment? Your new receiver will soon give you a new perspective on foreign lands as you enter the world of SWL.

Not only is the SW-717 the ideal kit choice for the beginning electronics hobbyist, but it's especially recommended for use with the Heathkit ER-3701 Amateur Radio Novice License program described on page 18. The SW-717 assembly manual includes instructions for operation of the receiver, plus a reception guide that lists bands, frequencies, zones and times for most favorable shortwave listening. Complete, easy-to-follow instructions and careful engineering make the SW-717 an attractive, responsive receiver. When you finish your kit, you can proudly tell your friends and family, "I built it myself."

Kit SW-717, Shpg. wt. 10 lbs. 99.95

Long-wire SWL Antenna. Really helps you pull in distant stations. 75-foot copper long wire with 30-foot lead-in, all insulators and hardware for easy setup. A must for the serious shortwave listener.

GRA-72, Shpg. wt. 2 lbs. 7.95

Suporex Headphones. Ideal for use with the SW-717 and other shortwave receivers. Shown in the photo above, the Suporex Headphones feature dual coils for excellent sensitivity, wide headband for comfortable listening. 600 ohms impedance.

GO-396, Fully assembled, Shpg. wt. 2 lbs. 7.95

SW-717 SPECIFICATIONS: Frequency Coverage: Band A — 550 kHz-1500 kHz, Band B — 1.5-4 MHz, Band C — 4-10 MHz, Band D — 10-30 MHz. Meter: Indicates relative signal strength. Headphone Jack: Accepts low impedance headphones or external speaker. Loudspeaker: Built-in. Controls: Volume with on/off switch; Mode (AM, Standby & CW); BFO; Main Tuning; Bandsread Tuning; ANL on/off. Power Supply: Transformer operated; full-wave bridge rectifier. Power Requirement: 120/240 VAC, 60/50 Hz, 8 watts. Dimensions: 5¼" H x 14½" W x 8" D.

Heathkit Computer Systems put you in control



H8 8-Bit
Personal
Computer



H89 All-In-
One Computer
with Floppy
Disk Storage



H13 Smart
Video Terminal



H14 Hard Copy
Line Printer



Save 5% when
you buy a system!

H27 Floppy Disk System
for the H11A Computer

Powerful H11A 16-bit
Personal Computer

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

For over 30 years, Heath Company has been at the forefront of consumer electronics, most recently in computers. Since introducing the first personal computer in 1957, Heath has continued to develop one of the most complete and innovative lines of personal computers and computer systems anywhere! Whether you purchase Heathkit computer products in economical, easy-to-build kits or as fully assembled units, you get more value for your computer dollar!

- Three computer families to fill any need
- Video terminals and hard copy printers
- Floppy disk memory storage systems
- Operating and applications software
- Memory and interfacing to make your computer more versatile
- A complete line of quality peripherals
- Thorough and accurate Heath Documentation
- Complete nationwide service support

Three very different computers for very different people

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

For convenience — the All-In-One H89. If you want a complete, balanced computer system in one convenient package, the H89 All-In-One Computer is your choice. It includes computer, terminal, floppy, 16K RAM, keyboard and keypad. Just add software and you're ready to run (See next page).

For flexibility — the H8. If you enjoy the ins and outs of computers, the H8 is your choice. With seven plug-in board positions for memory and I/O, you have the flexibility to design your own system (See page 76).

For power — the 16-bit H11A. If you're an advanced computerite ready to step up to the big power needed to run your complex programs, the H11A is your choice. It features 16-bit power plus seven plug-in board positions for memory and I/O (See page 78).

Value-packed Heathkit software includes programs written for MICROSOFT™ BASIC and Assembly languages for home and business applications. Our complete software line can help you write your own programs easily. And we won't let your disk-based Heathkit software go out of date—for one year after purchase, we'll send you, free of charge, any changes (see page 82).



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

Heath offers complete service support.

Technical expertise, advice and service for your Heathkit Computer System is always available! Experts at the Heath factory or at the 55 Heathkit Electronic Centers nationwide can help you keep your computer system working right. That's an important advantage of buying from a company with 30 years' experience.



5% System Discount: When you buy the H8, H88, H89 or H11A computer, one major peripheral and any I/O devices and accessories you need to complete your computer system, you can deduct 5 percent from the total price (excluding shipping and handling charges).

The All-In-One Computer: everything in one compact unit

Get professional features and power
in a compact, low-priced computer

\$1695⁰⁰

The features that will work for you

- Heavy-duty professional keyboard
- Numeric keypad in calculator format
- Smart video terminal
- Two Z-80 microprocessors
- 16K RAM, expandable to 48K
- Built-in floppy disk storage
- Easy-to-read 12" CRT



Two-part serial I/O interface hooks up to time-share systems and printers. H89 includes cassette interface.

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

Your All-In-One Computer includes built-in floppy disk storage.

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

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

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

Professional electronic keyboard features eight user-function keys.

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

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

This 8-bit computer features keyboard-selectable baud rates up to 9,600, direct cursor addressing. Shifted functions give cursor control for insertions, deletions. Upper and lower case letters are formed by a 5 x 7 dot matrix in 24 lines by 80 character format (with special non-scrolling 25th line). Lower case letters with descenders use 5 x 9 matrix. Also has 33 line graphics characters using 8 x 10 matrix. Has 16K RAM, expandable to 48K. Built-in memory diagnostics. All communications EIA RS-232 Standard. Built-in single-drive floppy disk system. Each 5¼" diskette stores 100K bytes. Requires HDOS or equivalent systems software for normal operation. H89 All-In-One Computer, with floppy disk system. Includes H88-5 Audio Cassette Interface.

Kit H89, Shpg. wt. 86 lbs. 1695.00

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

WH89-CA, Shpg. wt. 54 lbs., Mtr. Frt. 2895.00

SPECIFICATIONS: Processor: Z-80. Clock: 2,048 mHz. Memory: 16K bytes user RAM (expandable to 48K). Video Terminal: High-resolution CRT with P4 phosphor. Keyboard: 80 keys, typewriter format, with numeric keypad in calculator format. Cursor: Blinking, non-destructive underline or block. Cursor Controls: Up, down, left, right, home, CR, LF, back space and tab. Cursor Addressing: Relative and direct. Tab: Standard eight-column tab. Refresh Rate: 60 Hz at 60 Hz line frequency, 50 Hz at 50 Hz line frequency. Edit Functions: Insert and delete character or line. Erase Functions: Erase from beginning of line, erase to end of line, erase from beginning of page, erase to end of page, erase line and erase page. Power Requirement: 120/240 VAC, 50/100 Hz at 90 W. max. Dimensions: 13" H x 17" W x 20" D.

Shown with optional second drive



More floppy disk capability for the All-In-One Computer

\$595⁰⁰

- Give your All-In-One Computer two or three-drive capability
- Additional data storage capacity, easier copying of programs

Designed especially for the Heathkit All-In-One Computer, the H77 Floppy Disk System gives you all the storage and programming capacity you need for most applications. When you use the H77 Floppy Disk with your All-In-One Computer, you have room for up to three disk drives. You can run your operating system and program disks at the same time to get instant access to programs and data.

Floppy disk storage is far more versatile and reliable than paper tape or cassette storage systems. You'll be able to load programs in seconds, access and update data fast. And because the H77 Floppy Disk is designed with the All-In-One Computer in mind, you'll have a harmonious computer system.

The storage media for the H77 is the standard, hard-sectored 40-track diskette. Each track has ten sectors, capable of storing 256 bytes of data each.

Measuring just 5.25 inches in diameter, each oxide-coated floppy disk offers access to 100K bytes of program and data storage area.

- Each disk drive installs vertically to take up less space
- Easy kit assembly — disk drive is fully assembled and tested

For two-drive capability (200K bytes) on the H89, buy the H77, which includes one drive in a dual-drive housing. When you connect your finished H77 to the H89, you'll be ready to run on two. And the H77 comes with a diskette storage box which goes into the second drive housing, so your system looks neat and efficient.

For three-drive capability (300K bytes) on the H89, buy the H77 and the optional H17-1 Second Drive (page 77). Add the H17-1 to your H77 — and you're ready to run on three disk drives.

If you want instant three-drive capability, the factory assembled and tested WH87, which includes two drives in the dual-drive housing, factory assembled and tested, can be used in place of the H77/H17-1.

For two-drive capability on the H88, purchase the H77 and the H88-4 Drive (opposite page). The H88-4 includes required interface. Add the H88-4 to the H88 housing and you're ready to run on two.

```
00010 PRINT "BASIC"
00020 A=0:GOSUB 2000
00030 LINE INPUT "ENTER ROSEL NUMBER (EXIT) "
00040 IF P=0 THEN 300
00050 IF P=1 THEN 100
00060 IF P=2 THEN 200
00070 FOR J=1 TO 19
00080 IF A15+14<J THEN 200
00090 NEXT J
00100 A=1:GOSUB 2000
00110 IF A=1 THEN 100
00120 GOSUB 3000
00130 IF A=1 THEN 100
00140 CLEAR
00150 GOTO 100
00160 END
00170 PRINT "PROGRAM LISTING"
00180 IF P=0 THEN 300
00190 PRINT "BASIC"
00200 LINE INPUT "ENTER ROSEL NUMBER (EXIT) "
00210 IF P=0 THEN 300
00220 IF P=1 THEN 100
00230 IF P=2 THEN 200
00240 GOTO 200
00250 END
```

For three-drive capability on the H88, purchase the H8-4 Drive and add it to your H88 console. Then add either the H77/H17-1 combination or the WH87.

You'll have immediate access to more data — any time you want it.

Expand the capability of your All-In-One Computer System today — with the H77/WH87 System.

Kit H77, with 1 drive, 23 lbs. \$595.00

Assembled Dual-Drive Floppy, with 2 drives.
Requires H88-6 for installation.

WH87, Shpg. wt. 28 lbs. \$1195.00

H88-6 Modification Kit. Required for WH87 installation. Not required for H77.

H88-6, Shpg. wt. 5 lbs. \$50.00

H77/WH87 SPECIFICATIONS: Number of Tracks per Diskette: 40. Number of Sectors per Track: 10. Formatted Bytes per Sector: 256. Spindle Motor Speed: 300 rpm, ±1 percent. Data Transfer Rate: 128 kiloHertz. Motor Start Time: 1 second. Operating Temperature Range: 32°F to 104°F (0°C to 40°C). Power Requirement: 120/240 VAC, 50/60 Hz, 75 watts. Dimensions: 6 1/8" H x 13 1/4" W x 13 1/4" D (15.6 cm H x 33.7 cm W x 33.7 cm D). Net Weight: 25.25 lbs. (11.45 kg).

Get much more computer-and save with the All-In-One

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

Only **\$1695⁰⁰** for H89

Are you looking for all the computing power and built-in peripherals you need, in one compact desk-top computer — but your computer budget doesn't allow for extravagance? Make the Heathkit All-In-One Computer your choice. The All-In-One has the power, built-in peripherals and convenience features you need, for less than you think — little more than "bare-bones" models.

This easy-to-program, easy-to-operate 8-bit computer features extra power. The computer and terminal both have their own separate Z80 microprocessors, so the computer never has to share processing power with the terminal. This means the Heathkit All-In-One Computer can perform a variety of high-speed functions — which makes the All-In-One more versatile than most other desk-top computers and computer systems.

A 12-inch (diagonal measurement) cathode-ray tube monitor combines extremely wide bandwidth with outstanding resolution for a brighter, clearer read-out. Special P4 phosphor helps the CRT display crisper, sharper, easier-to-read characters. Upper and lower case letters are formed by a 5 x 7 dot matrix, while lower case letters with descenders use a 5 x 9 dot matrix format.

This professional video terminal displays information in the format of 24 lines by 80 characters per line. That means the CRT can display up to 1,920 easy-on-the-eyes characters at any one time. The terminal

- A real computer value — more versatility for little more than basic models
- Heavy-duty professional keyboard
- Numeric keypad in calculator format
- Professional video terminal
- Easy-to-read 12" CRT

• Kit versions include audio cassette interface

also features a special-purpose, non-scrolling 25th line, which is software-controlled. Characters on the CRT screen are approximately 0.2" high by 0.1" wide.

The All-In-One's heavy-duty professional keyboard, designed in typewriter format, can control all video terminal functions. The keyboard prints the entire 28-character ASCII set, including both upper and lower case letters. The All-In-One's keyboard also features 33 special graphics symbols, part of the 128-character set — and eight user-function keys, to give you an extra measure of flexibility.

You can select baud rates of up to 9,600 through the keyboard. Direct cursor addressing lets you insert or delete characters anywhere on the screen. And the terminal's 32 separate functions, including the line graphics characters, can all be controlled from the keyboard or the computer. And reverse video lets you emphasize any portion of the screen by reversing white on black.

Designed in calculator format, the 12-key numeric keypad makes entering arithmetic programs faster and easier than before. Shifted functions give you cursor control to make insertions or deletions.

The Heathkit All-In-One Computer comes with more memory power. 16K of random access memory (RAM) is supplied with the All-In-One. And memory diagnostics are built-in to make memory checks easier and faster.

You can expand the All-In-One Computer to meet your

- Two Z-80 microprocessors — one for computer, one for video terminal
- 16K random access memory, expandable to 48K
- Built-in floppy disk storage
- Rugged construction

specific needs. The Heathkit All-In-One will accept up to a total of 48K random access memory (RAM). To add memory, all you need to do is plug integrated circuits into sockets. No soldering is necessary.

The built-in floppy disk system makes this a true All-In-One Computer, giving you tremendous storage capacity for programs and data. Each 5¼-inch standard, hard-sectored 40-track diskette stores up to 100K bytes of data and information. The diskettes are easier to handle — and load — than paper tape or cassette systems.

The WANGCO/Siemens 82 single-drive system is a proven system which gives you accurate, instant access to data. You'll be able to load programs in seconds, access and update data fast. And the floppy disk drive is factory assembled and tested for easier kitbuilding.

If you need even more data storage, buy the H77 Floppy Disk System (at left). Designed with the All-In-One Computer in mind, the H77 (with appropriate accessories) can give your All-In-One system up to three-drive capability.

You get more flexibility with the All-In-One Computer. An audio cassette interface, standard with kit versions of the All-In-One, lets you communicate with cassette storage systems. And with other accessory interfaces, you can communicate with printers or time-share systems (all with appropriate software). All communication is EIA RS-232.

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

Order your Heathkit All-In-One Computer today. With so much power and so many features built in, this desktop computer brings exceptional value within your reach. Put it to work for you now. Requires HDOS or similar systems software for normal operation.

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

Kit H89, Shpg. wt. 86 lbs. 1695.00

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

WH89-CA, Shpg. wt. 54 lbs. 2895.00

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

Kit H88, Shpg. wt. 59 lbs. 1295.00

H88 SPECIFICATIONS: Clock: 2.048 MHz. Cursor: Blinking, non-destructive underline or block. Cursor Controls: Up, down, left, right, home, CR, LF, back space and tab. Cursor Addressing: Relative and direct. Tab: Standard eight-column tab. Refresh Rate: 60 Hz at 60 Hz line frequency; 50 Hz at 50 Hz line frequency. Edit Functions: Insert and delete character or line. Erase Functions: Erase from beginning of line, erase to end of line, erase from beginning of page, erase to end of page, erase line and erase page. Power Requirement: 120/240 VAC, 50/60 Hz. Dimensions: 13" H x 17" W x 20" D.

Accessories and software for more versatility from your All-In-One

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

H88-18, Shpg. wt. 5 lbs. 30.00

Systems Software for the All-In-One's Floppy Disk System. Includes a diskette containing extended Benton Harbor BASIC; a two-pass absolute 8080 assembler; a text editor to prepare source code; a full set of disk utility programs for convenient file manipulation and a console debugger. Dynamic File Allocation eliminates time-consuming disk-compacting. Supplied on standard diskette.

H89-17, Shpg. wt. 5 lbs. 150.00

Popular MICROSOFT™ BASIC Computer Language. Direct access to CPU ports and memory locations, more highly-structured programming, string processing, double precision math and more. Requires floppy and 32K min. memory (48K recommended).

H8-21, Shpg. wt. 3 lbs. 150.00

16K Random Access Memory Expansion Chip Set.

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

Two-Port Serial I/O Interface Accessory.

H88-3, Shpg. wt. 2 lb. 100.00

Cassette Interface for WH89-CS All-In-One Computer.

H88-5, Shpg. wt. 2 lbs. 75.00

NEW! Three-Port Serial I/O Interface for use with the Heathkit All-In-One Computer. Lets the All-In-One Computer communicate with the H14 Line Printer, time-share systems or any other serial peripheral (with appropriate software). Three serial ports support a Standard RS-232C interface.

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

Heathkit H8 Personal Computer gives you plug-in



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

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

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

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

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

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

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

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

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

Design your own H8 Computer System

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

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

Or save with one of our complete H8 Systems

HKS82 Advanced H8 System. A powerful, versatile H8 System for the advanced computerite. Includes H8 Computer, H8-4 Four-Port Serial I/O to interface with line printers, WH8-16 16K Wired Memory Board for more computing power, H17 Floppy Disk System for more program and data storage capabilities, H19 CRT Terminal and H8-17 HDOS Operating Software. \$2219.00 if purchased separately. Save \$224.00 when you buy the system.

HKS82, Shpg. wt. 143 lbs. **1995.00**

WHS83 Assembled Advanced System. Includes WH8 Assembled Computer, WH8-4 Assembled Four-Port Serial I/O, WH8-16 16K Wired Memory Board, WH17 Assembled Floppy Disk System and H8-17 HDOS Operating Software. If purchased separately, \$1789.00. Save \$194.00 when you buy the system.

