

New stereo components for your car
shown above are described on p. 11
New portable FET-VOM, p. 43
New two-station intercom, p. 15
New "scanning" transducer bracket for
the Heathkit Fish Spotter, p. 36
New solder/desolder set, p. 16
See Index on back cover

Prices reduced on 2 Heathkit solid-state color TVs, see pp. 8 & 9

OVER 350 KITBUILDING IDEAS TO MAKE SUMMER MORE FUN

HEATHKIT®

Factory Mail Order Catalog 800/40. Copyright 1972, Heath Company.

WHY HEATHKIT COLOR TV...

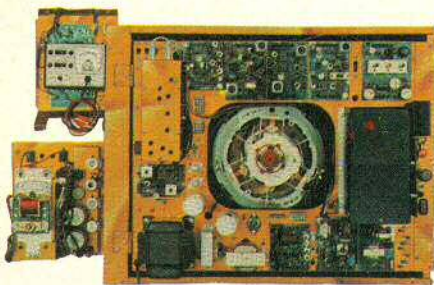
If you want something done right - do it yourself!

We live in an age of mass consumption, with mass production spinning out products by the hundreds of thousands daily. By definition, "mass production" has as its goal the minimizing of hand labor costs and the optimizing of production and profits. Not that there's anything basically wrong in that, as it does put more goods in the hands of more people at lower prices. But something has to give. And it's usually quality.

It follows, then, that if you had the interest, quality parts and know-how, you could build a better product than you can buy ready-made if only because you put your own labor and care into the project... rather than that of a machine on a fast-moving production line. And that, in a nutshell, is the whole Heathkit Color TV philosophy.

Back in 1962, Heath Company elected to bring its considerable experience in kit designing to bear upon producing a superior television kit that anyone, regardless of experience, could put together from carefully packaged parts by following thorough but simple step-by-step instructions. In the fall of '62, the first Heathkit black and white television receiver was introduced. It was an immediate success. People of all ages from every walk of life began assembling their own Heathkit television sets, had the fun and satisfaction of doing it themselves, and enjoyed the performance of a vastly superior product. What's more they found they could perform most of the routine service themselves.

Then along came Heathkit color TV — followed closely by the modern trend to solid-state color TV. Today, the Heathkit solid-state color TV line includes a set to satisfy every need... from a crisp-pictured, 14" diagonal portable, to a big-screen 25" diagonal ultra rectangular console with 24-channel UHF/VHF remote power tuning.



A WORD ABOUT PRICE:

People have asked: "How come Heathkit TV sets sometimes cost as much as ready-made sets you can buy at the store?" The answer is simple and, if you can arrange a side-by-side comparison, also is obvious. The same dollars simply buy more TV — better TV — in a Heathkit set. If you'll just spend the next few minutes to read the facts, you'll see why.

QUALITY — THE KEY TO HEATHKIT VALUE.

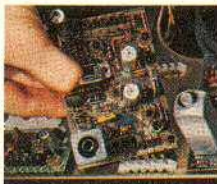
Granted, we promised you a lot in Heathkit Color TV. And we couldn't deliver on that promise without our preoccupation with quality that borders on downright fussiness.

To begin with, Heath engineers don't start to design an ordinary TV set. They design a better set, with features and performance specifications that normally exceed any existing comparable set on the market. Then they go a step beyond, by designing in such exclusive Heathkit convenience and self-service features as modular, plug in, solid-state circuit boards; an easy-access swing-out chassis; tilt-out convergence & secondary control panel.

Finally, we demand that every part and component put into your Heathkit Color TV set deliver long life and dependable performance — and follow up on that demand with rigid quality control standards.

STATE-OF-THE-ART ENGINEERING FEATURES.

Only Heathkit Solid-State Color TV offers you this exclusive combination of engineering excellence:



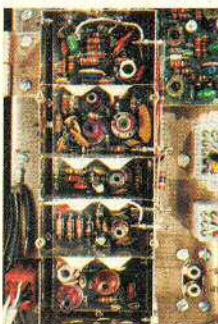
Modular design with Plug-in circuit boards



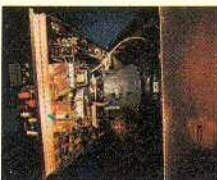
Transistor & IC sockets



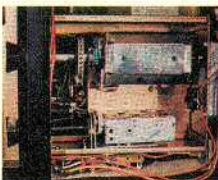
Plug-in wiring harness



3-stage IF & built-in AFT



Swing-out chassis



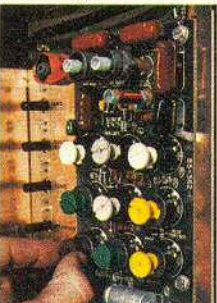
Solid-state tuners



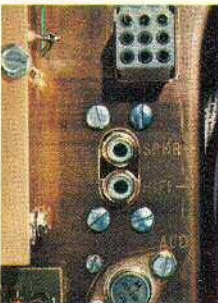
Transformer-operated power supplies



Built-in dot generator



Easy-access convergence/secondary control panel



Sound output to your hi-fi system

WE WON'T LET YOU FAIL!

Famous Heathkit assembly manuals and follow-up service assure success. If you've never before built a kit, you may consider a Heathkit color TV set beyond your ability. That's natural. Let's assume your knowledge of electronics doesn't extend beyond changing lightbulbs around the house.

You don't know a volt from an ohm, much less a transistor from a capacitor. No problem! You're just the person Heathkit assembly manuals are written for — first time kitbuilders with absolutely no prior knowledge of electronics or kitbuilding experience.

Heathkit manuals are famous for their completeness and simplicity. The kitbuilder's guide that comes with each kit shows you how basically simple it is to make good solder connections; how to identify and mount parts. The plain language assembly manual leads you one non-technical step at a time from carton to completion. You check off each step as you go along. Nothing is left to chance or to your imagination. Big, clear drawings and wiring diagrams help map your way. And at the end, detailed check-out and operating procedures insure that your set is working to perfection. It's like 100% personalized quality control... Something never associated with high speed mass production lines.

Even the packaging of a Heathkit TV set is designed with easy assembly in mind. You don't spread all the parts out in one big pile. Each major circuit section comes packed in its own separate compartment, or sub-pack, so assembling your set is really like building a series of smaller kits.

Should you encounter trouble anywhere along the way, a trained staff of technical consultants is only a phone call or letter away, here at the plant or at Heathkit Electronic Centers in all major cities from coast to coast — both ready and able to help you at no cost. Complete service facilities are also available at all locations should the need arise. And,



of course, our Heathkit "Plain Language" Warranty stands behind every Heathkit TV set we sell. In short — WE SIMPLY WON'T LET YOU FAIL! And that goes for the entire Heathkit line, as well as Heathkit Color TV.

SELF-SERVICE FEATURES MEAN EXTRA SAVINGS, BETTER PERFORMANCE.

The extra quality your dollar buys in Heathkit Color TV is only the beginning of your savings. Every Heathkit Color TV set comes to you with trouble-shooting



and self-service capabilities built in. An easy-to-use volt-ohm meter comes with every set — lets you check out circuits as you assemble them — check out the entire set when completed. The manual shows you what to do and how to do it — with absolutely no knowledge of electronics on your part.

A built-in dot generator puts a dot pattern on your TV screen, lets you do the periodic convergence adjustments required of all color TVs for peak performance — virtually eliminates a major cause of costly technician service calls.

And finally, a special programmed Trouble Shooting



Procedure Manual takes all the guesswork out of tracking down and solving most other service problems.

EXPEDITED 48-HOUR NO-CHARGE WARRANTY SERVICE FOR ALL HEATHKIT SOLID-STATE TV MODULES

We leave nothing to chance. Should you encounter difficulty with any Heathkit solid-state TV module, special service facilities have been established at the factory and all Heathkit Electronics Centers to expedite service and return of the module within two working days. During the 90-day warranty period, the modules will be serviced or replaced with no charge for labor or parts. After the initial 90-day warranty period expires, TV modules will be serviced or replaced at a fixed charge of \$5 per module for labor and parts for the life of the set. All picture tubes are warranted for two full years.