WHS83, Shpg. wt. 81 lbs. **1595.00**

flexibility at an affordable price—and floppy disk capability



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

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

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

Front panel keyboard gives you more control of your H8 Computer



Use the H8 as the heart of your computer system

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

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

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

The value-priced H8 is housed in a heavy-duty metal cabinet with modern, high-impact structural foam side panels. Operates on switch-selected 120/240 VAC, 50/60 Hz. Dimensions: 6 1/2" H x 16 1/4" W x 17" D. Requires at least 4K of memory to operate. See page 83).

Kit H8, Shpg. wt. 31 lbs. 299.00

Factory Assembled and Tested H8 Computer.

WH8, Shpg. wt. 30 lbs. 399.00

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

HM800, Shpg. wt. 13 lbs. 30.00

NOTE: Individual product manuals are included with each kit.

H17 Floppy Disk makes your H8 System ever more versatile

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

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

Designed exclusively for use with the H8, the H17 stores up to 100K bytes of data on a standard, hard-sectored 40-track diskette which measures just 5 1/4" in diameter. The disks are easier to handle — and easier to load — than paper tape or cassettes.

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

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

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

Kit H17, Shpg. wt. 28 lbs. 575.00

WH17, Factory assembled and tested H17. Shpg. wt. 28 lbs. 645.00

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

H17-1, Shpg. wt. 5 lbs. 325.00

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

H17-2, Shpg. wt. 1 lb. Was \$25, Now Only 20.00

H17 Floppy Disk Operating Software gets you running fast

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

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

Special features of the operating software include

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

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

H8-17, Shpg. wt. 14 lbs. 150.00



Heathkit H11A Computer brings 16-bit power



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

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

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

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

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

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

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

Heart of the H11A — the KD11-HA Microcomputer

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

There is no on-board memory, so you can match your RAM/R0M requirements to meet your particular needs. And full compatibility with the LSI-11 family means you can combine components from both the LSI-11 and LSI-11/2 families.

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

H11A Operating Systems Software for the

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

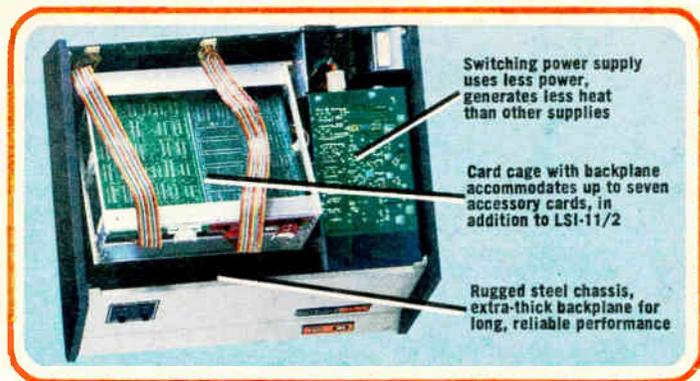
EDIT: A text editor to create or modify files for programs and documentation.
EXPAND, ASMBLE AND CREF: Utility programs for macro-expansion, Assembly Language processing and cross-reference listings. Supports the entire PDP-11 instruction set and several pseudo-operators.

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

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

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

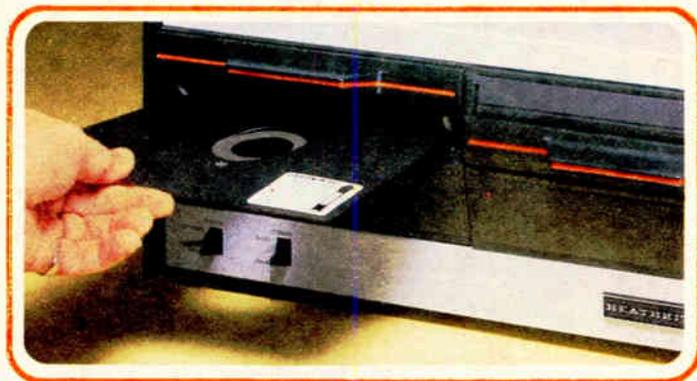
to the advanced computerite—at an affordable price



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

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

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



Get the power and versatility you need in the H11A Computer

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

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

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

Kit H11A, Shpg. wt. 43 lbs. 1195.00

Factory Assembled and Tested H11A Computer.

WH11A, Shpg. wt. 43 lbs. 1995.00

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

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

H27 Floppy Disk gives you instant access to data

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

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

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

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

Kit H27, Shpg. wt. 93 lbs.. Motor Freight 1995.00

WH27 Dual-Drive Floppy Disk System. Fully assembled and tested

WH27, Shpg. wt. 69 lbs., Motor Freight 2595.00

H27-2, Pkg. of 5 Blank Disks. IBM 3740 format. Shpg. wt. 2 lbs. 25.00

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

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

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

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

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

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

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

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

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

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



The Heathkit H19 Smart Terminal features full ASCII set, professional keyboard and super-sharp CRT display

\$675.00 Kit • Z80 microprocessor-based for fast, efficient data handling
 • Extremely wide bandwidth monitor for easy-to-read images

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

Look at these professional features:

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

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

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

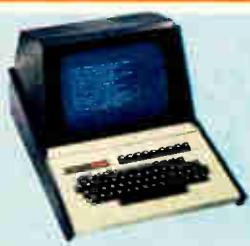
The typewriter format lets you start right in programming from the keyboard. The terminal's 32 separate functions can be controlled from keyboard or computer. A 12-key numeric pad in calculator format makes entry of arithmetic programs fast and easy. Baud rates of up to 9,600 are keyboard selectable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

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

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

Kit H19, Shpg. wt. 49 lbs. **675.00**
 Factory Assembled and Tested Version of above.
 WH19, Shpg. wt. 43 lbs. **995.00**

H19 SPECIFICATIONS: CRT: 12" Diagonal, P4 phosphor. Display Size: 6½" high x 8½" wide. Character Size: 0.2" high x 0.1" wide (approx.). Character Set: 128 characters (95 ASCII and 33 graphic). Character Type: 5x7 dot matrix (upper case), 5x9 dot matrix (lower case with descenders). Keyboard: 80 keys (60 alphanumeric, 12 function) plus a 12-key numeric pad. Cursor: Blinking, non-destructive underline. Cursor Controls: Up, down, left, right, home, CR, LF and tab. Cursor Addressing: relative and direct. Tab: standard 8-column tab. Refresh Rate: 60 Hz. Erase Functions: erase page, erase to end of line, erase to end of page. Scroll: auto or line/page freeze. Bell: audible alarm on receipt of control G. Video: normal and reverse using an escape sequence. Interface: EIA RS-232C at 110 to 9,600 baud. Communications Mode: full or half duplex. Parity: even, odd, stick or none. Power: 120/240 VAC, 60/50 Hz, 45 W. Dimensions: 13" H x 17" W x 20" D.



Save like never before on our versatile H9 CRT Video Terminal

Marked down \$179.05 from our Fall catalog. Displays twelve 80-character lines. Has auto-scrolling, plot and erase modes, automatic line carryover, cursor, built-in speaker. Serial interface provides EIA RS-232C levels, 20 mA current loop, TTL levels. Parallel interfacing includes TTL levels, 8 bits input, 8 bits output, 4 handshaking lines. For 120/240 VAC, 50/60 Hz. 12½" H x 15½" W x 20¾" D.

Kit H9, 50 lbs., Was \$479.00 in Cat. 846, Now 299.95
 Adapter Cable. Interface H9 with other devices.
 WH9-1, Shpg. wt. 1 lb. **15.00**
 80

New Heath/Zenith color monitor



- Accepts composite color video from your computer, VCR or camera

The new Heath/Zenith 13" (diagonal measure) Color Video Monitor is the ideal choice to complement your computer, video cassette recorder or color camera. It accepts composite NTSC color video and Hi-Z audio input to produce a high resolution color picture and features a built-in audio amplifier and speaker. Includes RCA-type phono jacks for both audio and video input. Cabinet measures 14" H x 20¾" W x 14¾". Fully assembled.

GOZ-1320, Shpg. wt. 42 lbs. **379.95**



Acoustic Modem

- Save — now get \$20 off
- Ideal for any telephone

Lets your computer talk to other computers over standard telephone lines. Features selectable originate and answer modes. LED display of unit status and special acoustic self-testing. Compact, powerful. Plugs directly into wall sockets. Data exchange occurs at any speed up to 30 characters per second, via standard EIA-RS-232C interface. Many practical and fun applications. Fully assembled.

WH13, Shpg. wt. 3 lbs. ... Was \$195.00, Now 175.00

A full line of printers for a variety of applications

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

\$595⁰⁰ • One of the lowest-cost microprocessor-based printers
 Kit • Use with most computers

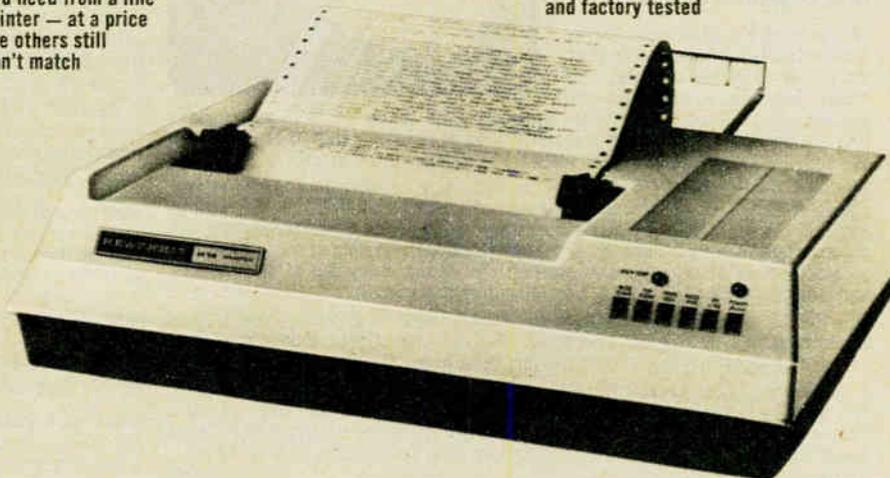
The H14 prints the standard 96-character ASCII set (upper and lower case) on a 5 x 7 dot matrix print head. Uses readily available 0.5" wide nylon inked ribbon on 2" spools. Maximum throughput rate is 75 cps, with selectable 80, 96 or 132 character line length. 6 lines per inch line spacing; 8 lines per inch software selectable. 110-4800 baud rates. Adjustable width sprocket feed handles edge-punched fan-fold paper from 2.5" to 9.5" wide.

Connects to H8, H11A computers with standard RS-232C serial interface or 20 mA current loop. Hand-shaking provided by busy control signal. Includes 25-pin male EIA connector and matching paper catch. 4 1/2" H x 18 1/2" W x 14 1/2" D. 120/240 VAC, 50/60 Hz. Requires H8-17, H8-18 or HC8-14 software for H8; HT-11 or H11-18 software for H11 or H11A.

Kit H14, Shpg. wt. 30 lbs. **595.00**
 Assembled WH14, Shpg. wt. 27 lbs. **895.00**
 3200 sheets 9 1/2" x 11" Fan-Fold Paper for H14.
 HCS-2, Shpg. wt. 31 lbs. **30.00**

Get the extra features you need from a line printer — at a price the others still can't match

Available in economical, easy-to-build kit form or fully assembled and factory tested



Compact, versatile, easy-to-use DEC Desktop Computer Teleprinter



Cut \$100
 Was \$1295⁰⁰
NOW ONLY \$1195⁰⁰

• Convenient desktop design makes the WH34 ideal for office uses

Prints full 96-character ASCII set with switch selectable 110, 300 baud rates. True 30 cps print speed, adjustable character widths and line spacing, clear 9 x 7 dot matrix print head. Features sculptured keyboard, cartridge ribbon change, auto. line feed. With EIA RS-232C interface cable, ribbon, paper. 120 VAC. 7" H x 22" W x 15 1/2" D.

Assembled WH34, 40 lbs. . . . Was \$1295, Now **1195.00**
 3 Ribbon Cartridges. HCS-54, 1 lb. **25.00**
 Tractor Feed Accessory. WHA34-2, 3 lbs. **150.00**

YOU SAVE \$100 NOW

LAST CALL on Acoustic Coupler for the H36 Printer. Provides hookup to phone lines for time-sharing. Save \$100.00.

H36-3, 10 lbs. Was \$250, Now **150.00**

Fan-Fold Paper for the H36 Printer. 3200 sheets of 14 7/8" x 11" white/green, one-part, lined paper. HCS-3, Shpg. wt. 47 lbs. **35.00**

Ribbon Accessory for the H36 and WH24 Printers. HCS-53, Shpg. wt. 1 lb. Pkg. of 3, **15.00**

The Heathkit WH24/TI810 Line Printer — the complete line printer

Unlike others, we include upper and lower cases, floor stand, paper catch tray — and an extra \$100 savings

NOW ONLY \$1795⁰⁰

- Fully assembled and tested
- Optimized bi-directional printing

Now marked down an extra \$100, the WH24/TI810's optimized 150 cps bi-directional printing minimizes printhead travel time and maximizes efficiency. Vertical and horizontal tabbing help produce maximized data, regardless of format.

A 256-character FIFO buffer lets you receive data at speeds from 110 to 9600 baud. Programmable forms length and a wide carriage handle multiple-part forms, tickets and reports from 3" to 15" wide. A 9 x 7 dot matrix character font prints up to 5 clear copies. Adjustable tractor drives mean alignment of forms can be made at the front panel.

Includes upper/lower cases, floor stand, paper catch tray. 120/240 VAC. 8" H x 25 3/4" W x 20" D. Needs WHA11-5 Serial I/O Card for H11/H11A only. Not required with other Heathkit systems.

WH24, 97 lbs., Mtr. Frt. . . . Was \$1895, Now **1795.00**

Printer without floor stand.

WH24-1, Shpg. wt. 66 lbs., Mtr. Frt. **1695.00**

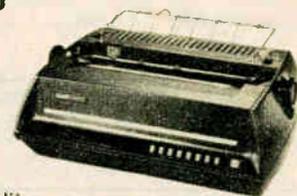
WHA11-5, Serial I/O Card, 1 lb. **150.00**



Beautiful letter quality printing for your word processing system

\$2995⁰⁰

The factory assembled and tested WH44 Diablo Printer features famous daisy wheel printing quality



Prints std. 96-character ASCII set, max. 45 cps. Bi-directional printing. Adjustable horizontal and vertical tabs, settable in all positions. 1/120" horizontal, 1/48" vertical incremental motion, 2-color printing for graphics, ETX/ATC protocol. With RS-232C Interface, HCS-22 Printwheel (Elite 12) and HCS-51 Film Ribbon. For 120/240 VAC. Dimensions, 9 3/4" H x 23 1/2" W x 15 3/4" D.

WH44, Assembled and Tested, 60 lbs. **2995.00**

Diablo Teleprinter Accessories

HCS-50, 3 Cloth Ribbons, Shpg. wt. 1 lb. **18.00**

HCS-51, 3 Film Ribbons, Shpg. wt. 1 lb. **18.00**

HCA-1, Tractor Feed Accessory, Wt. 8 lbs. **259.00**

Diablo Teleprinter Printwheels

HCS-20, Courier 10. Pica w/slashed zero. 1 lb. **8.00**

HCS-21, Courier 72. Pica w/unslashed zero. 1 lb. **8.00**

HCS-23, Gen. Scientific. Greek letters, superscripts math symbols. Shpg. wt. 1 lb. **8.00**

HCS-24, APL Computer Language. 1 lb. **8.00**

HCS-25, ANSI std. OCR-A format. 1 lb. **8.00**

HCS-26, Prestige Elite Legal 12A. Elite with legal symbols. Shpg. wt. 1 lb. **8.00**

HCS-27, Courier Legal 10. Pica with legal symbols. Shpg. wt. 1 lb. **8.00**

HCS-28, Courier Legal 10. Pica with legal symbols. Shpg. wt. 1 lb. **8.00**

Full line of accessories and software gives your

H8/H88/H89 software gives you more ways to use your computer system

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



Extended Benton Harbor BASIC™. An easy-to-learn, easy-to-use conversational computer language, this enhanced version of Dartmouth BASIC includes strings and files. It provides even faster operation and includes character strings, additional convenience commands and math functions, dynamic storage allocation access to 2 mS clock, keyboard interrupt processing, expanded error messages and recovery ability, LED display control and keypad support.

This BASIC features numeric data with over six digits of accuracy, and Boolean values which permit logical operations. It also features free format programs, enhanced expression, math functions and conditional statement facilities.

A minimum of 12K memory is required to run Extended Benton Harbor BASIC. 16K memory is preferred if full use is to be made of its capabilities. Extended Benton Harbor BASIC supports the H14 Line Printer and the H8-4 Four-Port Serial Interface Board. The software is supplied in 1200 baud audio cassette form.

HC8-14, Shpg. wt. 13 lbs. 30.00

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

This operating systems software includes: Benton Harbor BASIC, a conversational programming language which makes use of simple English statements and familiar algebraic equations to perform operations and solve problems; HASL-8 Assembly Language, a two-pass absolute assembler that lets you create source programs using letters, numbers and symbols to generate efficient machine language code. It assembles the source program into a listing and an object

program in binary format executable by the H8; TED-8 Text Editor, which converts the H8 Computer and terminal into a powerful typewriter for generating text and editing. It prepares the source code for H8 Assembly language and can be used to prepare reports, write letters and edit manuscripts; and BUG-8 Console Debugger, an enhanced and extended version of the front panel monitor which allows entry and debugging of user machine language programs via an external terminal. It features single or multiple stepping through programs, breakpointing, load and dump from tape storage. (A user program is required to use the Console Debugger); and a full set of utility programs.