COMPLETE INSTALLATION FLEXIBILITY — A HEATHKIT EXCLUSIVE.

Only Heathkit Color TV gives you a choice. Not only does Heathkit TV offer you a wide range of size, price and features, but once you've made your selection, the installation possibilities are practically unlimited. You can opt for attractive high



quality Contemporary, Mediterranean or Early American cabinetry — or perhaps you prefer to fashion your own; you can install your set in a wall or bookcase to save both space and cabinet cost; and there's even the ultimate custom installation — a Heathkit hideaway TV Wall Mount unit with electronic slide-away tambour doors that can be opened and closed by remote control.

Remote control options are another Heathkit convenience option. They're available for most Heathkit solid-state color TV receivers, and can be purchased with the set, or added later on!



READ WHAT OWNERS AND EXPERTS SAY ABOUT HEATHKIT COLOR TV

From the experts:

"...The troubleshooting guide supplied with the kit is almost foolproof. After final alignment, the set worked as was expected; it compared favorably

with the best color sets we have seen."

— ELECTRONICS WORLD

"...assembling a color set really isn't that difficult

...What made the job so easy are Heath's manuals. Heath's sets still produce the best color going."

— ELECTRONICS ILLUSTRATED

"...It's worth the large commitment in time and money when you have friends over and your wife casually flips on the set. 'Harold built it in his spare time,' she says, and suddenly you've achieved new status." — Harold Weise, MODERN HI-FI & STEREO GUIDE

"...Heathkit's Model GR-169 is one of the finest 14-inch (102 square inches) solid-state, portable, color TV sets you can buy."

— POPULAR PROJECTS

"...the troubleshooting manual, is really good. It should allow the owner of the set to make almost all repairs by himself."

— RADIO ELECTRONICS

"...The detail in the individual construction manuals is absolutely astounding."

— ELEMENTARY ELECTRONICS

From Heathkit Color TV owners:

SUPERIOR PERFORMANCE

"...Congratulations on what is possibly the best kit and finest color TV ever to be put on the market." — J.G., Conn.



"...color set is outstanding. We spent some time comparing commercial sets and none could measure up to the Heath." — K.A.P., Mich.

"...A friend, who is a TV serviceman, was so impressed that he may be ordering one in the near future." — L.K.N., N.Y.

"...I wouldn't trade the Heathkit set for any other color TV set made." — K.N.S., W. Va.

"...I have just completed 18" Color GR-269. Fantastic!" — R.E.M., N.Y.

UNEXCELLED QUALITY

"In this day of so much mediocrity, it is a pleasure to encounter excellence..." — A.C.A., Pa.

"...It is gratifying to find such quality in this day and age and aside from the feeling of accomplishment in building the set, it is nice to have such a star performer." — E.B., Conn.

"...It is also gratifying to see the quality of parts and material used in this kit." — J.D.B., Ill.

EASY ASSEMBLY

"...If a housewife with three children under 4 years of age can successfully build it in her few spare moments, it has to be good." — Mrs. J.G., Md.

"...The picture quality is superb. My friends think I'm a genius. They aren't aware of your easy-to-follow directions." — J.E.K., Manhattan, Ka.

"...I believe anyone that can read... if they can solder a joint, can build this TV. I have never seen a better color television." — F.D., Calif.

"...I am 15 years old and it took me

four days to construct the set, and the construction manual was so clearly written that I feel anyone could follow it!" — G.T., Va.

"...This was my first attempt to build a kit... I highly recommended the kit to any novice." — C.J., Va.

"...It was a fun kit to construct besides being a beautiful television." — J.C., Wash.

PERSONAL SATISFACTION

"...When the time came to plug it in I was convinced the whole thing would disappear in a cloud of smoke. To my complete surprise and pleasure it was perfect, not a single problem or error committed. It is a beautiful, magnificent piece of equipment, and I am prouder of having successfully completed its construction than any single accomplishment I have had in years." — J.M.B., Ohio

"...This was the first time that I have built any kit. It has been a truly satisfying experience from start to finish — V.S., N.J.

"...the most thrilling part of it all was when I plugged it in for the first time and it worked." — R.E.H., Ala.

"...It was indeed a pleasant experience and I never realized the 'fun' this would be and the satisfaction..." — T.A.F., Neb.

CUSTOMER-PLEASING SERVICE

"...Right on! Your letter... is acknowledged and your expertness is praised... you hit upon the problem in your first paragraph... I am a rank beginner but... I look forward to my next attempt and am relieved to know that any problems can be solved by the Heath Company staff." — B.C.M., Ky.

"...thank you for the quick and satisfactory handling of the problems I encountered... you live up to your warranty 100%." — H.B., S.C.

"...I telephoned the factory Friday, December 10th... the part was delivered to my home Monday, December 13th... very fine service indeed!... I'd like to bring to your attention the fine staff of the Customer Service Department of the Heath Co." — M.W., Ill.

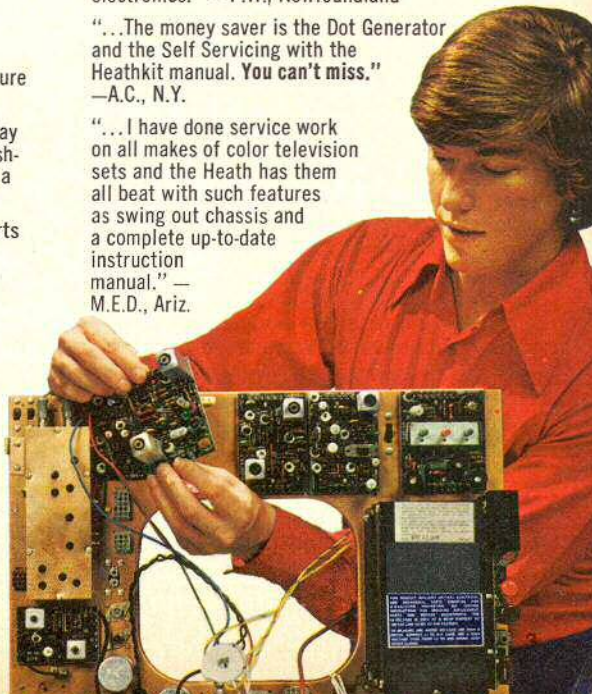
"...how immensely satisfied I am with the efficient and courteous service... continue the good work." — N.J.M., Md.

SELF-SERVICE SAVINGS.

"...thank you for what I believe to be the finest color TV set available today. My set is 3 years old, has cost me to date 30c for repairs, and plays as good now as when I first built it... incidentally my first experience with anything to do with electronics." — P.W., Newfoundland