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

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

Operating Systems Software for the H17 Floppy Disk System. Helps get your H17 Floppy up and running fast. Includes all the standard H8 software (Extended Benton Harbor BASIC — an easier conversational computer language, a two-pass absolute assembler which helps you create efficient machine language programs, a text editor to help you generate and edit text; a console debugger which allows entry and debugging of user machine language programs from an external terminal, and a full set of disk utility programs. This software is supplied on a standard diskette.

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

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

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

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

Paper Tape for your H10 Reader/Punch

Three 8" dia. 900' Rolls Blank Tape.
HCS-10, Shpg. wt. 5 lbs. 10.00
Three 1000' Boxes Fan-Fold Tape.
HCS-11, Shpg. wt. 5 lbs. 15.00

Have hours of excitement and fun with H8 Computer Games

Supplied in 1200 baud audio cassette form, requires H8 and H8-5. Won't work with H89 or H8-4.
Biorhythm. Requires Extended BASIC, 16K RAM.
PA-82, 1 lb. 10.00
Space War. Requires 24K RAM. PA-83, 1 lb. 10.00
Game Set #1. 8 games. Requires 8K RAM.
PA-84, 1 lb. 10.00

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HEATH COMPANY

By _____

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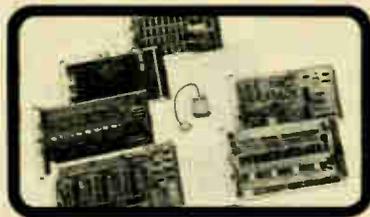
By _____

Customer's Signature

Heathkit computer system new versatility

H8 Accessories give your computer system more capability

Use any or all of these accessories to expand the capability of your H8 Computer and make your system even more versatile. Many of these accessories plug right into the H8 Computer for fast, easy hookup, so you can design a system to fit your specific computing needs.



SAVE \$50⁰⁰ on the WH8-16 16K Wired Memory Board. This board lets you expand your H8 Computer's memory power. Fully assembled and tested, and factory burned-in to eliminate memory problems.

WH8-16, Shpg. wt. 2 lbs. Was \$395.00, Now 345.00

NEW! the HA8-1 Extender Board. Lets you operate your H8 Computer with accessory boards outside the "card cage" to allow easy access for servicing, prototyping or debugging.

HA8-1, Shpg. wt. 1 lb. 40.00

NEW! HA8-2 Music Synthesizer System. Synthesizer board connects to your stereo system with two shielded cables (included). True D/A converter provides excellent 27.5-6,600 Hz frequency response, with up to 9 harmonics. Software lets you enter any song — right from conventional sheet music. Complete documentation shows how to use the synthesizer system for your maximum enjoyment. Software supplied on disk. Requires 24K min. memory, H17 Floppy Disk System and terminal. Available May 15.

HA8-2, Shpg. wt. 2 lbs. 159.00

WH8-8 8K Wired Memory Board. 8K x 8 memory card, supplied with 8K memory. Plugs directly into H8 bus. Max. storage capacity, 8192 8-bit words. With on-board regulators, heat sinks and full buffering. Fully assembled and tested.

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

H8-2 Parallel Interface. Connect your H8 to any parallel device, such as printers. Three independent ports, each with 8 bits input and output, universal hand-shaking capability. Compatible with all Heathkit software.

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

H8-4 Four-Port Serial Interface. Recommended to interface your H8 to the H14 Line Printer and H19 Terminal. All four serial ports support a standard RS-232C interface, including MODEM controls. One port is switch programmable for a 20 mA serial loop. Software programmable baud rate. All ports have solderless addressing and vector interrupt jumpers for easy setting. Has interface connector for DCE and DTE modes. Includes WH8-41 cable for connection to line printer.

Kit H8-4, Shpg. wt. 2 lbs. 175.00

WH8-4, Assembled and Tested, Shpg. wt. 3 lbs. 250.00

Adapter Cable for Use with H8-4 Serial Interface. Provides EIA std. electrical, mechanical connections between interface, other peripherals.

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

H8-5 Serial I/O and Cassette Interface. Cassette interface with 1 serial I/O port for control terminal. Connects the H8 to serial devices and to cassette mass storage devices, like the ECP-3801A. Jumper selectable data rate from 110-9600 baud. Common I/O interfaces, including 20 mA current loop and RS-232C compatible levels. Cassette interface uses Byte/Manchester format, but runs at 1200 baud. NOTE: A second H8-5 Interface cannot be used to connect the H8 to the H14 Line Printer. The H8-4 Four-Port Serial Interface is recommended for H8 systems not using cassette mass data storage.

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

WH8-5, Assembled and Tested, Shpg. wt. 2 lbs. 120.00

Adapter Cable for use with H8-5 Serial I/O and Cassette Interface. Connects H8-5 with other peripherals. Use with H8 Computer.

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

H8-7 Circuit Design Breadboard Card. Custom design your own analog or digital circuits for the H8. 5 VDC power supply included. Reuseable.

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

H11A Accessories and Interfaces give you added flexibility

Increase your computing power and performance by adding one or several H11A accessories. The H11A Computer accepts up to seven accessory cards — more space for you to add the power and versatility you want from your H11/H11A Computer System.



SAVE \$55⁰⁰ on the WH11-1 Assembled 4K Memory Expansion Module. Plugs into the H11 or H11A backplane. Adds 4K x 16-bit word capacity to memory. Uses reliable 1K x 4 static MOS RAM chips. Access time is less than 500 nS. Contains decode circuitry for operation on 4K address boundaries, and has a handle for easier installation and removal from the H11/H11A backplane. Factory assembled and tested for easy installation.

WH11-1, Shpg. wt. 2 lbs. Was \$150.00, Now 95.00

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

Kit 830-35, Shpg. chgs. prepaid 53.50

Parallel Interface. 16 diode-clamped latched data input lines, 16 latched output lines, 16-bit word or 8-bit byte data transfers. LSI-11 bus interface and control logic for interrupt processing and vectored addressing. Control status registers are compatible with PDP-11 software routines. 4 control lines: output data ready, output data accepted, input data ready and input data accepted logic operations. Maximum data transfer rate, 90K words/second under program control. Maximum drive capability, 25 ft. cable. This parallel interface is compatible with TTL and DTL logic devices.

Kit H11-2, Shpg. wt. 2 lbs. 95.00

Assembled and Tested Version of Above.

WH11-2, Shpg. wt. 1 lb. 150.00

Serial Interface. Universal asynchronous receiver/transmitter serial interface module for use between LSI-11 bus and serial devices, such as the Heathkit H9 Video Terminal (see page 80) or the WH34 DEC Teleprinter (see page 81). Has an optically isolated 20 mA current loop or EIA interfaces, selectable baud rates of 50 to 9600. Plugs into H11 backplane, fully compatible with PDP-11/03 and other LSI-11 backplane machines. Supplied with all mating connectors.

Kit H11-5, Shpg. wt. 2 lbs. 105.00

Assembled and Tested Version of Above.

WH11-5, Shpg. wt. 1 lb. 150.00

Adapter Cable for H11-5 Serial Interface. Provides EIA industry standard electrical and mechanical interface between H11-5 Serial Interface and other computer system peripherals. For use with H11/H11A Computers.

WH11-51, Assembled and Tested, Shpg. wt. 1 lb. 15.00

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

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

Extended Arithmetic Chip. Adds powerful arithmetic instructions to the LSI-11, including fixed point multiply, divide and extended shifts, plus full floating point add, subtract, multiply and divide. Helps minimize arithmetic subroutines and saves memory space. This extended arithmetic chip, a 40-pin dual in-line IC, plugs into H11/H11A board.

H11-6, Shpg. wt. 1 lb. 190.00

Look over the Manuals before you buy. Complete manuals for H11A Computer, H11-2 Parallel Interface, H11-5 Serial Interface and H9 Video Terminal. Get a first-hand look at the accurate, easy-to-follow Heathkit assembly manuals that take you, step-by-step, from unpacking to final plug-in. Know your H11A Computer inside out before buying. And when you do buy the H11A Computer, we'll deduct \$25.00 from the purchase price.

HM-1100 Manual Set, Shpg. wt. 12 lbs. 30.00

Accessories make computing easier

This space-saving Computer Work Station organizes your system for attractive, rugged operating efficiency

\$295⁰⁰

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

Heath's Computer Work Station organizes your computer system in less space — yet all components are easily accessible! Designed to Heath specifications, the 60" x 30" easy-to-clean formica desk top places I/O's at a comfortable height for seated operators. The lower shelf holds horizontal components. The upper shelf is 8½" H x 20" W x 19¾" D, while the lower shelf is 7" H x 20" W x 19¾" D.

Built to last for years, the PD-11 features rugged black steel legs and black sheet metal shelving, which



are designed to last under constant use. Casters make it easy to roll the Computer Work Station from place to place, while caster locks prevent the work station — and your computer system — from rolling away by accident. The PD-11 Computer Work Station keeps your operator comfortable and efficient — puts every one of your computer system components within easy reach — and its rugged but handsome appearance make it an attractive addition to every office environment. Partially assembled; not a kit.

PD-11, Shpg. wt. 95 lbs., Motor Frt., FOB El Segundo, CA 295.00

Assembled Cassette Recorder/Player is ideal for data storage

This Heath-recommended assembled Cassette Recorder/Player is a quality unit that's the ideal choice for data storage use with computers. Ruggedly constructed, it features separate volume and tone controls, pushbutton select of record, play, rewind, fast forward, stop and tape eject. It also features a convenient built-in 3-digit counter with reset button that enables you to locate specific information on a tape quickly and easily. Built-in microphone and quality speaker also make it perfect for general recording and playback use. Factory wired; not a kit.

ECP-3801A, Shpg. wt. 4 lbs. 60.00



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

ECP-3802, Shpg. wt. 1 lb. per pack 6.00

Multi-function calculator for the computer hobbyist

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

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

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



Learn more about your computer system with these books



Introduction to Microprocessors, Volume I. An introduction to the basic microprocessor. EDP-224 9.50

Getting Acquainted With Microcomputers. A basic guide to what microcomputers can do. 288 pages. EDP-275 8.95

8080 Machine Language Programming for Beginners. A comprehensive guide to 8080 machine language programming, written for beginners. EDP-272 7.95

PDP-11 Programming Fundamentals. How to program your PDP-11 computer with Assembly language and get the most out of it. EDP-239 10.00



FORTAN IV Self-Teaching Guide. High-level computer programming in FORTRAN. EDP-279 5.95

101 Basic Computer Games. New computer game ideas — all in BASIC — fun for the entire family. Only collection containing a complete listing, sample run, description of each game. 250 pages. EDP-237 7.50

8080 Software Gourmet Guide and Cookbook. Interesting new ideas for your 8080A computer. Over 200 pages. General purpose routines, programming time delays, random number generators, six appendices. 218 pages. EDP-228 10.95



BASIC Software Library, Vol. I. Business and recreational programs for your computer. 300 pages. EDP-240 24.95

BASIC Software Library, Vol. II. Special BASIC programs in engineering and statistics. 250 pages. EDP-241 24.95

BASIC Software Library, Vol. III. Advanced business programs to cut clerical costs. 150 pages. EDP-242 39.95

BASIC Software Library, Vol. IV. General purpose programs with scores of applications. EDP-243 9.95

BASIC Software Library, Vol. V. Programs for the experimenter who enjoys learning. EDP-251 9.95

See page 53 for book ordering information.

Personal or business computing—made simpler



NEW

Gain the basic knowledge needed to begin a computer hobby with our new program

- Do you own a computer — or are you considering buying one?

The Heathkit Personal Computing Program can help. It introduces you to the fundamental concepts, capabilities and terminology of personal computing. With our new program, you'll learn some of the ways you can benefit from a computer.

Designed for the curious, motivated individual who is uninitiated to computing, the Personal Computing Program shows you how a computer can serve you.

You'll be able to determine if your particular problem can be solved by a computer, because you will understand what a computer can do. You'll be able to cut through the technical fog, and understand what different computer system components do — in easier, simpler terms.

The Heathkit Personal Computing Program is divided into five easy-to-understand units, which explain different parts of the personal computing system and put the system into perspective, so you can make an informed decision. You'll learn:

The Fundamentals of Computers: You'll examine the types of problems that can be solved by a computer, and how to apply the capabilities of a computer to your specific problems. You'll find out how computers "understand" electronic data. Then, you will learn how to convert written words into electronic data.

Computer Hardware: When you complete this section, you won't be intimidated by long lists of specifications when you shop for computer system components. You'll be able to easily and simply compare different computers — because you will understand how each performs.

Interfacing: You'll learn how the computer communicates with other system components. You'll also be able to distinguish between analog data and digital data.

Personal Computing Systems: You will learn how to evaluate various types of small computer systems, by understanding how different combinations of components function.

Computer Software: When you read this section, you'll learn about different types of software, and how each type can solve different types of problems.

Instructing the Machine: The final section of the program shows you how you can control the computer system, by introducing you to BASIC Language Programming.

You don't need an extensive math, electronics or computer background to learn about personal computing with our new program. The easy-to-read 400-page text, supported and reinforced by three audio cassettes, makes personal computing clear and understandable to most individuals with high school backgrounds. The language used in the self-instruction program is carefully chosen to be informal, conversational and easy to understand. And we guarantee that you'll be satisfied with Personal Computing. If you're not, we'll refund the purchase price.

When you complete your introduction to Personal Computing, pass the optional final examination with a score of 70 percent or better, and you'll earn 1 CEU and a Certificate of Achievement.

EC-1000, Shpg. wt. 5 lbs. 39.95

86

Is your business ready for a computer system? The Heathkit Self-Instruction Program can help you decide

- The Heathkit Computer Concepts for Small Business Program is designed to give you the information and understanding you need to evaluate the usefulness of a computer in your business. Are the benefits of a computer worth the cost? Here's an easy way to find out the answer.

If you're a businessman who's thinking about using a computer in your business, the Heathkit Computer Concepts for Small Business Self-Instruction Program is for you. Designed for the businessman who knows little or nothing about computers, this program shows you how a computer can serve your business needs. When you consider making a computer investment that can run into thousands of dollars, you need to know as much about computers as possible — before making the investment. Our program gives you everything you need to intelligently evaluate the ways in which a computer can benefit your business. It covers:

The Computer and How It Works: Including types of memory; comparisons of the capabilities of different types of storage media and different types of I/O; and a detailed discussion of different types of applications software, covering the typical tasks a computer system can perform for a small business.

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

Alternatives in Computer Services: This section of the Heathkit Computer Concepts for Small Business Self-Instruction Program includes a comparison of the advantages of owning your own computer system, versus entering into a time-sharing arrangement or using a computer service bureau. This section includes a discussion of the typical problems which confront each type of arrangement.

How To Select a Computer: This section discusses how to define your data processing requirements. Once your data processing requirements are known, the final section of our program shows you how to put together the computer system that's right for you, including the right combination of hardware, peripherals and software. This section also discusses how to get the most from outside data processing services.

The program includes a 160-page self-instruction text with three appendices. You can read at your own pace in step-by-step, easy-to-understand segments. Our attention to detail assures complete understanding of the text material. And three audio cassettes are included with the program, to reinforce the material presented in the self-instruction text and make learning even easier.

Completion of the final examination, with a passing grade of 70% or more, earns you 1 CEU and a Certificate of Achievement.

A computer is a big investment. Our Computer Concepts for Small Business Program is a small investment to get the understanding you need to make an informed decision.

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

MONEY-BACK GUARANTEE

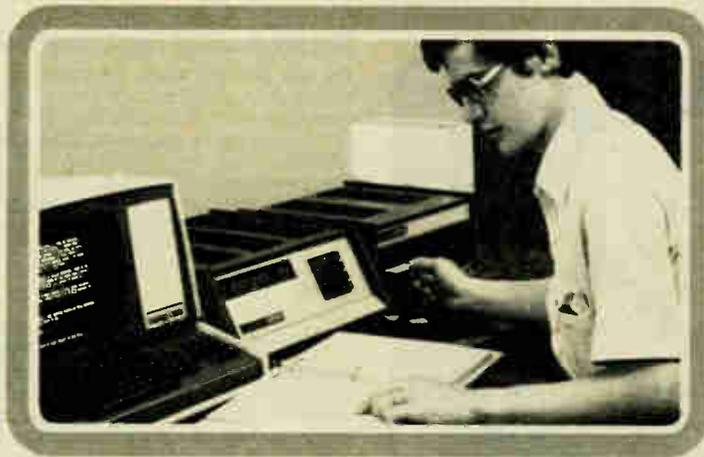
If you're not satisfied with any Heathkit Self-Instruction program, we'll completely refund the purchase price.

Learn to communicate in the language of your computer

Heathkit Self-Instruction Program for Assembly Language computing

\$49⁹⁵

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



Heathkit Self-Instruction Program for BASIC Language computing

\$39⁹⁵

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

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

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

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

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

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

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

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

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

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

Send today for the Heathkit Assembly Language Self-Instruction Program.

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

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

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

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

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

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

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

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

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

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

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

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

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

Money-Back Guarantee

The programs on this page carry a complete refund of the purchase price.

If you're not satisfied, return all program materials and your receipt.

Learn electronics the easy and economical



Why are Heathkit Programs your wisest choice?

You save time and money when you choose a Heathkit Self-Instruction Program. You save time because each subject is presented in bite-sized bits to help you learn more efficiently, with ease and enjoyment. You save money because you pay for less than a comparable adult education or vocational school course. But lower cost does not mean a sacrifice in quality — Heathkit Programs use the latest multi-media techniques described on this page. Furthermore, a Heathkit technical consultant is on duty to answer your questions by phone or letter. Such attention to detail and concern for the student are why thousands of Heathkit Programs are used by individuals, schools, business and government training programs. Heathkit Programs combine proven techniques to help you succeed.