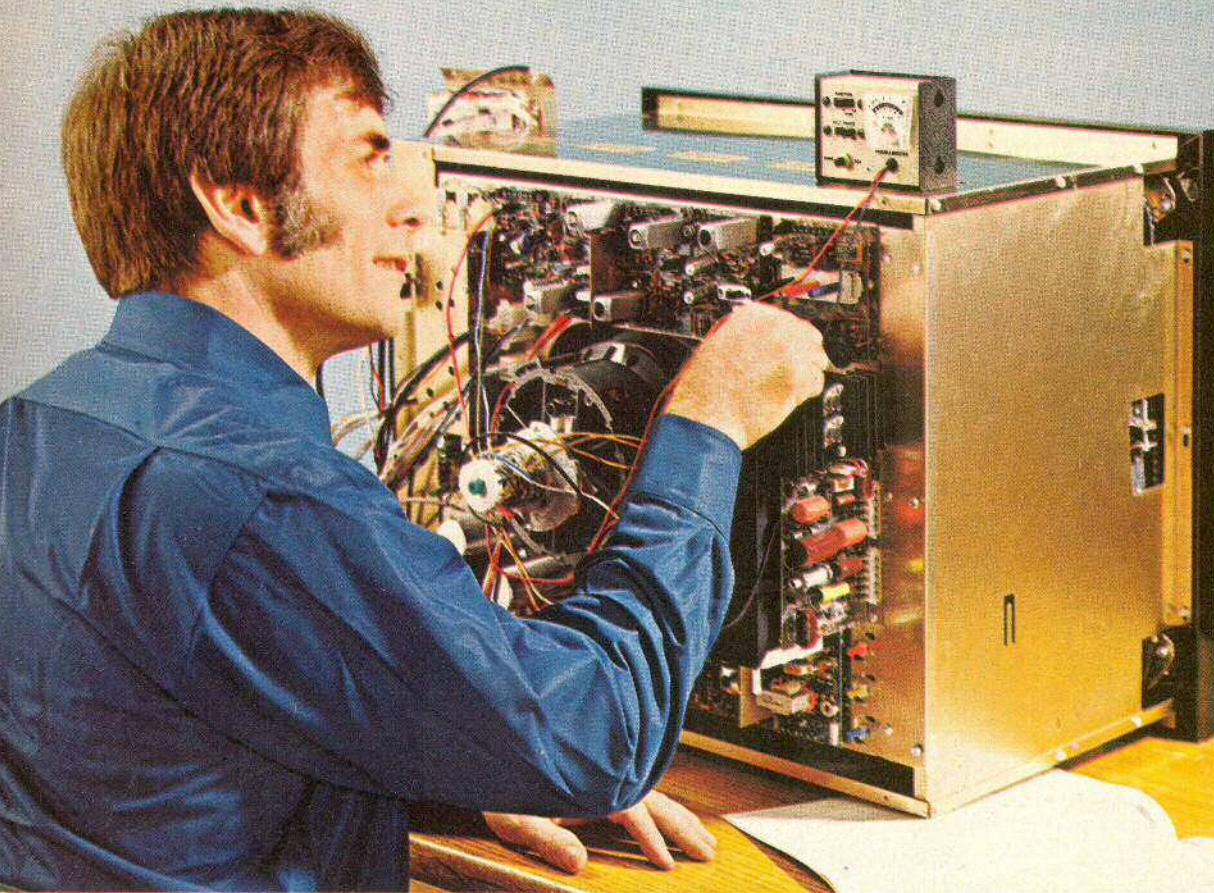
"...The money saver is the Dot Generator and the Self Servicing with the Heathkit manual. You can't miss." — A.C., N.Y.

"...I have done service work on all makes of color television sets and the Heath has them all beat with such features as swing out chassis and a complete up-to-date instruction manual." — M.E.D., Ariz.



Our best Color TV, handcrafted by you

599⁹⁵
no money down



Heathkit GR-900 25V solid-state Color TV with 24-channel detent UHF/VHF power tuning, plus full remote control capability and the exclusive Heathkit MTX-5 ultra-rectangular tube... 599.95

You build the best when you build the Heathkit GR-900. Heath engineers poured all the features and design know-how into this one. Features like detent power tuning on any 12 UHF and 12 VHF channels — in either direction; ultra sensitivity varactor UHF tuner; exclusive angular tint-control...to provide you with the best in color performance and convenience...plus the fun and personal satisfaction of "doing it yourself" that's exclusively Heathkit Color TV.

EASIEST TUNING EVER

The GR-900 lets you preselect any 12 of your favorite UHF channels 14 through 83. Then you can scan in both directions either with push-button power tuning or remote control, while the exclusive Heath detent tuning feature zeroes in on each channel with the precision you're accustomed to on regular VHF. Controls for presetting the 12 UHF positions are mounted on the tilt-out convergence panel for easy access. A simple push button selects either UHF or VHF channels, while a lighted dial indicates the UHF or VHF channel number you're tuned to. In remote control operation, an electronic latching circuit replaces the UHF/VHF switch to provide you with full remote selection of all 12 VHF and 12 preset UHF channels. Also featured is a new angular tint control switch giving you selection of "normal" or "wide angle" color demodulation to reduce tint and flesh tone change when switching channels or when stations change from one program source to another.

EXCLUSIVE MATRIX TUBE

The new GR-900 comes to you with the exclusive Heath MTX-5 ultra-rectangular tube — the largest color picture tube available to the industry, with a full 25 in. diagonal or 315 sq. in. viewing area. You see the transmitted image in its entirety, with nothing hidden from view. A specially etched face plate cuts glare, increases contrast without sacrificing brightness, while a matrix screen around the phosphor dots stops reflected light.

An "Instant-On" feature brings you picture and sound in seconds — can be overridden for normal "on/off" operation. Other features include VHF and UHF power tuning at the touch of a button or remote control; Automatic Fine Tuning for perfect picture and sound at a touch; adjustable tone control; an output for playing the TV audio through your stereo/hi-fi system for the ultimate in sound reproduction.

RELIABLE SOLID-STATE CIRCUITRY

At the heart of the GR-900's outstanding performance, long-life and reliability is the solid-state modular circuitry including 46 transistors, 57 diodes and four ICs containing another 54-transistors and 15 diodes. Picture tube and high voltage rectifier are the only tubes used. Assembly, service, and adjustments are simplified through the use of individual plug-in glass epoxy circuit boards containing major circuit functions. Better fringe-area reception, increased sensitivity, lower noise and cross-modulation are the result of a specially designed solid-state VHF tuner with MOS Field Effect Transistor. Sensitivity is further enhanced by the RF amplifier and hot-carrier diode design of the varactor tuner. Other features are a three-stage solid-state high-gain IF, Automatic Chroma Control, adjustable video peaking, adjustable noise limiting and gated AGC.

SELF-SERVICE SAVINGS

The built-in dot generator and tilt-out convergence panel let you perform the periodic adjustments required of all color TV sets. A volt-ohm meter is also included, along with complete new step by step programmed trouble-shooting instructions. Versatile installation flexibility is yours in the GR-900, too. Install it in the new Heathkit electronic hide-away TV wall mount (next page); your choice of luxurious preassembled cabinets (next page); or in your own custom mount.

Kit GR-900, TV less cabinet, 125 lbs., Express/Frt. **599.95**
Kit GRA-900-6, Remote Control, 8 lbs., mailable **79.95**

GR-900 SPECIFICATIONS — Tuning range: VHF TV channels 2-13; UHF TV channels 14-83 presettable in each of 12 detent positions. **Hi-Fi output:** Impedance, 2.2 K ohms. Output voltage: 1V rms nominal. All other specifications same as GR-371MX, Page 6.

Heath Company is the world's largest manufacturer of electronic kits

Luxurious hideaway cabinetry for your GR-900



Elegant Mediterranean console... designed specially for Heathkit GR-900 and GR-371MX Color TV's...179.95

The finest cabinet in the Heathkit line has prefinished rich-grained pecan veneers on hand rubbed furniture grade hardwood solids. Two beautifully scalloped double-hinged doors hide the TV screen when it's not in use, fold neatly to the cabinet sides when opened. Ornate brass "Canterbury Antique" handles add the perfect finishing touch. Measures 29 $\frac{3}{4}$ " H x 46 $\frac{1}{4}$ " W x 22 $\frac{5}{8}$ " D (25 $\frac{1}{2}$ " D incl. cup).