A big plus — programmed learning texts

Programmed learning texts make Heathkit Self-Instruction Programs more effective. You can read at your own pace in easy-to-understand, step-by-step segments. No fact of the material is omitted and nothing is assumed. Self-test reviews throughout the text let you check your progress, too, for complete understanding.



The Heathkit DC Electronics is the interesting, efficient way for you to build a solid foundation in the basics of electronics



The Heathkit DC Electronics Self-Instruction Program is your first step on the way to a complete understanding of electronics. You are introduced to the basics of current, voltage, resistance, magnetism, Ohm's Law, electrical measurements, inductance and capacitance. This Program will take you through each new concept step by step to give you a solid foundation in electronics. Audio-visual treatment reinforces learning so you retain what you learn. And hands-on experiments help your understanding by giving you practical proof that the theory really works. You will acquire a detailed knowledge of basic DC electronics in a very short time. Average completion time is about 30 hours. A knowledge of high school math is assumed in the Program, however it even includes a review of the math you need, should you require a refresher. When you have successfully completed DC Electronics, you will be able to accomplish the following:

1. Solve problems of current, voltage, resistance, and power.
2. Explain current, voltage, resistance, and power.
3. Discuss the relationship between electricity and magnetism.
4. Using a schematic diagram as a guide, construct DC circuits with resistors, relays, switches, lamps, batteries, and capacitors.
5. Given a wiring diagram of a circuit, draw an equivalent schematic.
6. Use a multimeter to measure current, voltage and resistance.
7. Convert metric prefixes and work with powers of ten.
8. Explain the construction, operation, and purpose of resistors, potentiometers, switches, fuses, relays, capacitors and inductors.
9. Use safety procedures for you and your test equipment.
10. Build and experiment with basic DC circuits of your own design.
11. Explain the basic operation of transformers.
12. Explain the operation of resonant circuits.

Should you choose to take the optional final exam for DC Electronics, a passing grade of 70% or better will earn you 2.0 Continuing Education Units and a Certificate of Achievement. The Program includes a comprehensive text housed in an attractive vinyl binder, records with the audio material and 56 electronic components for the 20 experiments. The optional ET-3100 Experimenter/Trainer is desirable for completing the experiments. Optional cassette tapes duplicate the material on records. This Program will form the basis for your advancement in the world of electronic knowledge, and there's no better time to begin than right now.

EE-3101, Shpg. wt. 7 lbs. 44.95

Spanish Language DC Electronics Learning Program.
(Less EB-6101-30 Parts for optional experiments. See page 98).

EE-3101-S, Shpg. wt. 7 lbs. 49.95

EAA-3101, Optional Cassettes*, Shpg. wt. 1 lb. 9.95

Save \$10.00! EES-3101, Program with Kit Trainer, Shpg. wt. 13 lbs. 109.90

Save \$50 on basic electronics package

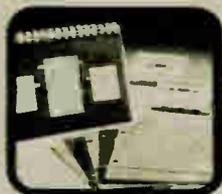
Order EE-3101, EE-3102, EE-3103, EE-3104 and EE-3105 Electronics Programs together with the ET-3100 Trainer kit for a fundamental electronics education. If purchased separately, \$339.70.

EES-3115, Shpg. wt. 56 lbs. 289.70

Heathkit way with these proven self-instruction programs

Audio-visual aids speed your learning of subject material

Large, illustrated visual materials make the text material more interesting and effective. And audio aids for many programs make your learning even easier. They can be used on a record player or audio cassette recorder/player. Besides the Programs in this section, see Automotive Programs on pages 48-49, Ham Radio on pages 18-19, and computer-related Programs on pages 86-87.



Recognition of Achievement and the Heathkit guarantee

Score at least 70% on the optional final exam and earn a Certificate of Achievement plus Continuing Education Units, a nationally-recognized way of certifying non-credit adult education. Some of our programs prepare you for professional exams and for CLEP exams (page 94). Guarantee: If, for any reason, you are dissatisfied with our Programs, we will refund price of text material (less Trainer).



Hands-on experience helps understanding

You learn best by doing, so optional experiments in Heathkit Programs help you get a better grasp of many concepts. Our optional Electronic Trainers, for use with our Electronics Programs, give you actual hands-on experience with components and circuitry. And later, the Trainers can serve as ideal circuit experimental units so you can do your own breadboarding and circuit design work.



IMPORTANT TAX NOTE: All the Continuing Education Programs and trainers may qualify you for a Federal Tax Deduction. Treasury Regulation 162-5 permits an income tax deduction for educational expenses undertaken to: (1) maintain or improve skills required in one's employment or other trade or business, or (2) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status or rate of compensation.



Accredited
by the
Home Study
Council



Licensed
School
State of
Michigan



Accredited
by the
Council of
the CEU

AC Electronics builds upon your basic knowledge of electronics using proven Heathkit methods of learning

AC Electronics covers the fundamentals and basic theory of alternating current in a straight-forward, easy-to-understand manner. Progressing at your own pace, you move through programmed instruction material that teaches you a little bit at a time so you aren't overwhelmed by new concepts. The logical arrangement of the AC Electronics Program will help you master this subject in an easy and enjoyable way. Upon successful completion you will be able to:

1. Explain the difference between AC and DC.
2. Describe the operation of alternating current generators.
3. Determine average, peak, peak-to-peak, and effective values of an AC sine wave, and analyze its frequency, period and phase; then measure these values using an oscilloscope.
4. Use AC meters to measure current, voltage and power.
5. Analyze AC circuits which contain resistance.
6. Understand and describe capacitance and capacitive reactance.
7. Analyze AC circuits with capacitance or capacitance and resistance.
8. Understand mutual inductance, self inductance and inductive reactance.
9. Analyze series and parallel resonant circuits.

10. Analyze AC circuits with inductance or inductance and resistance.
11. Determine the current, voltage and power relationships at the inputs and outputs of both ideal and practical transformer circuits.
12. Analyze and design RC, RL and LC filters.
13. Understand the construction, specifications and characteristics of capacitors, inductors and transformers.

Scoring 70% or better on the optional final exam will earn you a Certificate of Achievement and 1.5 CEU's. The DC Program or equivalent knowledge is a desirable background for EE-3102. Included in this Program are a complete text and sturdy vinyl binder, records, and 16 electronic components for completing experiments. The ET-3100 Trainer is helpful for completing the material on records. Continue your knowledge of electronics by ordering AC Electronics now.

EE-3102, Shpg. wt. 7 lbs. 49.95

Spanish Language DC Electronics Learning Program.
(Less EB-6103-30 Parts for optional experiments.
See page 98).

EE-3102-S, Shpg. wt. 7 lbs. 49.95



EEA-3102, Optional Cassettes*, Shpg. wt. 1 lb. 9.95
Save \$10.00! EES-3102, Program with Kit Trainer,
Shpg. wt. 13 lbs. 114.90

Advance to a knowledge of solid-state technology the efficient Heathkit way

Semiconductor Devices teaches you solid-state technology. It covers fundamentals, diodes, zeners, bipolar transistors, FETs, thyristors, ICs and optoelectronics. Included are text, records and 27 components for 11 experiments. DC and AC Electronics or equivalent knowledge is desirable background. Upon completion, you will be able to:

1. Describe the electrical characteristics of semiconductors.
2. Name the advantages of semiconductor devices over tubes.
3. Explain how the most important semiconductor devices operate.
4. Describe how semiconductor devices are constructed.

5. Use semiconductor components properly without damage.
6. Design your own circuits using semiconductor devices.

Passing the final exam with 70% or better will earn you a Certificate of Achievement and 3.0 CEUs.

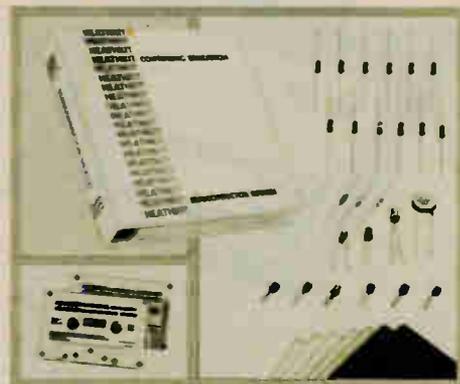
EE-3103, Shpg. wt. 6 lbs. 49.95

Spanish Language Semiconductor Devices Program.
(Less EB-6102-30 Parts for optional experiments.
See page 15).

EE-3103-S, Shpg. wt. 6 lbs. 49.95

EEA-3103, Optional Cassettes*, Shpg. wt. 1 lb. 9.95

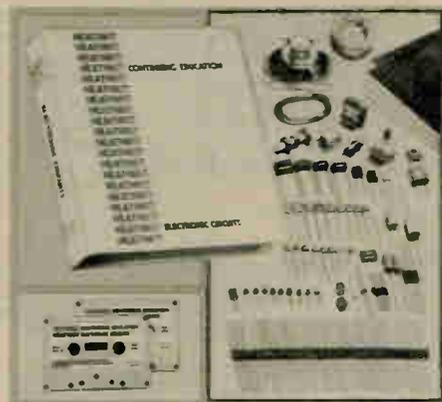
Save \$10.00! EES-3103, Program with Kit Trainer,
Shpg. wt. 11 lbs. 114.90



Programs and Trainer for easy, in-depth learning of electronics

Electronic Circuits Program applies your basic know-how

This Program brings all the theory of your first programs together to show you how it applies in actual circuit operation. You should first complete AC and DC Electronics and Semiconductor Devices, or have equivalent knowledge. For the optional experiments you should have an oscilloscope like the Heathkit IO-4105 on page 70 and the ET-3100 Trainer, below. Passing the optional final exam with a 70% or better score earns you a Certificate of Achievement and 4.0 CEUs. Upon completion, you will be able to:



1. Identify basic amplifier circuits and describe their operation.
2. Discuss direct current amplifiers, audio amplifiers, video amplifiers, intermediate frequency amplifiers, and RF amplifiers.
3. Explain differential amplifiers, comparators, filters.
4. Analyze and design simple inverting and non-inverting amplifiers.
5. Explain power supply rectifiers, filters, and regulation circuits.
6. Identify commonly used LC, RC, and crystal oscillators.
7. Explain shapers, multivibrators, Schmitt triggers, generators.
8. Explain AM, FM, heterodynes, modulation and detection.
9. Construct many transistor and IC circuits.
10. Use voltmeter and oscilloscope to analyze electronic circuits.

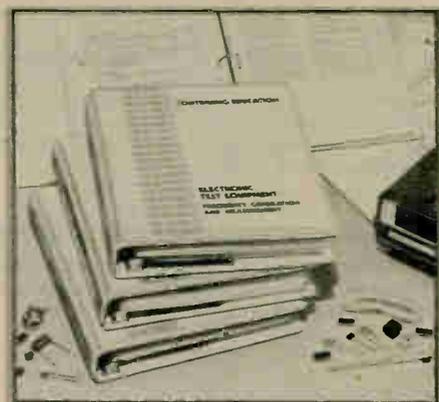
The Electronics Circuits Program includes text, an attractive vinyl binder, records and 100 electronic components for 18 experiments. Optional tapes duplicate the material on records in convenient cassette format. As with all Heathkit Self-Instruction Programs, the ones on this page carry a complete money-back guarantee of satisfaction. So confident are we of these programs that if, for any reason, you are not satisfied with either the Electronics Circuits Program or the Test Equipment Program, simply return all text materials (less Trainer) for a complete refund of your purchase price.

EE-3104, Shpg. wt. 7 lbs. 59.95
 EEA-3104, Optional Cassettes, Shpg. wt. 1 lb. 9.95
 Save \$10.00! EES-3104, Program and Kit Trainer, Shpg. wt. 18 lbs. 124.90

Save even more by purchasing the entire Basic Electronics Series of Programs. See page 88.

Test Equipment Program saves you money on electronic repairs

Understand the test equipment you need to save money on electronic repairs. This Program provides excellent background, plus the ability to operate test instruments. Covers Analog and Digital Meters, Oscilloscopes, Frequency Generation and Measurements, Special Measuring Instruments. Basic Programs (EE-3101 through EE-3104) and Digital Techniques (EE-3201) or equivalent knowledge are needed to benefit fully from this Program. Upon completion you will be able to:

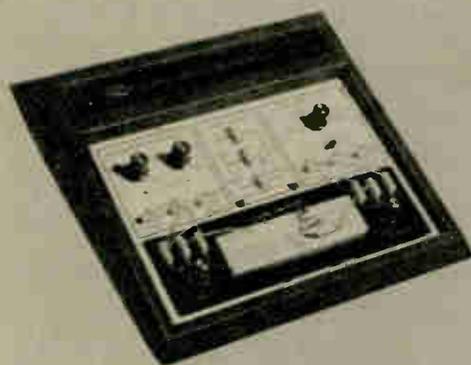


1. Use analog and digital meters to make electrical measurements.
2. Explain the operation of integrating and non-integrating meters.
3. Use an oscilloscope in electronic testing and servicing.
4. Understand the operation and use of the three most popular types of passive frequency meters.
5. Understand the operation and use of the four most popular types of active frequency meters.
6. Use a dip meter to calculate the value of an unknown inductor.
7. Understand the operation and use of electronic counters.
8. Use appropriate bridge circuits to measure resistance, capacitance, inductance, impedance, etc.
9. Determine beta a leakage values of transistors and transconductance and leakage values of FETs using a transistor tester.
10. Understand curve tracers, spectrum analyzers and logic probes.

The Test Instrument Program includes four texts in attractive vinyl binders and electronic components for experiments. A digital meter, analog meter, oscilloscope, frequency generator and a frequency counter, as well as the ET-3100 Trainer are useful for completion of the optional experiments. See pages 56 through 70 for a wide selection of quality Heathkit test equipment. If you choose to take the optional final exam, a passing grade of 70% or better will earn you 6.0 Continuing Education Units, plus an attractive Certificate of Achievement from Heathkit Continuing Education.

EE-3105, Shpg. wt. 18 lbs. 59.95
 Save \$10.00! EES-3105, Program and Kit Trainer, Shpg. wt. 24 lbs. 124.90

Experimenter/Trainer gives you hands-on learning for the DC, AC, Semiconductor, Circuits and Test Instruments Programs



The Heathkit ET-3100 Experimenter/Trainer is designed for use with the DC, AC, Semiconductor, Electronic Circuits and Test Instruments Self-Instruction Programs. It will help you to get the most benefit out of each of these Programs by giving you the hands-on experience of performing Program experiments. Because of its design, it lets you perform those experiments quickly and easily, too. The Experimenter/Trainer features solderless breadboarding sockets for ease of component substitution, a 2-range variable sine and square wave (200-20,000 Hz) signal source, dual-variable power supplies for positive and negative voltages (1.2 to 16 volts, 120 mA), 1 k and 100 k linear potentiometers. A center tapped transformer provides 30 volts rms, 60 Hz for line experiments.

Your Heathkit Experimenter/Trainer will continue to give you value even after you've completed your Basic Electronics Programs. It's ideal for putting your newly acquired knowledge to use in "breadboarding" your own circuits and experimenting with

circuit design. Save money by getting your Experimenter/Trainer with a Program, or for even bigger savings, as part of the Basic Electronics System on page 88.

Kit ET-3100, Shpg. wt. 6 lbs. 74.95
 ET-3100S, ET-3100 with Spanish manual,
 Shpg. wt. 5 lbs. 79.95
 ETW-3100, Factory Assembled Trainer,
 Shpg. wt. 6 lbs. 134.95

ET-3100/ETW-3100 SPECIFICATIONS: POWER SUPPLIES: Positive Supply Output: 1.2 to 15 volt DC, continuously variable. Load Regulation: Better than 1%, no load to full load. Current Output: 100 mA with short circuit protection. Negative Supply Output: -1.2 to -15 volts DC, continuously variable. Load Regulation: Better than 1%, no load to full load. Current Output: 100 mA with short circuit protection. GENERAL: Power Requirement: 120/240 VAC, 60/50 Hz, 7 watts maximum. Dimensions: 3 1/2" H x 12 1/8" W x 11 3/4" D (8.9 x 30.8 x 29.8 cm).

Learn digital techniques the easy, enjoyable Heathkit way

Learn Advanced Digital Techniques — everything from TTL and CMOS logic to ROM's, PLA's and an introduction to microprocessors

Using tried and tested Heathkit Self-Instruction techniques, you can learn all about the latest advances in electronics. Learn at your own pace, with the freedom to cover the material quickly, or to review those areas that need re-emphasis. And, as with all Heathkit programs, this one carries a money-back guarantee if you are not completely satisfied.

The Heathkit Advanced Digital Techniques program is a comprehensive treatment of the subject, beginning with fundamentals and theory, and guiding you through digital logic circuits, digital integrated circuits, Boolean algebra, flip-flops and registers, sequential logic circuits, combinational logic circuitry and digital design.

This well-organized approach to the subject of Digital Techniques combines printed word and recorded sound for ease of learning and greater comprehension and retention. It even incorporates programmed learning. As you complete each step-by-step section, hands-on experiments and tests will further aid your understanding of Digital Techniques. You'll be getting the comprehensive knowledge you need at a fraction of the cost of a comparable college or technical school course on the subject. You'll be interested to know, in fact, that several American universities as well as an agency of the Federal government utilize the Heathkit Advanced Digital Techniques Self-Instruction program.

This expertly-designed program shows you how to design digital circuitry for virtually any modern electronic application. It assumes a prior knowledge of electronics (the Heathkit DC, AC, Semiconductors and Electronic Circuits programs or equivalent). The program includes a comprehensive text in two attractive vinyl binders, records (or optional cassettes), and 44 electronic components for performing the 24 experiments. The Optional ET-3200 Electronic Trainer described below is useful to perform the experiments. Also recommended for some experiments are the 1M-5284 Multimeter (page 57) and an oscilloscope such as the 10-4105 (page 70).

When you have successfully completed the Digital Techniques Program, you will be able to:

1. Understand the advantages and benefits of using digital techniques in electronic equipment.
2. Name the major applications of digital techniques in electronics.
3. Convert between the binary and decimal number systems and recognize the most commonly used binary codes.
4. Name the major components used in implementing digital circuits and explain how they operate.
5. Understand the operation of digital logic gates.
6. Identify the more commonly used integrated circuit families used in digital equipment and discuss their operation, characteristics, and features.
7. Use Boolean Algebra to express logic operations and minimize logic circuits in design.
8. Understand the operation of flip-flops.



9. Understand the operation and application of binary and BCD counters, shift registers and other sequential logic circuits.
10. Name the most frequently used combinational logic circuits and explain their operation.
11. Design both combinational and sequential logic circuits for a given application from definition and concept to the selection of the integrated circuits.
12. Understand the operation and application of digital counters in time and frequency measurements.
13. Understand how a digital computer is organized and how it operates.
14. Understand microprocessors, explain their operation and give examples of their applications.

Upon completion if you choose to take the final exam included with the program, a passing grade of 70% or better will earn you 4.0 Continuing Education Units and a Certificate of Achievement. As with all Heathkit Self-Instruction Programs, this one carries a money-back guarantee. If not satisfied with the program, return all text materials (less Trainer) for a refund of the purchase price.

EE-3201, Shpg. wt. 9 lbs. **74.95**

EES-3201, Optional Cassettes*, Shpg. wt. 1 lb. **9.95**

SAVE \$15.00! EES-3201, Program with Kit Trainer, wt. 14 lbs. **149.90**

*Optional cassettes duplicate material on records.

Use this versatile Electronic Trainer to get maximum benefit from the Digital Techniques Program

Learn by doing. Use the Electronic Trainer for the Digital Techniques experiments, build and test prototypes, verify circuit operation, check digital ICs. Solderless breadboard sockets aid experimenting and design; take up to eight 14 or 16-pin dual-inline ICs, also 24, 28 and 40-pin DIPs. Has 4 binary data switches, 2 "no-bounce" switches to pulse logic circuits, 3-frequency pulse clock generator and 4 LEDs for visual indication of logic states. Regulated power supplies produce +12 VDC @ 100 mA, -12 VDC @ 100 mA and +5 VDC @ 500 mA — all current-limited and overload protected for safety. Compatible with all commonly-used IC logic families including: RTL; TTL; CMOS; ECL; NMOS; PMOS; Lin-

ear. Can be wired for either 120 or 240 VAC use.

Kit ET-3200, Shpg. wt. 5 lbs. **89.95**

ETW-3200, Assembled and tested version of above,

Shpg. wt. 6 lbs. **149.95**

ET-3200 SPECIFICATIONS: DATA SWITCHES: States: +5 V or 0 V. Maximum Current: 10 mA, each switch. Outputs: 4 terminals, one for each switch. LOGIC SWITCHES: Type: Momentary contact, spring loaded. Circuit: Two flip-flop latches for contact bounce buffering. Output States: Complementary. +5 V and +0.2 V. CLOCK: Output Frequency: 1 Hz, 1 kHz, 100 kHz; $\pm 20\%$. Duty Cycle: 45%. Output Voltage: 5 V peak-to-peak. Dimensions: 3½" H x 12¼" W x 11¾" D (8.9 x 30.8 x 29.8 cm).



Now you can learn to program and interface microprocessors



You learn about microprocessors, microcomputers and programming in a complete, efficient and well-organized way with the Heathkit Microprocessor Self-Instruction Program. You'll learn microprocessor basics, computer arithmetic, programming, interfacing, perform experiments and much more. Our multimedia approach will help you learn fast.

**Winner International Award of Distinction
Society of Technical Communicators**

The microprocessor program is organized into 10 learning units as follows:

UNIT 1: NUMBER SYSTEMS AND CODES. Covers decimal, binary, octal, hexadecimal number systems; conversions and binary codes, positional notation.

UNIT 2: MICROCOMPUTER BASICS. Covers terms and conventions, computer words, executing a program, addressing.

UNIT 3: COMPUTER ARITHMETIC: Covers Binary addition, subtraction, multiplication and division; two's complement arithmetic; Boolean operations — AND, OR, Exclusive-OR, INVERT.

UNIT 4: INTRODUCTION TO PROGRAMMING: Covers branching, conditional branching, algorithms, additional instructions.

UNIT 5: THE 6800 MICROPROCESSOR — PART 1. Covers architecture, instruction set and addressing modes.

UNIT 6: THE 6800 MICROPROCESSOR — PART 2. Covers stack operations, subroutines, input-output (I/O) operations and interrupts.

UNIT 7: INTERFACING — PART 1. Covers interfacing fundamentals; interfacing with random access memory (RAM); interfacing with displays.

UNIT 8: INTERFACING — PART 2. Covers interfacing with switches; the Peripheral Interface Adapter (PIA); Using the PIA.

UNIT 9: PROGRAMMING EXPERIMENTS. Covers experiments with binary/decimal, hexadecimal/decimal, and straight line programs; arithmetic and logic instructions, branches, additional instructions, new addressing modes, arithmetic operations, stack operations and subroutines.

UNIT 10: INTERFACING EXPERIMENTS. Covers memory circuits, clock, address decoding, data output, data input, peripheral interface adapter, key matrix and parallel-to-serial conversion, digital-to-analog and analog-to-digital conversion.

NOTE: Units 1 through 6 and Unit 9 assume no prior knowledge of electronics. Units 7, 8 and 10 assume a knowledge of electronics equivalent to the Heathkit Digital Techniques Program.

The EE-3401 is complete with 62 electronic components required to complete the experiments. These components include two 2112 256x4-bit RAM's, 6820 PIA interface chip, 1406 digital to analog converter, 741 and 301 op amps and a variety of other microprocessor-oriented devices. The optional ET-3400 Trainer (page 93) is desirable for experiments.

If you choose to take the optional final exam, a passing grade of 70% or better earns you 8.0 CEU's and a Certificate of Achievement.

EE-3401, Shpg. wt. 12 lbs. 99.95

SAVE \$9.95! Order the EE-3401 Microprocessor Program and ET-3400 Kit Trainer together. If purchased separately, \$279.90. **ETS-3400, 19 lbs. 269.90**

SAVE \$20.00! Order EE-3401 Program, ET-3400 Kit Trainer and ETA-3400 Kit Accessory. If purchased separately, \$469.90. **ETS-3401, 28 lbs. 426.90**

EE-3401-1 Slides. Optional 35 mm Slides duplicate the audio-visual flip charts in the EE-3401 program. Shpg. wt. 2 lbs. **60.00**

EE-3401-2 Filmstrip. Optional 35 mm Filmstrip. 1 lb. **20.00**

See page 98 for classroom version of EE-3401.

Heathkit Learning Dictionary is a complete short course in electronics

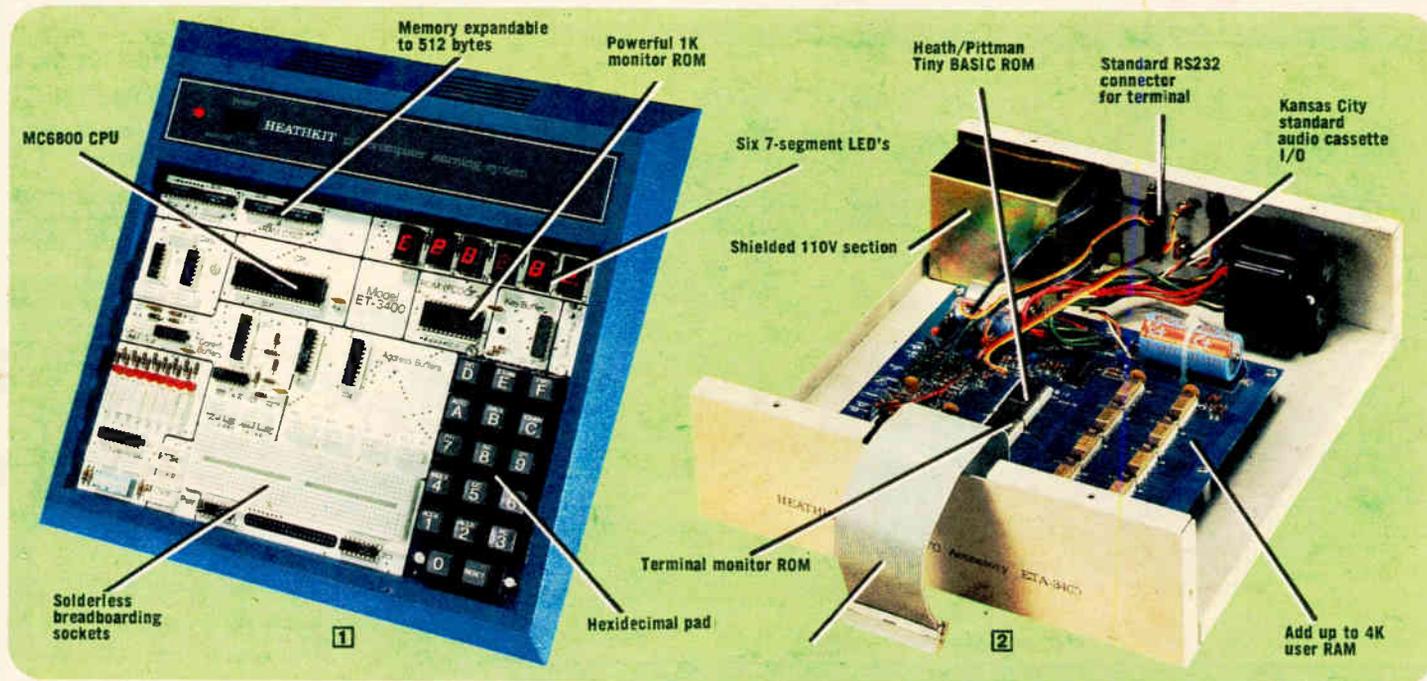
\$1495

Having the language of electronics compiled in handy dictionary form is reason enough to put this book on your reference shelf. Better yet, the Heathkit Learning Dictionary includes a compendium of 16 topic outlines that turns this dictionary into a low-cost self-instructional course. Each topic outline lists related terms, making your Dictionary an effective learning tool. 832 pages.

EB-1010, 3 lbs. 14.95



with our Microprocessor Self-Instruction Program and Trainer



Learn microprocessor architecture, interfacing, programming with our versatile Microprocessor Trainer and Computer Accessory

The ET-3400 Microprocessor Trainer and ET-3400 Computer Trainer Accessory provide low-cost computing capacity for practice or practical programming. The Trainer is designed for use with the EE-3401 Microprocessor Self-Instruction Program on the opposite page. It provides all you need to learn the fundamentals of programming and interfacing, and perform experiments in the EE-3401 Program. Once you complete the experiments, add the ETA-3400 Computer Accessory and a terminal such as the H9 or H19, for a complete computer system.

1 ET-3400 Microprocessor Trainer

Functioning as a miniature digital computer, the ET-3400 Trainer performs the experiments in the EE-3401 Program. Built-in 1K ROM monitor program controls unit operation. Has 6-digit hexadecimal 7-segment LED display for address and data readout. 17-key hexadecimal keyboard for access of memory location to examine contents, then step forward or backward from that location to examine others, to change a location, to examine and/or alter any of the MC6800 CPU's internal registers, to set break points for program debugging, or to reset the CPU. The flexible instruction set of the MC6800 permits five addressing modes. The CPU employs two accumulators, an index register, and stack pointer.

The ET-3400 has 256 bytes of random access memory (RAM) built-in, and is expandable to 512 bytes with the RAM supplied in the EE-3401 Program. Has 8 buffered binary LED's for display of breadboard logic states, 8 SPST DIP switches for binary input to breadboarding circuits, a breadboarding socket for prototyping, interfacing and memory circuits. All microprocessor address, control and data buses are buffered and terminated on the front panel for ease of connection to prototype circuits. Has provision for 40-pin external connector to expand mem-

ory and I/O. Built-in +5, +12 and -12 V power supplies. 120/240 VAC, 60/50 Hz, 30 W. 3½" H x 12½" W x 11¾" D. After completing the EE-3401 Program, team the ET-3400 Trainer up with the ETA-3400 (below) for real computing power.

Microprocessor Trainer,
Kit ET-3400, Shpg. wt. 7 lbs. 199.95
Factory assembled and tested.
ETW-3400, Shpg. wt. 6 lbs. 279.00

2 ETA-3400 Trainer Accessory

Turn your Microprocessor Trainer into a complete system with the ETA-3400 Accessory. It provides more computing power with an additional 1K bytes of memory so you can run longer and more sophisticated programs. Memory expandable to 4K bytes with the optional 3K chip set (ET-3400-1). Order the chip set from the listing at the right.

A serial I/O with EIA or 20 mA loop format in the Accessory lets you hook up a terminal such as the H9, or a 20 mA ASCII teletype machine. It also provides an audio cassette interface so you can store programs on cassettes. The ROM monitor/debugger program lets you implement the standard trainer monitor functions through the external terminal. Memory locations can be examined or changed, break points can be initiated, and program debugging can be accomplished with a single instruction step.

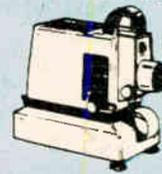
A Tiny BASIC interpreter is provided in ROM to let you program using BASIC™ (see EC-1100 BASIC Program on page 87). Tiny BASIC features 26 variables (A-Z), integer math, 15 BASIC statements and two functions: random and user. User function allows you to run machine code routines from BASIC — in the same routines you learn in the EE-3401 Program.

The Accessory connects to the Trainer by means of a 40-pin ribbon cable supplied. Parts required are included. Since this modification changes the clock frequency of the Trainer, experiments in the Microprocessor Program using timing loops will be changed. We recommend completing the EE-3401 experiments before adding this modification. 3" H x 11" W x 12" D. 120/240 VAC, 60/50 Hz. 11 watts.

Microprocessor Trainer Accessory.
Kit ETA-3400, Shpg. wt. 8 lbs. 150.00
Factory assembled and tested.
EWA-3400, Shpg. wt. 8 lbs. 250.00
Optional 3K Chip Set.
ETA-3400-1, Shpg. wt. 1 lb. 47.00

SPECIAL SAVINGS

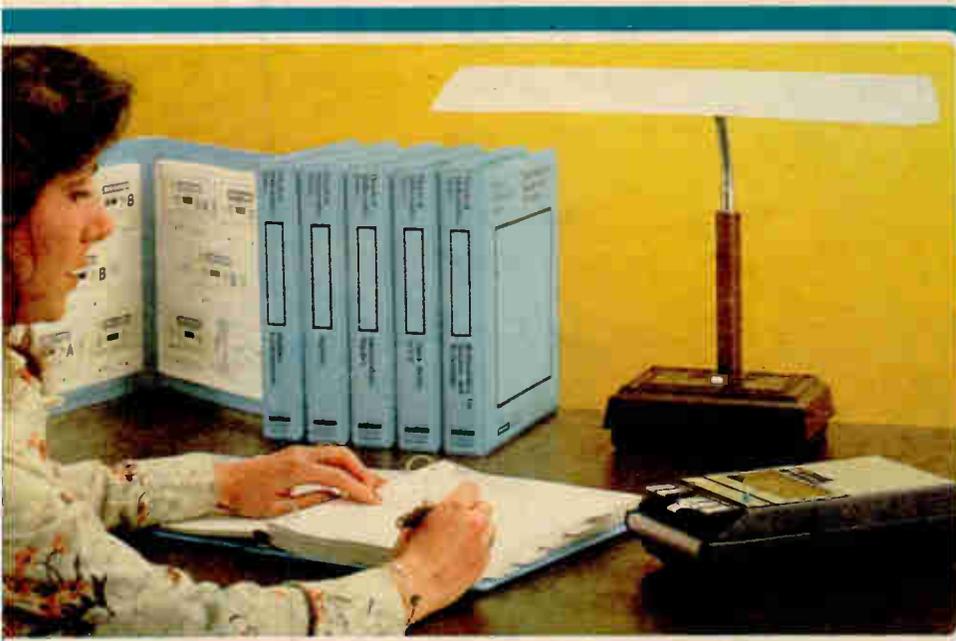
Save on top quality Dukane 35mm
Filmstrip/Slide Projector



YOU SAVE \$50.05
only \$59⁹⁵

Quality Slide-Filmstrip Projector. Has color-coded focus, advance and framing levers. Comes with 300 W. lamp and 3" lens, molded and fitted carrying case, and 2 x 2 stack load slide changer. 110 V. only. AVS-101, 17 lbs. . . Was \$110.00, Now \$59.95

Heathkit practical math programs help you learn the math



Our unique audio-tutorial learning method makes it easy to learn basic math skills you need for business or school

Teach yourself the metric system, soon to become the official system of weights and measurements in the U.S. Review the math you learned in high school or the first year of college. Or learn important algebra and trigonometry concepts on which much of modern engineering is based. The audio-tutorial learning method and the College Level Examination Program (CLEP) make it more worthwhile than ever.



Our audio-tutorial learning method gives extra emphasis to important subject matter, which means you can learn math concepts faster and easier than before. Cassette tapes help guide you through understandable text material, written in everyday language. You see and hear each math concept as it is presented. You advance through each program by completing examples while the discussion of the example is in progress on the tape. You work along with the narration as new skills are introduced. And you also complete exercises independently of the tapes. Continuous interaction between you and the subject material makes your educational experience faster and more thorough.