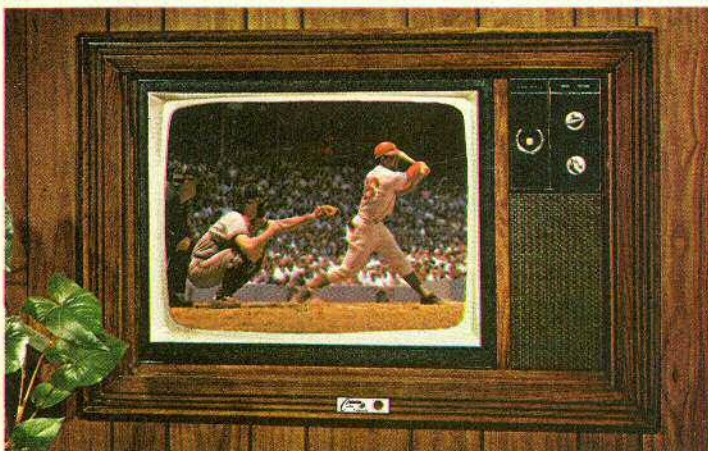
Assembled GRA-405-25, 100 lbs., Express/Frt. **179.95**

Other cabinet options for GR-900 and GR-371MX color TVs on pg. 6

GRA-404-25 (Mediterranean), 87 lbs., Express/Frt. **139.95**

GRA-403-25 (Early American), 75 lbs., Express/Frt. **122.95**

GRA-401-25 (Contemporary), 62 lbs., Express/Frt. **81.95**



Delightful hide-away TV wall mount with "electronic doors" for GR-900 and GR-371MX

A couple of leisurely evenings to assemble it and you're ready to enjoy the hidden beauty behind the Heathkit electronic TV Wall Mount...designed to house your GR-900 or GR-371MX Color TV. Push the frame-mounted button — or touch the optional GRA-900-6 Wireless Remote Control — and the carefully crafted tambour doors silently glide open to reveal your color TV picture. Picture and sound come on automatically when doors are opened. Another touch of the button (or Wireless Remote) and the doors slide quietly closed. An easy-slip clutch transmits power from the electric motor to doors. Doors also may be operated manually. The new "electronic" wall mount is ideal for bedroom, office, den... wherever you want to hide your TV. Or use it as the perfect hide-away for hi-fi components, wall safe, bar, etc.

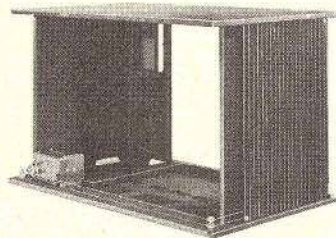
The Heathkit TV Wall Mount can be as unobtrusive as conventional wall molding or as wild as a piece of modern art. It's available prefinished in rich walnut or unfinished for antiquing or painting by you. You can even give the sliding doors a one-of-a-kind personal touch. Cover them with a favorite print or poster, slitting the illustration at the center point and at the tambour folds. Kit includes everything you need to build the completely self-contained enclosure that easily slides into hole prepared in wall or door.

Kit GRA-402-25, walnut finish, 50 lbs., Express/Frt. **114.95**

Kit GRA-407-25, unfinished, 50 lbs., Express/Frt. **109.95**

GRA-402-25, 407-25 SPECIFICATIONS — Power requirements: 120-130 VAC, 60 Hz, 75 watts. Time delay: (after switch is actuated and doors begin to close) approximately 5 seconds. Doors closing time: Approx. 10 seconds. Dimensions: Cabinet: 23 $\frac{3}{8}$ " H x 38 $\frac{1}{16}$ " W x 22 $\frac{5}{8}$ " D. Frame: 26 $\frac{1}{8}$ " H x 39 $\frac{3}{16}$ " W x 1 $\frac{1}{16}$ " D.

Simulated Color TV Pictures

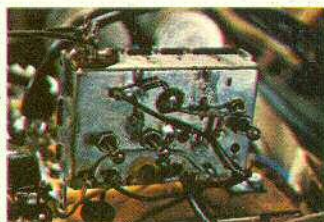


Everything you need for easy custom installation including preassembled trim frame, sliding tambour doors, electric motor assembly, and enclosure complete with tilt-out speaker baffle & convergence panel. Assembly easily slides out for TV maintenance.

Only the Heathkit GR-900 offers you these advanced color TV features:



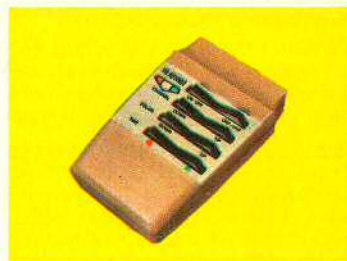
Convenient UHF preselection controls



Exclusive Heathkit varactor UHF tuner



Exclusive MOSFET solid-state VHF tuner



Armchair Wireless Remote Control for GR-900...79.95

Gives you 8-function across the room control of on/off; 3 preset volume levels; power tuning (up and down); color; tint; and UHF/VHF channel selection.

Kit GRA-900-6, 8 lbs., available **79.95**



Front panel pushbuttons for fingertip control



New programmed Troubleshooting Procedure manual



New angular Tint Control switch

Simulated Color TV Pictures

No money down on any kit — up to 2 years to pay — see order blank for details.

Magnificent 25V color starts here

**12
EVENING
KIT**

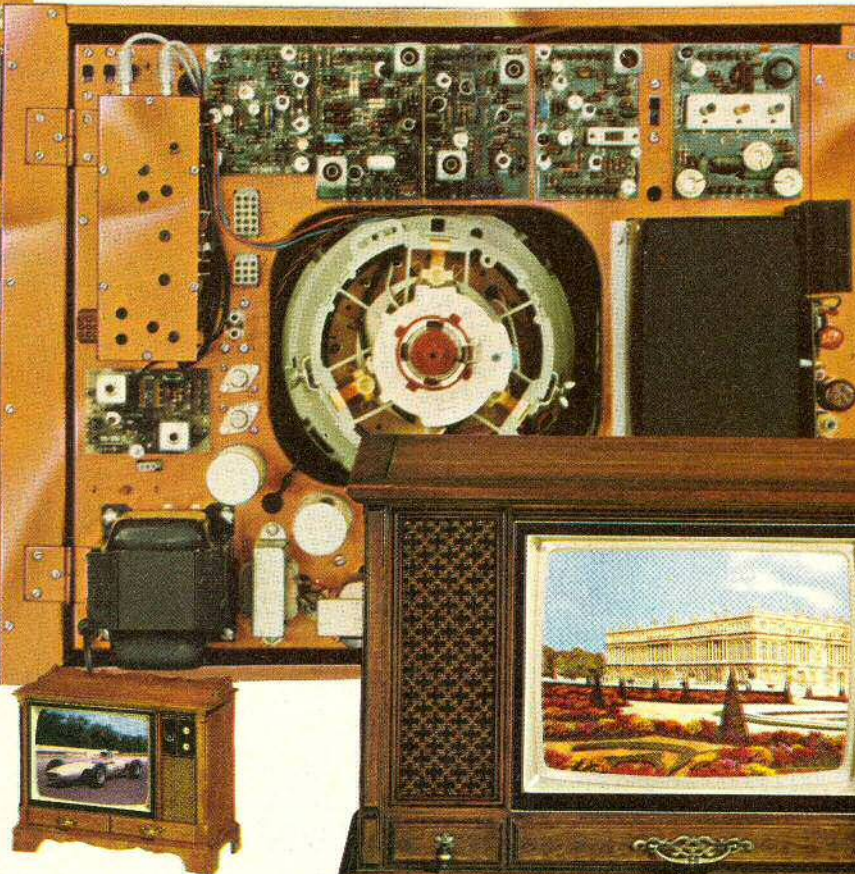
579⁹⁵

less cabinet

You'll be doubly proud of your GR-371MX because you know what's inside.



Assembled GRA-401-25, contemporary walnut cabinet of hardwood solids & veneers with oil-rubbed walnut finish. 30³/₈" H x 37¹/₈" W x 19⁷/₈" D (22³/₄" D incl. cup), 62 lbs., Exp./Frt.**81.95**



Assembled GRA-403-25, Early American cabinet in classic Salem Maple, constructed of fine hardwoods & veneers. 32¹/₂" H x 38¹/₂" W x 19³/₄" D (22⁵/₈" D incl. cup), 75 lbs., Exp./Frt.**122.95**



Assembled GRA-404-25, Mediterranean cabinet of furniture grade hardwoods & solids beautifully finished in pecan. 30⁷/₈" H x 48³/₄" W x 20⁵/₈" D (23¹/₂" D incl. cup), 87 lbs., Exp./Frt. **139.95**

our GR-371MX gives you pushbutton power tuning and a modular solid-state design that'll fascinate you every step of the way

The Heathkit GR-371MX is the big-screen color set that never fails to impress the electronic engineers wherever it's demonstrated. Compare the chassis photograph above with the interior of any other receiver on the market and you'll see why. Only Heath gives you the solid-steel wrap-around Magna Shield to help keep colors pure. Lustra-Coated to form a barrier against corrosion. And the swing-out chassis has individual plug-in circuit boards for every major circuit function. Built-in alignment and trouble-shooting aids and instructions.

As soon as you get your hands on this great TV kit, you'll begin to sense the quality — and through every step of the easy assembly you'll share in the pride of fine workmanship. The GR-371MX is packaged in sub-kits. You build one component circuit function at a time. It couldn't be easier.

THE DELUXE SET YOU'VE ALWAYS WANTED TO OWN

The exclusive Heath MTX-5 ultra-rectangular tube provides a full 215-sq.-in. viewing area. A specially etched face plate cuts glare, increases contrast without sacrificing brightness, and a matrix screen around the phosphor dots reduces reflected light. And there is famous Heathkit modular plug-in circuit board design with transistor sockets; factory-assembled & aligned tuners, IF, AFT & high voltage section for easier assembly; exclusive MOSFET design solid-state tuner for good sensitivity, low noise, best reception; completely shielded 3-stage IF for high gain, good picture quality; push-button Automatic Fine Tuning for "locked-on" sound & picture; pushbutton VHF power tuning scans all VHF and one UHF channel at a touch; Automatic Chroma Control for constant color under varying signal conditions; adjustable noise limiting and gated AGC to minimize pulse interference and maintain constant signal strength; adjustable video peaking for selecting degree of picture sharpness you want; adjustable tone control; defeatable "instant-on"; automatic degaussing; 75 & 300 ohm antenna inputs; and hi-fi output for playing TV audio through your own hi-fi system. Choose one of the three cabinet options shown, or the Heathkit Door Cabinet or Custom Wall Mount shown on preceding page.

Kit GR-371MX, all parts including chassis, 315 sq. in. picture tube, mask, UHF & VHF tuners, AFT & speaker, 125 lbs., Exp./Frt.**579.95**
Kit GRA-70-6, Remote Control, 6 lbs., mailable**64.95**

GR-371 MX SPECIFICATIONS: Viewing Area: 315 sq. in. Picture Tube High Voltage: 25,000 V. Deflection: Magnetic, 90 degrees. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF, 300 ohm balanced or 75 ohm unbalanced. UHF, 300 ohm balanced. Tuning Range: VHF TV channels 2 through 13; UHF TV channels 14 through 83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Hi-Fi Output: Output impedance, 1 k ohm. Frequency response ±1 dB 50 Hz to 15 kHz. Harmonic distortion, less than 1% at 1 kHz. Output voltage, 0.3 V rms nominal. Audio Output: Output impedance, 4 ohm or 8 ohm. Output power, 2 watts. Power requirements: 110 to 130 volts AC, 60 Hz, 240 watts.

Simulated TV Pictures

New Expedited 48-Hour No-Charge Warranty Service Plan for Solid-State TV Modules! Special service facilities have been established at the factory and all Heathkit Electronic Centers to expedite service and return of Solid-State TV circuit modules within two working days. During the 90-day warranty period, TV modules will be serviced or replaced with no charge for labor or parts. After the initial 90-day warranty period expires, TV modules will be serviced or replaced at a fixed charge of \$5.00 per module for labor and parts for the life of the set. All picture tubes warranted for two full years.

Build this wireless remote control for your Heathkit solid-state color TV ... GR-270 & GR-371MX models. Gives across-the-room control of on/off, volume, channel selection, color and tint without moving from the comfort of your chair. Fast, easy assembly & installation. **Kit GRA-70-6**, 6 lbs., mailable**64.95**



Last call on one of our most popular color TV kits

the Heathkit GR-270 20V TV has the same great solid-state specs as the magnificent 371 — with a space saving smaller tube

489⁹⁵
less cabinet

When you build your Heathkit GR-270 you're working with the same advanced circuitry that is used in our GR-371. And the 10-circuit-board modular design has you assembling this sophisticated receiver like a professional. The premium quality 20" diagonal picture tube, one of industry's best 227 sq. in. bonded face, etched glass tubes, delivers crisp, true color pictures. Automatic fine tuning is standard, as is power tuning of all VHF channels and one preselected UHF channel. Factory assembled and aligned 3-stage IF is completely shielded to eliminate external interference. Solid-state VHF tuner with MOSFET delivers improved sensitivity, lower noise and less cross-modulation for better reception under marginal conditions. Other features include built-in automatic degaussing; automatic chroma control; adjustable noise limiting and gated AGC; high resolution circuitry; adjustable video peaking; "instant on"; adjustable tone control; hi-fi output; 75 and 300 ohm VHF antenna inputs. For further self-service savings, a built-in dot generator, tilt-out convergence/secondary control panel and comprehensive Heath manual team up to offer simple step-by-step home service. And the Volt-ohm meter supplied lets you troubleshoot and adjust entire set. Order your GR-270 now — quantity limited!

Kit GR-270, all parts incl. chassis, picture tube, mask, VHF and UHF tuners, AFT and spkr., 109 lbs., Express/Frt.**489.95**

Kit GRA-70-6, Remote Control, 6 lbs., mailable**64.95**

Save \$35 on Mediterranean cabinet:

Assembled GRA-202-20 Mediterranean cabinet, (top) finished in luxurious pecan, above. 28 1/8" H x 42 3/4" W x 19 7/8" D (22 3/4" D incl. cup), 85 lbs., Express/Frt.**WAS 119.95****NOW 84.95**

GR-270 SPECIFICATIONS: Viewing Area: 227 sq. in. All other specifications same as GR-371MX, opposite.



Last Call



Assembled GRS-203-6, walnut finished, contemporary cabinet and base combo. Cabinet 21 1/8" H x 31 1/2" W x 18 5/8" D (21 1/2" D incl. cup), 59 lbs., Express/Frt.**NOW 56.95**
GRA-201-20, base only, 13 lbs., Exp./Frt., **CLOSE OUT—ONLY \$5.00.**



Assembled GRA-203-20 cabinet, 46 lbs., Express/Frt.**51.95**
GRA-204-20 roll-around cart, 19 lbs., Express/Frt.**19.95**
GRS-203-5 cart & cabinet combo, 65 lbs., Express/Frt.**61.95**



Our 12V b&w portable turns on anywhere ... **129⁹⁵** NO MONEY DOWN



5
EVENING
KIT

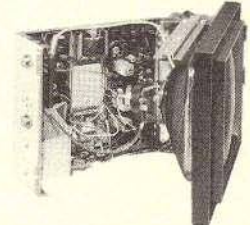
This is the kit-form TV for the beginner. Or for that youngster who wants a Heathkit project all his own. Two easy-to-assemble circuit boards hold most components, with a single wiring harness inter-connecting boards with chassis-mounted parts. Wire cutting and stripping is held to a minimum. UHF and VHF tuners are factory assembled and aligned. And this 12 in. diagonal b&w TV is the ultimate portable. At home, it plugs into any standard 120 VAC outlet, in the car, boat or camper it operates off of 12 VDC. For outdoor use, there's an optional rechargeable battery-pack base and snap-on sun shield. The GR-104B features shell bond picture tube, automatic gain control, front panel speaker, three video IF amplifiers, four circuit VHF "memory" tuner, double circuit breaker protection. The high-impact plastic cabinet takes plenty of abuse — cleans easily with a damp cloth.

Kit GR-104B, 35 lbs., mailable**129.95**

Kit GRA-104-3, rechargeable battery pack & sun shield, 9 lbs., mailable **42.95**

GRA-104-2, sun shield only, 1 lb., mailable**1.95**

GR-104B SPECIFICATIONS: Picture Size: 74 sq. in. viewing area, picture diagonal 12". Deflection: Magnetic, 110 degrees, 20 mm neck. Focus: Electrostatic. Antenna Input Impedance: 300 ohm balanced. Tuning Range: VHF TV Channels 2 thru 13, UHF TV Channels 14 thru 83. Picture IF Carrier: 45.75 MHz. Sound Carrier: 41.25 MHz. Sound IF Carrier: 4.5 MHz. Video Response: To 3.5 MHz. Audio Power Output: 500 milliwatts into 24 ohm load. Controls (front panel): UHF coarse tuning; UHF fine tuning, VHF channel selector, VHF fine tuning. OFF/ON volume, brightness, contrast, vertical hold, horizontal hold. Controls (rear panel): Height, Low voltage adjust, AGC. Tube & Semiconductor Complement: 27 transistors, 16 diodes, 1 IC, 1 picture tube. Power Requirements: 110-130 volts AC, 40 watts; 12 volts DC @ 24 watts. Overall Size: 11 1/2" H x 15 3/4" W x 9 3/8" D.