We can help you earn CLEP college credit. The College Level Examination Program (CLEP) enables students to earn college credit by examination, recognizing college-level achievement acquired outside the conventional classroom. Anyone can take CLEP tests to demonstrate college-level abilities gained through employment experience, military/industrial/business training or advanced work in high school courses or non-credit adult programs — including the Heathkit Continuing Education Series. Our Algebra series (EM-3, 4 and 5, opposite) will help you prepare for the CLEP College Algebra Exam. Use the Trigonometry Program (EM-6, opposite) before the CLEP Trig Exam. Or take both Statistics programs (EM-7 and 8, opposite) to prepare for the CLEP Statistics Exam.

With today's high costs of college tuition, room and board, CLEP can save a student real money and help a student get a degree sooner. Hundreds of colleges and universities honor CLEP test scores for credit. To obtain a list of those institutions, and for more information on the CLEP Program, write The College Board, P.O. Box 1822, Princeton, NJ 08541.

Cassette Tape Recorder/Player

The ECP-3801A Cassette Tape Recorder/Player is recommended for use with Heathkit educational programs containing audio cassettes. Easy-to-reach pushbuttons control play, rewind, fast forward, stop, eject and record functions. The ECP-3801A also has a built-in condenser microphone and a built-in three-digit counter with reset button. This Heath-recommended Cassette Recorder/Player is factory assembled and wired; not a kit.

ECP-3801A, Shpg. wt. 4 lbs. 60.00



Advanced Texas Instruments TI-50 Scientific Calculator

Advanced capability and quality in an attractive package. The TI-50 is a powerful scientific calculator with statistics — and the most commonly used logarithmic and trigonometric operations, making it ideal for use with Heathkit practical math programs, as well as other Heathkit educational courses. Sixty functions automatically handle a wide range of problems, while scientific notation lets you work any number with ease.

EMA-10, Shpg. wt. 1 lb. 39.95



The TI Programmable 59 Calculator — the super-powerful card programmable

The TI-59 offers the most advanced features available anywhere. Computer-like power and versatility with subroutines, looping, editing capabilities and much more. Interchangeable Solid State Software™ modules expand capability and flexibility. Or develop programs yourself. Includes master library with 25 prewritten applications programs.

EMA-20, Shpg. wt. 7 lbs. 249.95



skills necessary to you — and earn college credit, too

Math Tutorials for Science and Technology

Get a quick review of the fundamental mathematical skills that you need in your work every day. In 12 self-contained programmed workbooks, you get a complete review of the mathematical skills you learned in high school and college.

The course covers arithmetic and signed numbers, powers and roots, scientific notation, arithmetic in scientific notation, units and rounding, graphs, ratios and proportions, introduction to algebra, solving equations, triangle trigonometry, vectors, probability and statistics.

Upon completion of this program and passing the optional final examination with a score of 70% or better, you'll receive 4.0 Continuing Education Units (CEUs) and a Certificate of Achievement.

EM-1, Shpg. wt. 9 lbs. 39.95

Now it's easier than ever to Think Metric, U.S.A.

The metric system is the most common system of weights and measures. Soon, it will become the official system of weights and measures in the U.S., and every American will need to know it.

We make learning the metric system fun and easy with Think Metric, U.S.A. This program introduces you to the most commonly used metric terms, provides examples of what you'll be measuring when you use the new system, helps you compare metric terms to familiar terms and provides practical examples of using the metric system.

The material is presented in a three-ring binder and includes an audio cassette that reinforces the text material.

When you complete the course and pass the optional final exam (70% or better), you'll earn 1.0 CEU and a Certificate of Achievement.

EM-2, Shpg. wt. 4 lbs. 19.95

Learn the algebra you need today

Algebra Fundamentals reviews basic algebraic skills. A text and seven cassettes cover integer arithmetic, substance of algebra, proportional reasoning, graphs, divisions and multiples, fractions, roots and real numbers. Upon passing the optional final exam, you'll receive 2.5 CEUs and a Certificate of Achievement.

EM-3, Shpg. wt. 6 lbs. 49.95

Algebra provides a working knowledge of algebra. Eight sections, a workbook and 10 cassettes cover polynomial arithmetic, factoring, algebraic functions, exponents and radicals, linear equations, inequalities, quadratic equations and inequalities in one variable, probability, sets and operations. Upon passing the optional final exam, you'll receive 3.0 CEUs and a Certificate of Achievement.

EM-4, Shpg. wt. 7 lbs. 49.95

Intermediate Algebra covers advanced problems and theories. The text and nine cassettes are provided. This program covers functions, relations and inverses, graphs and variation, linear relations, quadratic relations, systems of equations and inequalities, determinants, logarithms, sequences and series. When you pass the optional final exam, you'll receive 3.5 CEUs and a Certificate of Achievement.

EM-5, Shpg. wt. 7 lbs. 49.95

Save \$10.00 on your Algebra Education!

Order all three Algebra Programs (Algebra Fundamentals, Algebra and Intermediate Algebra) for a complete education in the fundamentals of Algebra. If purchased separately, \$149.85.

EMS-345, Shpg. wt. 20 lbs. Only 139.85

Learn the fundamentals of trigonometry

You need trigonometry to analyze alternating current, as well as more complex mathematical, circular and angular problems — and we make understanding this college-level material easier than ever.

The Trigonometry Program includes two three-ring binders for the text, and nine cassette tapes to reinforce the text material. It's a natural step forward from algebra, and requires the successful completion of our EM-5 Intermediate Algebra program (left) or equivalent knowledge. A basic knowledge of geometry is helpful, too.

You'll learn about circular functions, graphs of circular functions, identities and proofs, inverse functions, conditional equations, right triangle trigonometry, the solution of right triangles, polar coordinates and parametric equations, vectors and complex numbers.

You can learn first-year college trigonometry in depth — taking the time you need to really learn trig fundamentals. Supplement what you learn in school — or prepare for the CLEP Trig examination, where you can earn college credit for what you learn outside the classroom.

Upon passing the optional final examination, you will receive 4.0 CEUs and a Certificate of Achievement.

EM-6, Shpg. wt. 7 lbs. 49.95

Descriptive Statistics and Probability Distributions

NEW

Designed especially for people who need to know statistics — but don't have a strong math background. Abstraction and symbolism are kept to a minimum, while concepts, rules and processes are thoroughly presented.

Before starting Descriptive Statistics and Probability Distributions, you should complete our Algebra Fundamentals course (EM-3, left) or have equivalent knowledge.

This self-instruction program includes seven units of text in a three-ring binder, with another binder containing seven cassette tapes.

You'll learn about frequency distributions and graphs, special frequency distributions, frequency polygons, measures of central tendency, measures of variability, basic probability, the binomial distribution and the normal distribution.

The optional EMA-10 Calculator (opposite page) has statistical functions needed to complete this course and EM-8 below. When you pass the optional final exam, you'll receive 3.0 CEUs and a Certificate of Achievement.

EM-7, Shpg. wt. 6 lbs. 49.95

Inferential Statistics advances your knowledge

NEW

Our new Inferential Statistics Program introduces you to more advanced statistical concepts and problems. You'll gain knowledge about sampling and sample statistics, hypothesis testing, estimating population parameters, the t distribution, linear correlation, linear regression, the chi square distribution, the F distribution and nonparametric tests.

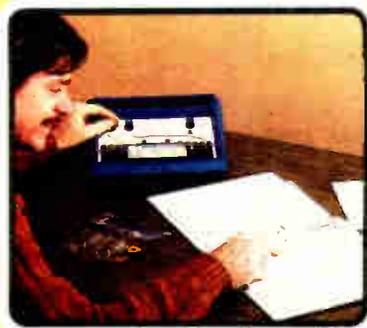
The optional EMA-10 Calculator (opposite page) has statistical functions necessary to complete this program and EM-7 above. When you complete Inferential Statistics and pass the optional final examination with a score of 70% or better, you'll receive 3.5 Continuing Education Units (CEUs) and a Certificate of Achievement.

EM-8, Shpg. wt. 8 lbs. 59.95

Our new Descriptive Statistics/Probability Distributions and Inferential Statistics Programs help you prepare for the CLEP Statistics Examination, where you can earn college credit for what you learn outside the classroom.

Heathkit Programs make learning electronics easier

NEW



Heathkit Advanced Electronics Self-Instruction Programs eliminate the legwork for you. They come complete with components so you can perform tried and tested experiments based on an easy-to-understand text. So, learning is faster, more fun... and more economical, too. Large, illustrated visual materials make learning even more effective. And the optional Heathkit ET-3300 Electronic Trainer gives you actual hands-on experience with the electronic components and circuits discussed in the Ad-

vanced Electronics programs. Whether you are a technician/engineer interested in self-improvement, a student seeking advanced electronics knowledge, or a hobbyist interested in new electronic developments, these programs are designed to meet your needs in the most economical way.

Learn about Op Amps, one of today's most important ICs



A 385-page text, reinforced by test questions and experiments, teaches you how to measure and compute common op amp parameters; how to design basic op amp linear circuits; how to design integrator and differential circuits; and how to design and predict the performance of op amp constant current sources; as well as current-to-voltage and voltage-to-current converters. Even the popular Norton and BIFET op amps are covered. Components are included for conducting experiments. Desirable options for the experiments are the ET-

3300 Lab Breadboard (below), and an oscilloscope like the Heathkit IO-4105 (page 70), a multimeter like the Heathkit IM-1104 (page 62), and a frequency generator like the IG-1271 (page 63). The Basic Electronics Series (EE-3101 through 3104, pages 88-90) or equivalent makes Op Amps easier. 3.0 CEUs.

EE-101, Shpg. wt. 5 lbs. 39.95
 Kit ET-3300, Breadboard, wt. 6 lbs. 89.95
 ETW-3300, Assembled Breadboard, 6 lbs. 149.95
SAVE \$10.00! EES-101, Program with Kit Breadboard, Wt. 11 lbs. 119.90

This in-depth program makes learning Active Filters easy



A 300-page text helps you learn to design active filters with op amps, to plot and predict frequency responses, to design and breadboard first-order low-pass and high-pass filters, to design second-order and high-order filters, bandpass and state variable filters. It's helpful to complete EE-101 (above), or have equivalent knowledge first. Desirable are the ET-3300 Breadboard (at right) or the ET-3100 Trainer (page 90) (NOTE: The ET-3100 cannot be used with the other Advanced Programs), an oscilloscope like the IO-4105 (page

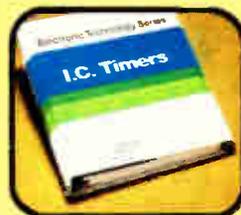
71), a multimeter like the IM-1104 (page 62 and a frequency generator like the IG-1271 (page 63). 70% or better on the optional final exam earns you 3.0 CEUs.
 EE-102, Shpg. wt. 5 lbs. 29.95
 Kit ET-3300, Breadboard, Shpg. wt. 6 lbs. 89.95
 ETW-3300, Assembled Breadboard, Shpg. wt. 6 lbs. 149.95
SAVE \$10.00! EES-102, Program and Breadboard, Wt. 11 lbs. 109.90

SAVE \$40.00 on your Advanced Electronics Education!

Order all four Advanced Electronics Programs (Op Amps, Active Filters, IC Timers and Phase-Locked Loops) together with the ET-3300 Breadboard kit. If purchased separately, \$249.75.

EES-1014, Shpg. wt. 29 lbs. 209.75

Our newest program introduces you to the IC Timer

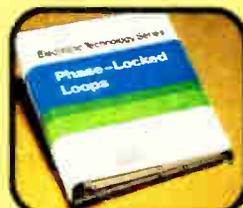


This new Heathkit Program helps you learn common IC timers, how each works, what they do and where to use them. You'll learn to use them for logic functions, in output drive circuits, time-delay relay circuits, wide-range pulse generators, voltage/frequency converters, free-wheeling, power-fail oscillators, sine-wave/square-wave oscillators, universal appliance timers, speed alarms, burglar alarms, alarm indicators, power monitor error detectors, phase-locked loops and precise clock sources. Included

are a 348-page text and parts for the optional experiments. Also useful for the experiments are the ET-3300 Breadboard (below), an oscilloscope like the IO-4105 (page 70) and a multimeter like the IM-1210 (page 66). It's helpful to complete EE-3201 Digital Techniques (page 91) or equivalent. 3.0 CEUs.

EE-103, Shpg. wt. 5 lbs. 39.95
 Kit ET-3300, Breadboard, Shpg. wt. 6 lbs. 89.95
 ETW-3300, Assembled Breadboard, 6 lbs. 149.95
SAVE \$10.00! EES-103, Program and Breadboard, Wt. 11 lbs. 119.90

Learn Phase-Locked Loops with this self-instruction program



You need to know about phase-locked loops to understand many state-of-the-art electronic devices. PLLs are widely used in television and FM receivers, CB and 2-meter transceivers. So this extensive 268-page self-instruction text helps you learn the general principles of PLLs and their building blocks — the phase detector, loop filter and voltage-controlled oscillator. Optional experiments at the end of each unit give you hands-on experience with PLLs. Necessary parts are included. Also helpful are the optional

ET-3300 Breadboard (below), a DC voltmeter like the IM-5284 (page 57) and a single-channel oscilloscope like the IO-4105 (page 70). To get more from the program, we recommend a dual-channel scope like the IO-4205 (page 70) and an audio signal generator like the IG-5218 (page 63). Passing the optional final exam with 70% or better will earn you 3.0 CEUs.

EE-104, Shpg. wt. 5 lbs. 49.95
 Kit ET-3300, Breadboard, Shpg. wt. 6 lbs. 89.95
 ETW-3300, Assembled Breadboard, 6 lbs. 149.95
SAVE \$20.00! EES-104, Program and Breadboard, 13 lbs. 129.90

The Lab Breadboard makes learning electronics easier

Ideal for performing the experiments in the Programs on this page, or use it to do your own experimenting, to test electronic components, or to design prototype circuits.

\$89.95
 Kit



The Heathkit ET-3300 Laboratory Circuit Breadboard is a great convenience tool for electronics learning or circuit design. Solderless sockets make breadboarding easier and simpler. Sockets are designed to accommodate any size dual in-line integrated circuit package. Reliable built-in power supply provides +5 VDC ($\pm 4\%$), +12 VDC (variable) or -12 VDC ($\pm 2\%$) power to the Breadboard, with fixed current limiting of each supply at rated current providing protection against shorts. Desirable with EE-101, EE-103 and EE-104. Can be used with EE-102. 120/240 VAC, 60/50 Hz. 3.5" H x 12" W x 12" D.

Kit ET-3300, Shpg. wt. 6 lbs. 89.95

Fully Assembled Laboratory Circuit Breadboard.

ETW-3300, Shpg. wt. 6 lbs. 149.95

Now student or traveler can learn languages faster



Learn French, Spanish, Italian or German efficiently with Berlitz®

\$95⁰⁰

- Each program features over six hours of audio tape guidance
- Comprehensive to fill student, tourist or business needs
- Fifty lessons in each language from the acknowledged leader
- Next to being in a foreign country, the best way to learn

Going to a foreign country? Or want to get top grades in high school or college language classes? Here's good news. These four Berlitz self-instruction language programs make your language-learning the next best thing to being in a foreign country — so you can converse with people in foreign lands as soon as you step off the plane. Selected to be part of the Heathkit line because it meets the high standards of Heathkit Continuing Education, Berlitz uses the techniques that have made it the leader in its field for nearly 100 years.

Each of these four programs features six "speak along" audio cassettes keyed to workbooks. Each cassette has its own, 50-page workbook of easy-to-follow, concise information to help you learn and understand what you're hearing on the

tape. The six tapes present 50 lessons that place you in real-life situations you will encounter in your travels — dealing with customs officials or waiters, for example, or shopping for souvenirs or essentials. Lessons on business teach you the special terms and phrases used in banking, law and other areas of commerce. Berlitz helps you learn a practical, comprehensive command of the language you study.

You...and your entire family can learn French, German, Spanish or Italian at home with these comprehensive programs. Knowledge of a foreign language is valuable to the tourist or to the student striving for higher grades. Furthermore, it's a real asset in the business world. The ability to converse and transact business in another language can earn you real respect from foreign business and government officials, and make you more valuable to your company.

Learning with these programs is easy, and fun, too. Not only are the lessons based on real-life situations, but Berlitz has designed them to give you a flavor of the customs and traditions of each country as you learn the language. So you get a little of the romance of France, the passion of Spain; a feeling for the grandeur of Germany or the festivity of Italy.

To further enhance your learning experience, Berlitz uses a variety of native speakers to accustom your ear to the languages, and to assure you of learning the precise pronunciation, accent and rhythm so essential to mastery of a foreign language.

The Berlitz method of individual instruction offers you many advantages over traditional classroom methods. You progress at your own speed. If you want to cover another lesson, you aren't held up by slower classmates. But if you want to hear a certain phrase again, simply rewind the tape — in an instant you can review it so you get the pronunciation right while it's still fresh in your mind. Used with a portable cassette player (such as our ECP-3801A on page 94), a Berlitz foreign language program allows you to practice your growing language ability while you shave, prepare meals...or even while commuting to and from work.

Make language-learning a family project with your Berlitz language program, and give your child an educational boost. It's an established fact that children have the ability to learn a foreign language every bit as quickly as adults. Furthermore, as many educators know, learning a foreign language also enhances an individual's ability to use his or her mother tongue. So give your child an educational headstart with these Berlitz Language Programs.

Each Program includes one 90-minute audio cassette, five 60-minute cassettes, six 50-page workbooks and a Rotary Verb Finder. The Verb Finder makes it easy to learn verb conjugation in the foreign language you are studying. Each Berlitz Language Program comes attractively packaged in a handsome briefcase.