Antennas

New GD-750 VHF/UHF Antenna. Reception Area: Deepest fringe. Impedance: 300 ohms. Front-to-back ratio: VHF low 23 dB, high 23 dB, UHF 24 dB. Elements: VHF 13 driven, 13 parasitics; UHF 1 driven, 44 passive. Length: 196". Turning radius: 116". 20 lbs. (less mast & coaxial cable), Express/Frt.**79.95**
GD-650 Deep Fringe VHF-UHF-FM Coaxial. Gain: Low 6 1/2 dB, high 12 dB,

UHF 11 dB. Front-to-back ratio: 20 dB. Elements: VHF 9 active, 14 passive; UHF 1 active, 27 passive. 112 3/4" L. 106" W. Turning radius: 87 1/2". 20 lbs. (less mast & coaxial cable), Express/Frt.**49.95**

GD-450 Fringe/Near-Fringe VHF-UHF-FM Coaxial. Gain: Low 5 1/2 dB, High 10 dB, UHF 9 dB. Front-to-back ratio: Low 18 dB, High 17 dB, UHF 20 dB. Elements: VHF 8 active, 9 passive; UHF 1 active, 15 passive. 118 3/4" L. 106" W. Turning radius: 77 1/2". 15 lbs. (less mast

& coaxial cable), Express/Frt.**39.95**
GD-219 Fringe Area VHF-FM Coaxial. Elements: Active-10; Passive-13. Front-to-back ratio: 20. Usable distance: 180 mi. (over flat terrain with best reception conditions) FM — 90 mi. Includes 300 to 75 ohm antenna mounted matching balun. 142" L. 102" W. Turning radius: 88". 19 lbs. (less mast & coaxial cable), Express/Frt.**29.95**
GD-550 City-Suburban VHF-UHF-FM Coaxial. Gain: Low 5 dB, High 8 1/2 dB, UHF 8 dB. Front-to-back ratio: Low 14

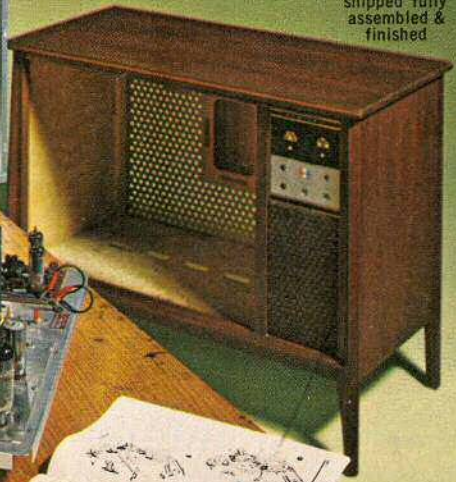
dB, High 15 dB, UHF 20 dB. Elements: VHF 7 active, 7 passive; UHF 1 active, 13 passive. 106 3/4" L. 102" W. Turning radius: 76". 10 lbs. (less mast & coaxial cable), Express/Frt.**29.95**

GD-188 City-Suburban VHF-FM Coaxial. Elements: Active-11; Passive-8. Front-to-back ratio: 19. Usable distance: 60 mi. (over flat terrain with best reception conditions). Includes 300 to 75 ohm antenna-mounted matching balun. 46" L. 8" W. Turning radius: 44". 4 lbs. (less mast & coaxial), mailable**9.95**



**Big
Screen 23V
399⁹⁵
less cabinet**

GRA-301-23
Contemporary
Cabinet
shipped fully
assembled &
finished



There are three
beautiful cabinet
choices for your
GR-200

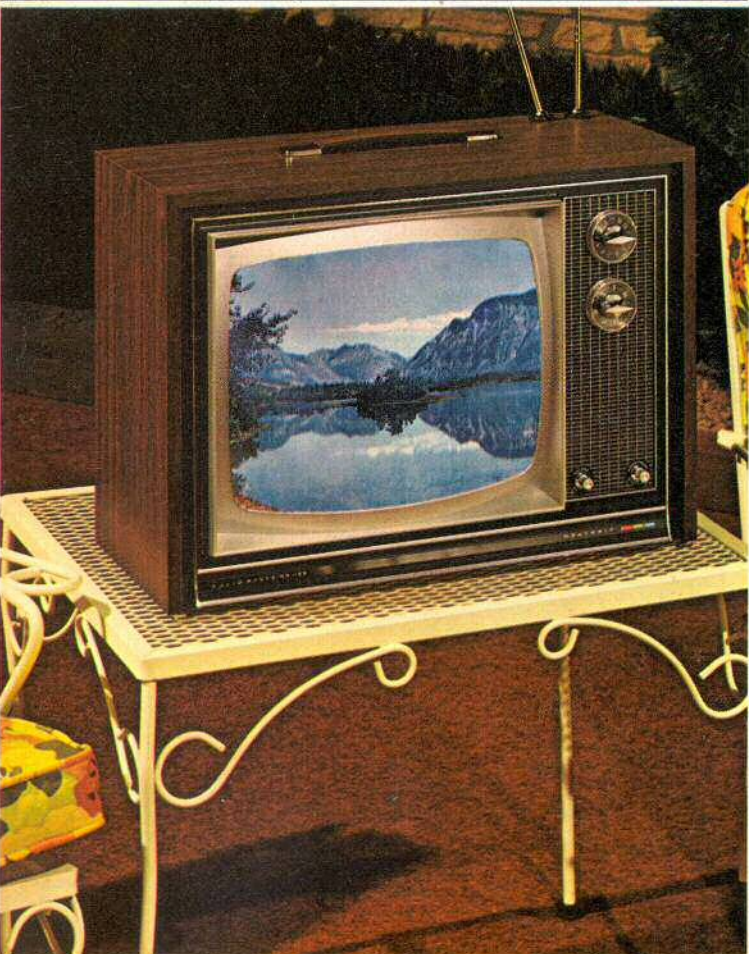


GRA-303-23 Early
American shipped
fully assembled
& finished



GRA-304-23
Mediterranean
shipped fully
assembled &
finished

**REDUCED \$50
14V SOLID-STATE COLOR TV 299⁹⁵
less cabinet**



**REDUCED \$50
18V SOLID-STATE COLOR TV 349⁹⁵
less cabinet**



Assembled GRA-402-18 walnut-grained vinyl clad wood cabinet. 16½" H x 25" W x 11" D (17½" D incl. cup), 33 lbs., Express/Frt. 29.95



GRA-403-18 Roll-Around Cart with walnut finished wood and pale brass accents. 27" W x 15½" D x 22" H. 23 lbs., Express/Frt. 19.95



Assembled GRA-401-18 Striking contemporary cabinet finished in hand-rubbed oiled walnut. 29" H x 28¼" W x 18¼" D. 41 lbs., Express/Frt. 59.95

"SUPER VALUE" HEATHKIT COLOR TVs—NEW LOW PRICES!

23V tube-type color TV loaded with deluxe features **399⁹⁵** less cabinet

Now you can have the excellence of Heathkit color TV in your home at a bargain price. Or the new GR-200 can be that second Heathkit set you've been wanting for the rec room. Tube-type design makes this one the easiest color TV kit you can build. Couple that with the low, low price and the Heathkit GR-200 comes over as one of the best buys in the industry.

FEATURES FOUND ON THE FINEST SETS

With your GR-200 you get as standard: Automatic fine tuning for locked-in picture reception at the touch of a button. A cable-type remote control unit. Non-etched 23 inch (measured diagonal) tube for extra bright mirror-image picture. Automatic degaussing to eliminate problems caused by magnetic interference, keep colors pure. Three-stage audio IF strip for reduced interference, improved reception. Dynamic pincushion correction circuit to keep all edges straight, eliminate distortion. Built-in 6" x 9" speaker, and two hi-fi outputs for super sound. Plus the exclusive Heath self-service built-in's—That's the Heathkit GR-200—a budget-minded color television that doesn't skimp on design. Order now, get started on your kit soon.

Kit GR-200, all parts, incl. chassis, picture tube, mask, tuners, AFT and spkr., 133 lbs., Express/Frt. **399.95**

Assembled GRA-301-23, contemporary walnut cabinet. Constructed of fine veneers & solids with an oil-rubbed walnut finish; 29³/₈" H x 35³/₈" W x 19⁷/₈" (22³/₈" D incl. cup), 60 lbs., Express/Frt. **81.95**

Assembled GRA-303-23, Early American cabinet factory assembled of hardwoods & veneers, finished in Salem Maple; 29³/₈" H x 37¹/₄" W x 19³/₈" D (22³/₈" D incl. cup), 73 lbs., Express/Frt. **119.95**

Assembled GRA-304-23, Mediterranean cabinet. Made from furniture grade hardwoods & luxurious veneers; 30¹/₈" H x 47¹/₂" W x 20³/₈" D (23¹/₂" D incl. cup), 95 lbs., Express/Frt. **139.95**

GR-200 SPECIFICATIONS—Picture Size: Rectangular viewing area 295 sq. in. Deflection: Magnetic 90°. Focus: Electrostatic. Convergence: Magnetic & dynamic. Antenna Input Impedance: 300 ohm balanced, or 75 ohm unbalanced (VHF). Picture IF Carrier Frequency: 45.75 MHz. Sound IF Carrier Frequency: 41.25 MHz. Color Subcarrier: 42.17 MHz. Video IF Bandpass: 3.58 MHz. Sound IF Frequency: 4.5 MHz. Tuning Range: VHF channels 2-13, UHF channels 14-83. Sound Cathode Follower: Output impedance, 3K. Audio Output: Output impedance, 8 ohms. Power Requirements: 120 VAC, 60 Hertz AC, 330 W. Chassis & Tube Dimensions Only: 20¹/₂" H x 25¹/₈" W x 19⁶/₈" D. Control panel assembly, 6¹/₂" W x 7⁷/₈" H x 7" D. Required installation clearances are given in spec. sheet and manual.

Wireless remote control for your GR-200

54⁹⁵

Order wireless remote control with your GR-200 ... and save! Gives you arm-chair control of on-off, volume, tint, and VHF channel selection. Includes transmitter, receiver, motors and all parts needed for easy assembly and installation.

Attention GR-295 & GR-25 owners—this remote is compatible with your set. At this special-value price, it's an ideal time to add the enjoyment and convenience of wireless remote control operation.

Kit GRA-295-6, 9 lbs. **ONLY 54.95**



REDUCED \$50 14V SOLID-STATE COLOR TV **299⁹⁵** less cabinet

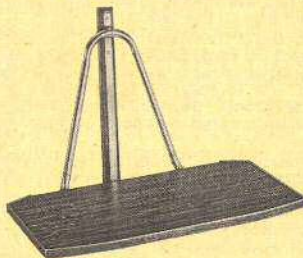
Build-up 10 circuit boards, prepare the chassis, terminals and connectors. Install and solder the wiring harness and point-to-point conductors. Assembling the Heathkit GR-169 is not a one evening project, but the work itself is just that easy. The end result is a 14 inch diagonal color portable with picture purity, and brightness that puts it at the top of its class. And thanks to the exclusive Heathkit built-in maintenance equipment, you keep it that way. If it ever needs service, plug-in modular circuit boards and the troubleshooting meter and data book help you fix it at home. The GR-169 is really a big little TV, with all the secondary controls found in our larger models. Color, tint, contrast, horizontal and vertical hold, height, AGC, color killer, switch-controlled degaussing. Carry it from room to room or across the country. This is the portable that bounces back with console-like performance.

Kit GR-169, 69 lbs., Express/Frt. Was **349.95**, now only **299.95**

GR-169 SPECIFICATIONS—Picture Size: 102 sq. in. viewing area. Deflection: Magnetic, 90°. Focus: Electrostatic. Convergence: Magnetic. Antenna Input Impedance: VHF—300 ohm balanced or 75 ohm unbalanced; UHF—300 ohm balanced. Tuning Range: VHF—Channels 2-13; UHF—Channels 14-83. Picture IF Carrier: 45.75 MHz. Sound IF Carrier: 41.25 MHz. Color IF Subcarrier: 42.17 MHz. Sound IF Frequency: 4.5 MHz. Video IF Bandwidth: 3.58 MHz. Audio Output: Power—1 watt. Impedance—8 ohms. Power Requirements: 120 VAC, 130 W. Dimensions: 16" H x 20¹/₂" W x 16" D.

Swivel Wall Shelf for GR-169 . . . mounts on any wall, swivels for most convenient viewing angle. Platform finished in walnut; pale brass plated tubing. Platform 24" W x 15⁷/₈" D.

GRA-169-1, 15 lbs., Express/Frt. **18.95**



antenna boot installed, 4 lbs., mailable **9.95**

GD-328, 100' coax, w/connectors and antenna boot installed, 5 lbs., mailable **11.95**

75-300 Ohm Matching Transformer/Splitter—Matches one all-channel 75-ohm download to separate 300 ohm VHF and UHF TV inputs. Hardware, instructions. **GD-298**, 1 lb., mailable **4.95**

All Channel Coupler With FM Tap—For taking FM signal off coax line ahead of distribution system or TV set. Hardware, instructions. **GD-308**, 1 lb., mailable **10.95**

75 Ohm Mixer-Splitter To Operate Two Sets—Operates two sets from one coax download, or combines two 75 ohm an-

tennas into one lead. Instructions, hardware included. **GD-318**, 1 lb., mailable **7.95**

Antenna Chimney Mount—Two 5' masts, chimney mount, 50 foot 300 ohm transmission line, standoffs, two 10 foot steel traps, complete instructions. **GD-208**, 10 lbs., Express/Frt. **7.95**

Antenna Roof Mount Kit—Two 5' masts, mast base, 50 foot 300 ohm transmission line, 50 foot guy wire, all standoffs, screw eyes, wire clamps. **GD-218**, 9 lbs., Express/Frt. **6.95**

Cornell-Dubulier AR-33 Antenna Rotator—Operated by dial or pushbuttons. ±1° accuracy, heavy duty rotor, instructions included. (5-wire power cable not supplied.) **GDP-258**, 16 lbs., mailable **49.95**

Alliance Tenna-Rotor—Rotates 360° in either direction, instantly reversible, magnetic braking. Sealed against moisture, lubricated for life. (5-wire power cable not supplied.) **GDP-214**, 11 lbs., mailable **29.95**

New 82-Channel/FM Indoor Antenna—Has exclusive Double Diamond UHF element, adjustable phase control for peak VHF, 12-position selector. **GD-301**, 3 lbs., mailable **10.95**

FM Band Rejection Filter—Reduces FM input signal strength by a minimum of 18 dB. Recommended where local FM static is cause broadband amplifiers of a system to overload. 75 ohm impedance. **GD-250**, 1 lb., mailable **9.95**

Accessories

Coax Distributor for 4-room TV/FM network—Solid-state Jerrold distribution amp takes single coax input from any all-channel antenna, amplifies all signals & feeds 4 outlets. Includes 200' coax cable, connectors, crimping tool, 4 matching transformers/frequency splitters. **GD-248**, 14 lbs., mailable **89.95**