EL-201, French, Shpg. wt. 8 lbs.	95.00
EL-202, German, Shpg. wt. 8 lbs.	95.00
EL-203, Spanish, Shpg. wt. 8 lbs.	95.00
EL-204, Italian, Shpg. wt. 8 lbs.	95.00



Amazing Electronic Translator actually pronounces French, Spanish or German words

\$299⁹⁵

- An electronic breakthrough called Solid State Speech™ lets this Language Translator actually speak foreign words, phrases and sentences to aid you in your language studies or travels.

Amazing is the only word — in any language — to describe the exciting new ET-200 Electronic Language Translator from Texas Instruments. This handheld electronic marvel actually speaks and displays words, phrases and sentences in foreign languages and English, yet measures only 7.95" H x 3.4" W x 1.25" D. Plug-in modules (offered separately below) give you more than a thousand phrases in Spanish, French, or German...and other language modules are on the way.

No more eating boiled squid when you thought you ordered a hamburger in foreign restaurants. Your Language Translator gives you instant access to the most commonly used expressions and statements you need. It lets you build more than a thousand

fill-in-the-blank statements such as "I would like _____" (coffee, tea, dessert, etc.). It even gives a translation for words entered letter by letter. For students, or translators, the Electronic Translator is a great learning device. You can build vocabulary in 16 useful categories such as food, travel, medical, etc. It even drills you on pronunciation and translation of words you select.

Your fully-assembled Electronic Language Translator comes complete with 110 VAC adapter. Or four AA batteries (not included) make it fully portable. Carrying case, earphone and Word/Phrase guide with instructions included. (Needs at least one language module, below, for operation).

Team your Language Translator with the Berlitz Language Programs above to become a language whiz.

ET-200, Assembled Translator, Wt. 2 lbs.	299.95
ET-200-1, French Module, Wt. 1 lb.	59.95
ET-200-2, German Module, Wt. 1 lb.	59.95
ET-200-3, Spanish Module, Wt. 1 lb.	59.95

Here's great news for teachers and training directors

Now you can apply the famous Heathkit learning programs to your own custom training needs. The programs on pages 89 and 91 have been reformatted for more flexible classroom use. The teacher uses the instructor's guide to add his experience and guidance to provide fully rounded learning.

The programs are organized in three separate publications for student and teacher convenience. The student text is the core of the learning material. The student workbook, with its exams and laboratory experiments, is keyed to the text. The instructor's guide presents the material in orderly fashion.

In addition, separate parts packs contain all the necessary components for implementing the workbook experiments. To complete the experiments in DC and AC Electronics, Semiconductor Devices and Electronic Circuits, the ET-3100 Trainer described on page 90 is useful. Experiments for the Digital Techniques Program require the ET-3200 Trainer featured on page 91. Turn to page 93 for a description of the ET-3400 Trainer required to complete the experiments in the Microprocessor Program.

Free brochures are available detailing the programs. Contact Heath Company, Contract Sales Dept. (616) 982-3519 for information and price schedules.



Program	Text Shpg. wt. 2 lbs.	Price	Workbook Shpg. wt. 2 lbs.	Price	Instructors' Guide Shpg. wt. 1 lb.	Price	Parts Shpg. wt. 1 lb.	Price	Cassettes Shpg. wt. 1 lb.	Price
DC Electronics	EB-6101	17.95	EB-6101-40	7.95	EB-6101-50	8.95	EB-6101-30	17.95	EEA-3101	9.95
AC Electronics	EB-6102	17.95	EB-6102-40	7.95	EB-6102-50	8.95	EB-6102-30	12.95	EEA-3102	9.95
Semiconductor Devices	EB-6103	17.95	EB-6103-40	7.95	EB-6103-50	8.95	EB-6103-30	12.95	EEA-3103	9.95
Electronic Circuits	EB-6104	19.95	EB-6104-40	8.95	EB-6104-50	8.95	EB-6104-30	27.95	EEA-3104	9.95
Digital Techniques	EB-6201 (3 lbs.)	24.95	EB-6201-40	10.95	EB-6201-50	8.95	EB-6201-30	24.95	EEA-3201	9.95
Microprocessor	EB-6401 (4 lbs.)	24.95	EB-6401-40	10.95	EB-6401-50	8.95	EB-6401-30	54.95	EB-6401-60	12.95

ATTENTION EDUCATORS: Heath products for education in fully assembled form are available from distributors serving the vo-ed market in the following states. More information and assistance are available at the telephone number listed below for your area.

Alabama	205-822-1326	Missouri	913-268-8838
Alaska	907-456-1872	Montana	503-635-3544
Arizona	602-945-6605	Nebraska	402-345-2797
Arkansas	205-822-1326	Nevada	702-358-0829
California (So.)	714-493-8040	New Hampshire	617-285-9028
California (No.)	415-651-6720	New Jersey	201-528-5637
Colorado	303-795-1450	New Mexico	602-945-6605
Connecticut	617-285-9028	New York	516-354-2983
District of Columbia	804-276-9291	North Carolina	919-776-9841
Florida	305-647-5373	North Dakota	612-533-2133
Georgia	305-647-5373	Ohio	513-424-4621
Hawaii	808-536-0243	Oklahoma	214-361-8665
Idaho	508-635-3544	Oregon	503-635-3544
Illinois (So.)	309-343-6135	Pennsylvania	717-533-4038
Illinois (No.)	312-960-0363	Rhode Island	617-285-9028
Indiana	317-293-5704	South Carolina	704-366-4824
Iowa	309-343-6135	South Dakota	612-533-2133
Kansas	913-268-8838	Tennessee	205-822-1326
Kentucky	205-822-1326	Texas	214-361-8665
Louisiana	205-822-1326	Utah	702-358-0829
Maine	617-285-9028	Vermont	617-285-9028
Maryland	804-741-2580	Virginia	804-741-2580
Massachusetts	617-285-9028	Washington	503-635-3544
Michigan	313-585-2300	West Virginia	804-741-2580
Minnesota	612-533-2133	Wisconsin	612-533-2133
Mississippi	205-822-1326	Wyoming	303-795-1450

Classroom version of Automotive Electrical Systems Program

The Heathkit Automotive Electrical Systems Program on page 48 is now available in classroom format. For additional information contact Heath Company's Contract Sales Department at (616) 982-3519 or distributors serving vocational education market (listed at right).

EB-10, Auto Textbook, Shpg. wt. 3 lbs.	12.95
EB-10-30, Parts Pack, Shpg. wt. 2 lbs.	17.95
EB-10-40, Student Workbook, Shpg. wt. 3 lbs.	9.95
EB-10-50, Instructor's Guide, Shpg. wt. 1 lb.	8.95
EB-10-60, Cassette Tapes, Shpg. wt. 1 lb.	17.95
EB-10-70, Filmstrips, Shpg. wt. 1 lb.	29.95

Learn to solder the correct way with this low-cost Heathkit Program

\$14.95

The Heathkit Soldering Manual and Kit teach the proper techniques for high reliability soldering in electronics applications. Whether for industrial training use, kitbuilding or experimenting, this self-instruction program is the perfect way to learn or brush up on soldering skills. Using a proven programmed instruction format, the step-by-step text begins with mechanical connection and progresses through tinning, temperature control, different types of solder, the advantages and disadvantages of various soldering irons, guns and tips... and even includes a section on unsoldering. To give you real "hands-on" experience, a handy practice kit complete with circuit board, components and solder is included. Requires a soldering iron and small hand tools (see page 43).

EI-3133, Shpg. wt. 2 lbs. 14.95



Beautiful, programmable 25" diagonal big-screen color

A completely automatic home television viewing system is yours with the Heathkit GR-2001

"The (optional) programmer puts you into the real avant garde of TV fanciers... you will never again miss a desired program because you forgot to turn the channel in time..."

Budget Electronics

"The programmable automatic channel selection feature... sets this set aside from all the others on the market."

Radio Electronics



Eight programming pushbuttons let you sequence the GR-2001 to change channels and rotate your antenna (with optional GD-1184 Rotor) at times you preselect! Above the push-buttons, backlit nomenclature shows the current operating mode of the programmer.



Standard TV picture

The Heathkit GR-2001 Computer TV System — one of the finest sets you can buy anywhere! This fully-computerized, programmable color TV allows you to turn on your set, pre-program it for an entire evening's viewing, and then just sit back and relax. The optional GD-1185 Programmer automatically changes to the right channel at the right time. You can program up to 32 channel changes in two 12/24-hour periods.

For even more automatic operation, the optional GD-1184 antenna rotator control lets you rotate your antenna to get the best reception. You can select up to 8 separate antenna headings, with up to three stations on each heading.

With all of this programming convenience, the GR-2001 is one of the best performing color TVs on the market. Dozens of circuit improvements and refine-

ments help produce a picture that's vivid, accurate, bright and sharp. The 25" diagonal rectangular picture tube is fully shielded to maintain better color purity, and features a black matrix screen. The phase-locked loop vertical and horizontal oscillators provide a picture so rock-steady and adjustment-free we've eliminated conventional horizontal and vertical hold controls. And the audio circuitry has been improved to provide true high-fidelity sound, with 50 Hz to 15 kHz frequency response (± 1 dB).

Comprehensive, fully-illustrated assembly manuals guide you through the easy, step-by-step kit assembly of the GR-2001. And famous Heathkit self-service features will let you keep your GR-2001 in perfect shape for years to come.

Our custom-installation option lets you build your GR-2001 into a wall, mount it in your own custom cabinet or order one of our beautifully constructed cabinets on page 100.

Your investment will be returned with year after year of trouble-free performance. Less cabinet. Includes chassis, picture tube and one speaker.

Kit GR-2001, 146 lbs., Motor Freight **769.95**

Second Speaker for GR-2001. Fits in space on GR-2001 cabinets where indicated. With all cables.

GRA-2000-7, Shpg. wt. 2 lbs. **9.95**

GR-2001 SPECIFICATIONS: Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Picture IF Carrier: 45.74 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarriers: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 4.08 MHz, at 6 dB down. HI-FI Output: Frequency response: ± 1 dB, 50 Hz to 15 kHz. Output voltage: Greater than 1.0 V RMS. Audio Output: 4 Ω or 8 Ω . 2 watts. Tuning range: TV channels 2 through 83. Power Requirement: 120 VAC, 60 Hz, 200 W.

Our special warranty service plan for solid-state TV modules: During the 90-day warranty period, modules with defective components will be serviced at no charge for parts and labor. If the problem is due to a construction error, the inspection and service charge is \$5.00 per module. After the 90-day warranty expires, the service fee is \$5.00 per module plus parts. All picture tubes warranted for 1 year.

8-Channel Tuning System Accessory for your GR-2001. The GRA-2001-9 Tuning System Accessory adds 8 additional channels to the GR-2001's random-access tuning system for 24-channel versatility.

Kit GRA-2001-9, Shpg. wt. 1 lb. **9.95**

GD-1185 TV Programmer. Automatically changes channels at any time you select — up to 16 changes in either of two switch-selected 12/24 hour periods. A front-panel keyboard and on-screen readout make it easier for you to enter any time or channel you want. The GD-1185 TV Programmer is the ultimate in convenience — setting our GR-2001 apart from other sets on the market — and it's a Heathkit exclusive. Requires GRA-601 Clock to operate.

Kit GD-1185, Shpg. wt. 9 lbs. **159.95**

GRA-2001-6 Remote Control (not shown). Lets you adjust the volume of your GR-2001, turn the set on or off, adjust tint, scan up or down — even turn the optional programmer on or off — all from up to 20 feet from your set.

Kit GRA-2001-6, Shpg. wt. 4 lbs. **99.95**

Easy-to-build On-Screen Digital Clock for your GR-2001 Computer Color TV. Displays the time in hours, minutes and seconds, in 12 or 24-hour formats, on your television screen. Easy-to-read 1" high white digits can be adjusted with the channel numbers to remain on permanently or automatically reappear at approximately selected intervals. A useful, versatile addition to your GR-2001 Computer Color TV System.

Kit GRA-601, Shpg. wt. 1 lb. **29.95**

Automatic Antenna Rotor Control. Provides better reception by automatically rotating your antenna to get the strongest signal on each channel.

Kit GD-1184, Shpg. wt. 6 lbs. **64.95**

Rotor Motor. Requires 5-wire cable (not supplied). GDA-1184-1, Shpg. wt. 11 lbs. **39.95**

Save **\$39.90** on GR-2001 System with GD-1185 Programmer and GRA-601 Clock. \$959.85 if purchased separately.

GRS-2001, 175 lbs., Motor Freight ... **899.95**

Save **\$64.85** on GR-2001 with Programmer, Clock and GD-1184 Rotor Control. **959.95**

GRS-2002, 137 lbs., Motor Freight ... **959.95**

Electronic-tune 25" diagonal Color TV for outstanding viewing

\$669⁹⁵ The set that brought color TV into the digital age — with on-screen channel display and an optional digital clock



Simulated TV picture

One of the best value color TV's you'll find anywhere — with a host of state-of-the-art features! Has electronic tuning which scans through the preset channels; negative matrix picture screen for extra bright and sharp pictures; fixed IF filter which virtually eliminates adjacent channel interference and never needs alignment; automatic gain control and lots more.

It has famous Heathkit built-in service circuits too — dot generator, purity and convergence circuits, vertical and horizontal centering circuits and a test meter. Easy kit assembly too — with most circuits mounted on plug-in printed circuit boards and factory-assembled wiring harnesses to minimize point-to-point wiring. You can custom-mount your GR-2000 in a wall or your own installation, or you can order one of our fine furniture cabinets below.

The GR-2000 will save you big money, too. Because you build it yourself, you can service it yourself. All the service circuitry you need is built-in. Get even more enjoyment and convenience from your GR-2000 by ordering the optional GRA-601 On-Screen Digital Clock and optional GRA-2000-6 Ultrasonic Remote Control described at right

Kit GR-2000, Shpg. wt. 147 lbs. Motor Freight **669.95**

Second Speaker for GR-2000. Fits in space on GR-2000 cabinets (where indicated). Includes all cables. GRA-2000-7, Shpg. wt. 2 lbs. **9.95**

"The picture obtained on the GR-2000 can only be described as superb...equal to that of many studio color monitors."

Popular Electronics

"Anybody who can follow instructions, solder and use wire cutters is capable of building himself a great television set."

Mechanix Illustrated

On-Screen Digital Clock for GR-2000

Shows the time in hours, minutes and seconds in bright 1" high white digits right below the on-screen digital channel display. The clock can be set for four-or-six digit readout and 12 or 24-hour format.

Kit GRA-601, Shpg. wt. 1 lb. **29.95**



Ultrasonic Remote Control for GR-2000

Lets you watch and control your GR-2000 right from your easy chair. On/off, color controls, digital readout and channels. Includes receiver for in-chassis mounting, hand-held transmitter. Operates up to 20 feet from set. The Ultrasonic Remote Control will add enjoyment and convenience to the operation of your GR-2000.

Kit GRA-2000-6, Shpg. wt. 4 lbs. **99.95**



GR-2000 SPECIFICATIONS: Picture Tube: 25" (diagonal). Viewing Area: 315 sq. in. Deflection: Magnetic, 90 degrees. Antenna Input Impedance: VHF: 300 Ω balanced or 75 Ω unbalanced. UHF: 300 Ω balanced. Tuning Range: TV channels 2 through 83. (Preset any 16). Hi-Fi Output: Output Impedance: 2000 Ω. Frequency Response: ±1 dB, 50 to 15 kHz. Harmonic Distortion: Less than 1% at 1 kHz. Output Voltage: greater than 1.0V rms. Audio Output: Output Impedance: 4 Ω or 8 Ω. Output Power: 2 watts. Dimensions: 20 1/8" H x 29 1/8" W x 21 3/4" D. Power Requirement: 110 to 130 volts AC, 60 Hz, 200 watts. Net Weight: 112 lbs.

Fine-Furniture Cabinets for your GR-2001 or GR-2000

1 Contemporary Cabinet. This beautiful cabinet will make your Heathkit Color TV a job to behold...even when it's not turned on. Constructed of wood solids and veneers, it features an oiled walnut finish. It has dual speaker capability, too. Comes assembled and finished. 28 3/8" H x 46 3/4" W x 20 3/8" D (23 3/8" D with cup).

GRA-602-25, Shpg. wt. 66 lbs. Motor Freight **199.95**

2 Compact Contemporary Cabinet. Solidly constructed of wood solids and veneers, beautifully finished in luxurious oiled walnut finish. Comes fully assembled with cutout for one speaker. 34 3/8" H x 33 7/8" W x 20 3/8" D (24 1/8" D including cup).

GRA-608-25, Shpg. wt. 65 lbs. Motor Freight **159.95**

3 Early American Cabinet. Your GR-2001 or GR-2000 will occupy a place of prestige in any room of your home in this handsome cabinet. Constructed of distressed maple finished wood solids and veneers, it has simulated wood-grain trim. Hardware has Winsor Antique Gold finish. Fully assembled and finished. Has twin speaker capability. 31 3/8" H x 47 1/8" W x 20 1/2" D (23 3/8" D including cup). Shpg. wt. 83 lbs.

GRA-603-25, Motor Freight **219.95**

4 Mediterranean Cabinet. For a cabinet as sharp as the picture on your Heathkit Color TV, you couldn't make a better choice than this cabinet crafted of wood solids and veneers. Its simulated wood-grain trim and dark oak finish are accented by Antique Gold finish hardware. Fully assembled and finished. Accepts two speakers. 30 3/8" H x 49 1/8" W x 20 7/8" D (23 3/8" D including cup). Shpg. wt. 82 lbs.

GRA-604-25, Motor Freight **219.95**

100



Simulated TV pictures

The latest in video technology for exciting TV viewing



Simulated TV pictures

In-line gun color TV tube, negative matrix screen, on-screen channel display, hi-fi output. Avoid future repair bills with trouble-shooting meter included.

Kit GR-500, less cabinet. 99 lbs. UPS 499.95

GRA-500-1, Walnut Veneer Table Model Cabinet (shown), 17¼" H x 25½" W x 14" D (17" D including cup), Shpg. wt. 28 lbs., UPS 44.95

GRA-403-18, Roll-Around Cart. 17 lbs. 21.95

GRA-601, Digital Clock Accessory, 1 lb. 29.95

GR-500 19" Diagonal Measure Color TV Kit

GR-2050 21" Diagonal Measure Color TV Kit has a host of fine features

The GR-2050 brings you all the technical excellence and quality design of our famous GR-2000, but in the popular 21" diagonal size. It uses the same optional on-screen clock and remote control as the GR-2000, and it has the same bright, accurate color picture. Modular circuit boards and color-coded wiring harnesses keep point-to-point wiring to a minimum. Built-in service features and adjustment circuits include dot generator, service circuit board, centering and pincushion circuits — so you can save money.

Kit GR-2050, with chassis, picture tube, one speaker. Shpg. wt. 122 lbs. Motor Freight 629.95

GRA-2050-1, Contemporary Cabinet. Measures 28¾" H x 30½" W x 22¼" D (with cup). Shpg. wt. 74 lbs. Motor Freight 179.95

Kit GR-2000-6, Optional Remote Control, Shpg. wt. 4 lbs. 99.95



Kit GRA-601, Optional On-Screen Digital Clock, Shpg. wt. 1 lb. 29.95

Heathkit TV antennas and accessories for better viewing

"Super Antenna." This 60-element VHF-UHF-FM antenna is a real signal-grabber. F/B signal rejection: VHF lo, 21 dB; hi, 22 dB; UHF, 22 dB. It features a 171" boom and a 109" turning radius. Weather-protected finish. Includes removable FM blocking elements. Less mast and cable. Motor freight.

GD-1461, 300 ohms, Shpg. wt. 17 lbs. 79.95

GDS-1461, 75 ohms, Shpg. wt. 16 lbs. 84.95

"Deluxe Fringe Antenna." Has 28 elements to pull in signals even in problem reception areas. VHF/UHF. 131" boom, 80" turning radius. Less mast, cable.

GD-1441, 300 ohms, Shpg. wt. 10 lbs. 39.95

GDS-1441, 75 ohms, Shpg. wt. 12 lbs. 44.95

Cornell-Dubilier Rotator System. Heavy-duty auto-rotator system consists of mast-mount rotator and control box. It pin-points your outdoor antenna on the station for dramatically improved TV and FM reception. The heavy-duty 1 rpm rotator features positive automatic stop and instant reverse. A ½" diameter ball thrust bearing supports antennas up to 150 lbs. Lower mast clamp accepts ⅞" to 2" diameter masts and is removable for direct mounting on rotator plate of tower. Lifetime lubricated bearings. 360° rotator control. 120 VAC. Requires 5-wire cable (not supplied).

GDP-1176, Shpg. wt. 14 lbs. 64.95

75/300 Ohm Transformer-Splitter. Matches one 75 ohm coaxial cable to separate 300 ohm VHF and UHF leads. 82 channel. Has no-strip, pre-attached leads.

GD-298, Shpg. wt. 1 lb. 4.95

CB Trap Filter. Is CB interference ruining your TV viewing or FM listening? Most effective single device to cut out CB. 300 ohm impedance. Assembled.

GD-1239, Shpg. wt. 1 lb. 6.95

Matching Transformer. Converts 300 ohms to 75 ohms for coax. 82 channels.

GD-1054, Shpg. wt. 1 lb. 3.95

Coaxial Cable. 100 ft. of high quality coax cable with antenna boot and connectors installed. Needs matching transformers at both ends.

GD-328, Shpg. wt. 4 lbs. 12.95

New low price on programmable Zenith Video Director — record up to five hours or even make your own TV shows



1 The Zenith Video Director's programmable timer records four different channels over a 14-day period. Daily or weekly repeats of a program are possible up to a total of five hours' recording time. Also, record a program while you watch, or record one while watching another. Remote Video Action Control lets you edit out unwanted scenes... during recording... right from your easy chair. Or stop tape for "freeze action" still pictures. Use Speed Search to view picture at approximately 10 times normal speed to locate the show you want quickly. Speed Search in reverse provides "instant replay." Viewing also possible at three times normal speed. Record or play back using either Beta II or Beta III formats — up to five hours in Beta III. Audio Dub lets you add music and narration to previously recorded tapes. Accepts optional camera or monitor (below). Includes remote, transformers, cables. 120 VAC, 55 watts. Comes with five free GDZ-9700-4 tapes (if purchased separately, an \$89.75 value).

GDZ-9700, Video Tape Recorder (Zenith Model VR-9700) Assembled and tested. Shpg. wt. 45 lbs. Was \$1249.95, Now Only 1150.00

Videocassettes	Beta II mode	Beta III mode	Weight	Price
GDZ-9700-5	3½ hours	5 hours	1 lb	20.95
GDZ-9700-4	3 hours	4½ hours	1 lb	17.95
GDZ-9700-3	2 hours	3 hours	1 lb.	14.95

2 Sanyo VC-1600X B/W Video Camera. Includes cable and connectors. GDP-1850, Fully Assembled, tested. Shpg. wt. 9 lbs. 259.95

GDP-1852, Mounting Bracket for Camera. 2 lbs. 19.95

3 Sanyo VM-4209 9" B/W Video Monitor. High-resolution picture. GDP-1851, Fully Assembled, tested. 17 lbs. 189.95

COMBO OFFER — SAVE \$49.55! Camera and Monitor together. With all cables and connectors. If purchased separately, \$449.90.

GDS-1850, 34 lbs. 399.95

101

Get super accuracy in the all-purpose Digital Thermometer

Get accurate temperatures for photo processing, baby's bath, kitchen, dozens of uses. Reads temps from +32°F to +230°F (0°C to +110°C) with 0.5% accuracy. Solid-state microprocessor gives readings in just 10 seconds. Operates for up to one year on one 9V battery (not included). Flashing decimal gives low battery warning. Weighs only 5½ ounces. 2" H x 2½" W x 5" L. Fully assembled; not a kit.

GD-1226, Shpg. wt. 2 lbs. 44.95



Kits that your whole family will enjoy for years



The ASPEN™ Pinball Game — spend less for more family fun

SAVE \$30
Was \$529.95
Now only **\$499.95**

- Save up to \$100 from similar models
- SCHUSSRING™ high-action field adds arcade-like excitement
- Electronic memory keeps score for up to four players
- Easy to assemble — playing field and circuit boards are pre-assembled

Put all the fast, action-packed excitement of a pinball arcade into your family room with the Heathkit/Brunswick® ASPEN Home Pinball Game. This full-sized pinball game features a SCHUSSRING high-action field with 18 scoring areas. Follow the regulation pinballs as they rack up points in almost no time. Double and triple scoring add to the fun and excitement, too.

A thumper bumper, two jet kickers, three rollover switches, three spin gates, three target switches and six rubber band switches keep the action fast and feverish. A free ball lane can help you score more points. Two independently operated flippers keep you in maximum control of each pinball. An adjustable tilt sensing mechanism stops action on

the ball in play when you tilt the field. And seven musical melodies play at the beginning and end of each game, at bonus scores and when the game field is tilted.

The ASPEN Pinball Game features a microprocessor-based electronic memory that keeps score for up to four players in each five-ball game. The memory also tells you which player is shooting, which ball is in play and when the game is over, with a bright digital display.

Build the ASPEN yourself — in as little as two evenings — and save up to \$100 from similar assembled models. All you need are tools normally found in the home. A complete Heathkit manual takes you, step-by-step, from unpacking the ASPEN to enjoying your first action-packed pinball game.

To make your kitbuilding experience even easier, the ASPEN's circuit boards and playing field are factory assembled and tested.

The ASPEN is designed for years of trouble-free fun. An easy-to-read operation manual and two built-in diagnostic tests make servicing simple.

Buy the ASPEN today — enjoy all the fun and excitement of a pinball arcade. For 120 VAC, 60 Hz only. Dimensions, 59½" H x 25" W x 49½" D.

Kit GD-1210, 141 lbs., Mtr. Frt. Was \$529.95, Now 499.95

The Heathkit Programmable Darkroom Timer — one of the most versatile available

State-of-the-art electronics mean our Darkroom Timer can handle most any processing situation

- Programmable memory holds up to nine process steps
- Auto-step sequencing automatically controls your entire process
- Convenient Litetouch™ control panel

\$124.95

The Heathkit PT-1500 Darkroom Timer is one of the most versatile darkroom timers available anywhere. This 4-digit timer is microprocessor-controlled for maximum accuracy.

The PT-1500's programmable memory can hold times for up to nine process steps and one enlarger step. Auto-step sequencing automatically loads the timer so you're ready for the next step.

If you use the optional Auxiliary Outlet to connect the timer to an external device (such as a color drum), the Auxiliary Outlet is turned on during countdowns in the Process mode. Enlarger and safelight outlets are toggled so one goes on when the other goes off.

Four alarm settings mark time in 1, 30 or 60-second intervals (selectable in any combination), or once at the end. The four-digit LED display times to 99 minutes, 59 seconds or 999.9 seconds. When not in use, the PT-1500 functions as a 12-hour clock.

Unlike other timers, the PT-1500 includes a Litetouch™ front keyboard panel which provides a waterproof seal for the front surface, and is impervious to darkroom chemicals. And a display switch turns off the LEDs and keyboard backlighting without affecting countdowns or memory.

Control start or focus switch with our optional Single Foot Switch, or control both start and focus switches with the optional Dual Foot Switch.



Kit PT-1500, Shpg. wt. 5 lbs. 124.95
Optional Auxiliary Outlet.
PTA-1500-3, Shpg. wt. 1 lb. 13.95
Optional Single Foot Switch.
PTA-1500-1, Shpg. wt. 1 lb. 9.95
Optional Dual Foot Switch.
PTA-1500-2, Shpg. wt. 3 lbs. 24.95

PT-1500 SPECIFICATIONS: Switched Outlets: Enlarger, 1000 watts max.; Safelight, 100 watts max. (Enlarger and Safelight outlets not recommended for inductive loads); Optional PTA-1500-3 Auxiliary Outlet, 100 watts max. Alarm Settings: End of interval, every second, every 30 seconds, every 60 seconds. Timing Accuracy: Determined by accuracy of AC line frequency. No cumulative error. Power Requirement: 120/240 VAC, 50/60 Hz, 1009 watts max. with switched outlet. Dimensions: 3¾" H x 9¼" W x 5⅞" D (7.9 x 23.5 x 14.9 cm).



Model Railroad Power Supply/Throttle for railroading realism

The Heathkit RP-1065 makes an HO or N-gauge layout dramatically realistic. Just operate the slide throttle control to make your engines gradually build up speed just like a real train, maintain realistic acceleration and braking at slow speeds, and stop gradually. The RP-1065's DC compensation circuit prevents stalling out when climbing grades, and helps overcome train and track obstacles.

Easily powers two HO or N-gauge engines, has two auxiliary outputs for operating switch machines, signals and building lights. 120 VAC, 50/60 Hz. 4¾" H x 9½" W x 8½" D.

Kit RP-1065, Shpg. wt. 9 lbs. 79.95
Walk-Around Remote Control for RP-1065.
Kit RPA-1065-1, Shpg. wt. 3 lbs. 22.95
Save — Buy RP-1065/RPA-1065-1 together.
RPS-1065, Shpg. wt. 19 lbs. 99.95

Great sound the entire family can play—and build

Heath and Thomas put beautiful music within your budget's reach with the TO-2130—Thomas' most popular organ. Build it yourself, in six evenings, and save from assembled models. Then, it's easy for the entire family to make rich, beautiful music with the TO-2130. Color-Glo keys and a complete playing guide show you the way. Single-finger chords let you add other accompaniment. Twelve chords and ten voices gives you the exciting sound of a complete orchestra.

\$999⁹⁵

- Build it yourself and save
- Rich, beautiful sound — 12 chords, 10 voices

With the Heathkit/Thomas TO-2130 Organ, everyone in your family can play—and enjoy—right away. Quick-learn features like Color-Glo keys, color-coordinated music, one-finger chords and an easy-to-follow instruction manual make the TO-2130 easy and a real delight to play—even if you've never made music before.

Advanced electronics put an entire orchestra at your fingertips. Single-finger chords free your hands to add other musical accompaniment, while the convenient Memo-Chord feature can convert any of the 12 single-finger Speak-Easy chord keys into any one of a dozen major chords. Memo-Chord selects and memorizes the correct chord and bass pedal note, and holds them until you press another chord key.

The 74 Color-Glo keys light up to identify chords and keys, so anyone can begin playing immediately. Music in the instruction book is color-coordinated to the Color-Glo keys, making the TO-2130 so easy to play, even the kids can learn.

You can register any of five Solo Voices, separately or in combination, for brilliant musical effects. Four Accompaniment Voices provide beautiful harmonic backgrounds. And the TO-2130's Fancy Voice combines with the Solo Voices to yield even more special effects.

Use the Fancy Foot pre-programmed pedal to add a distinctive professional quality to your arrangements. The Fancy Foot creates a rhythmic bass pedal pattern for each rhythm pattern you select.

Orchestral Presence produces a vibrant string ensemble effect by itself. Or combine it with one or more of the Solo Voices to add brilliance to your music. And you can add one or more of the Accompaniment Voices to Orchestral Presence to create a full orchestral sound.



The TO-2130's Organ Ensemble feature creates an orchestral chorus effect, while an Expression Pedal lets you add color and dimension to your music by controlling the overall sound output.

It's easy to build the TO-2130—you can begin making beautiful music in as little as six evenings. A completely detailed Heathkit assembly manual shows you the way, from start to finish.

Find out how easy making beautiful music is today. Matching padded bench included.

Kit TO-2130, 201 lbs., Mtr. Frt. 999.95

TO-2130 SPECIFICATIONS: KEYBOARDS: Solo: 37 keys, C2 through C5; Accompaniment: 37 keys, C2 through C5; Pedals: 13, C1 through C2. VOICES: Solo: Flute, Trombone, Oboe, Violin; Accompaniment: Melodia, Horn (piano when rhythmic), Diapason (guitar when rhythmic), String (harpsichord when rhythmic); Pedal: Flute (combination 16' and 8'). RHYTHMIC PATTERNS: Waltz, Foxtrot/Swing, Rock, Latin. POWER AMPLIFIER: 30 watts RMS. SPEAKER: 8 ohm permanent magnet type (headphone jack for private listening provided). POWER REQUIREMENT: 120 VAC, 50/60 Hz, 125 W. DIMENSIONS: 37" H x 39" W x 21½" D (94 x 99 x 55 cm).



Heathkit Electronic Metronome

Ideal for music students and teachers. Maintains a steady beat so you can practice more efficiently. Adjust tempo between 40 and 210 beats per minute with a front panel control, while a rear panel control adjusts volume. A chart on the bottom of the cabinet relates the number of beats per minute to tempos in different time signatures. Handsome cherry finish birch cabinet with non-marring felt feet. Easy one-evening assembly—ideal beginner kit. Uses two 9 V batteries (not supplied). 6¾" H x 3¾" W x 4" D.

Kit TO-1257, Shpg. wt. 2 lbs. 19.95



High-performance, solid-state 25-watt Guitar Amp

Rugged one-piece case with handle houses a full control amplifier and speaker system with two heavy-duty 12" woofers. Two dual-input channels. Features double-spring variable reverb and tremolo with variable rate and depth, a line reverse switch to minimize hum. Two

footswitches for reverb, tremolo. Power Requirements, 120/240 VAC. Dimensions, 19¾" H x 28" W x 9" D.

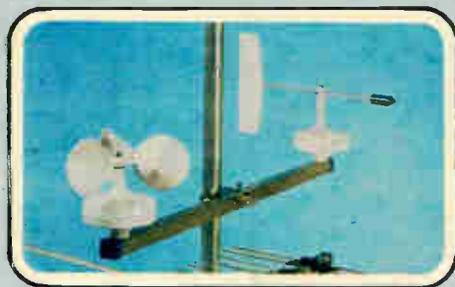
Kit TA-16, Shpg. wt. 61 lbs. 199.95

Build a breakthrough—the Computerized Weather Station

Powerful microprocessor gives you all the weather information you need — past, present and future

\$389⁹⁵

- Microprocessor calculates wind chill, average wind speed, rate of pressure change
- TWO memory banks store complete weather statistics
- Interface with your H8 Computer for more versatility



You'd have to be a professional meteorologist to have access to more weather information than the Heathkit Digital Weather Computer gives you. A four-bit microprocessor provides the Central Processing Unit (CPU) of the Electronic Weatherman



with 2048 bytes of read-only memory (ROM) and a 64-byte scratch pad memory.

This technological marvel utilizes its microprocessor to calculate wind chill by combining temperature, wind and barometric information. It calculates the rate of pressure change to alert you to approaching storm fronts. And it records highs and lows of temperature and barometric pressure, as well as peak wind gusts. Those exceeding the old information are stored, along with the time and date each occurred, for future reference. And all are instantly recallable.

No other consumer weather instrument can match the features of the Heathkit Digital Weather Computer.

Kit ID-4001, Shpg. wt. 15 lbs. 389.95

Find out more — including where to get computer interfacing information — by turning to the complete description on page 5.

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Heathkit

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 BENTON HARBOR, MI 49022

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