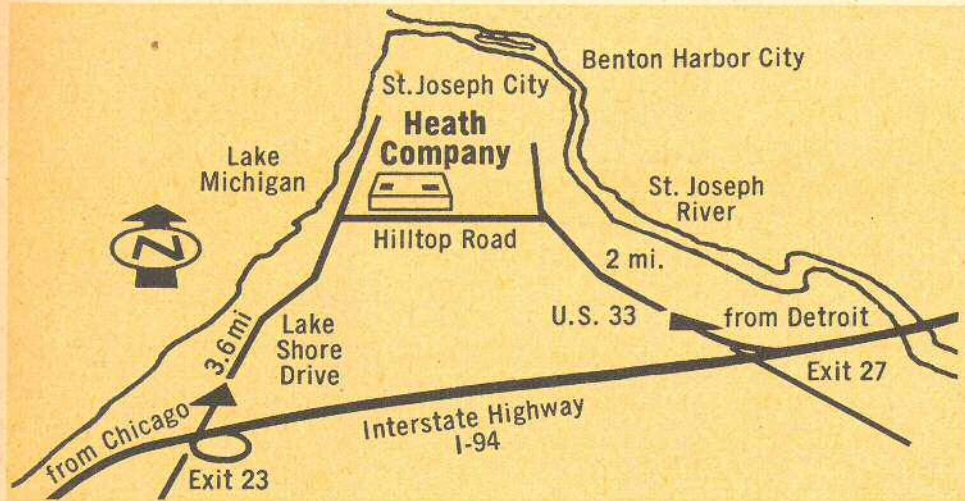
Coax Cable For Color TV—**GD-228**, 50' coax, w/connectors and antenna boot installed, 3 lbs., mailable **7.95**

GD-238, 75' coax, w/connectors and

On Vacation? Take a Heath Company plant tour.

Tours through the 365,000 sq. ft. Heath facility begin June 1, daily at 10:00 a.m. and 2:00 p.m. Eastern Standard Time and continue through the summer until August 31. For your convenience, the sales room in the front of the building provides complete display, demonstration and sales of all Heathkit products . . . at low mail order prices. Sales room hours are 8:30 to 5:00 Monday

through Friday, Saturday 9:00 to 3:00. Heath is located on Hilltop Road at the south edge of St. Joseph, just 3.6 miles north of exit 23 of Interstate-94 from Chicago . . . or 2 miles from exit 27 if you're coming from Detroit on Interstate-94. If you're in the area to enjoy the famous parks, waters and numerous tourist attractions in the Midwest, please stop by to see us.



Base price information

The following list reflects prices on major Heathkit products in effect prior to the lifting of the price freeze Nov. 13, 1971. These prices are shown for comparative purposes only. For current kit prices, refer to individual pages throughout this catalog. Information regarding the lawful base price for any item not listed here may be obtained by mail.

MODEL	BASE PRICE	MODEL	BASE PRICE
AA-14	67.95	GRA-303-23	114.95
AA-15	179.95	GRA-403-25	119.95
AA-29	149.95	GRA-404-25	134.95
AD-19	289.95	GT-18	179.95
AD-27	169.95	GT-101	299.95
AD-110	119.95	HM-102	29.95
AD-140	89.95	HP-13-A	69.95
ADP-49	175.00	HP-23-A	51.95
AE-19	19.95	HR-10-B	79.95
AJ-14	57.95	HW-16	99.95
AJ-15	189.95	HW-101	249.95
AJ-29	169.95	IB-101	199.95
AR-14	119.95	IB-102	99.95
AR-19	239.95	ID-29	29.95
AR-29	299.95	IG-18	67.50
AR-1500	349.95	IG-28	79.95
AS-27	79.50	IG-57-A	135.00
AS-37-A	41.95	IG-102	31.95
AS-48	184.95	IM-17	21.95
AS-101	259.95	IM-18	29.95
AS-103	189.95	IM-25	85.00
EU-20-V	320.00	IM-28	39.95
EU-70-A	595.00	IO-20	109.95
EU-302-A	195.00	IO-101	124.95
EU-700	1,275.00	IO-102	119.95
EU-801-A	499.00	IP-27	79.95
EU-805-AA	1,250.00	IPW-17	110.00
GD-18	54.95	IPW-27	125.00
GD-19	199.95	IT-18	24.95
GD-29	379.95	IT-28	39.95
GD-48	69.95	M1-19-1	79.95
GD-57	129.95	M1-19-2	79.95
GD-109	79.95	M1-29	89.95
GD-325-D	489.95	PM-17-A	89.95
GDA-209-1	99.95	SB-102	380.00
GDP-129	54.95	SB-200	220.00
GR-17	43.95	SB-220	349.95
GR-78	129.95	SB-303	319.95
GR-88	49.95	SB-310	259.00
GR-104-B	124.95	SB-401	299.95
GR-169	349.95	SB-610	89.95
GR-269	399.95	SM-105-A	350.00
GR-270	489.95	TA-16	119.95
GR-371-MX	579.95	TA-17	175.00
GRA-70-6	64.95	TO-101	1,495.00

Need help . . .

with a technical or kitbuilding question, or ordering a kit?

Call us anytime . . .

day, night, weekends or holidays. During non-business hours your call will be answered in person and help sent on its way to you at the start of the next working day. See "How to Order" section on page 32 for telephone numbers and routing information.



Heath's "Plain Language" warranty stands firmly behind your Heathkit purchase:

Your Heathkit Warranty... During your first 90 days of ownership, any parts which we find are defective, either in materials or workmanship, will be replaced or repaired free of charge. And we'll pay shipping charges to get those parts to you - anywhere in the world.

If we determine a defective part has caused your Heathkit to need other repair, through no fault of yours, we will service it free - at the factory, at any retail Heathkit Electronic Center, or through any of our authorized overseas distributors.

This protection is exclusively yours as the original purchaser. Naturally, it doesn't cover damage by use of acid-core solder, incorrect assembly, misuse, fire, flood or acts of God. But, it does insure the performance of your Heathkit anywhere in the world - for most any other reason.

After-Warranty Service... What happens after warranty? We won't let you down. If your Heathkit needs repairs or you need a part, just write or call the factory, your nearest retail Heathkit Electronic Center, or any Heathkit authorized overseas distributor. We maintain an inventory of replacement parts for each Heathkit model at most locations - even for models that no longer appear in our current product line-up. Repair service and technical consultation are available through all locations.

We hope you'll never need our repair or replacement services, but it's nice to know you're protected anyway - and that cheerful help is nearby.



Dear Friends: "You can't judge a book by its cover," they say. And that proverbial bit of wisdom has never been more true than in the case of Heathkit products. On the outside they look similar to any other well designed product with regard to styling, finish and overall appearance.

But it's what's inside that counts. That's where every Heathkit product speaks volumes about intrinsic superiority. You'll find it reflected in the careful planning put into basic design concepts; the scrupulous attention to engineering detail; the use of fine quality parts and components and thoughtful, uncluttered physical layouts. All are blended together to provide you the most reliable, high performance products possible. That's why you'll notice a little change in the format of this catalog. We've attempted to place more emphasis on the quality that's built-in to every Heathkit product by viewing them from the inside out.

It's also my pleasure to call to your attention a number of exciting new kits in this issue: the new hi-fi component FM stereo car radio and cassette tape deck featured on the cover and on the opposite page; a new state-of-the-art FET VOM on page 43; a new economy two-station intercom on page 15; and a handy new "scanning" transducer bracket for use with Heathkit fish spotters on page 36. I think you'll agree they're all outstanding Heathkit values.

Sincerely, *D.W. Nurse*
David Nurse, President

p.s. - We have just reduced prices by \$50 on our 14V and 18V color television sets. See them both, plus the new GR-200 "super value" 23V model, on pages 8 and 9. Now you get even more for your money with Heathkit TV.

ENGINEERING OPPORTUNITY AT HEATH

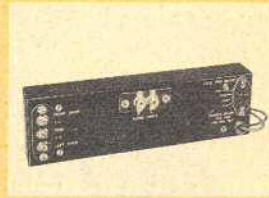
We have a position open for a degreed engineer (BSEE) to assume full project responsibility within our Kit Instrumentation Group. Experience should include high-frequency, analog and digital circuit design. Write to: G. Kulkis, Personnel Dept.

HEATHKIT ELECTRONIC CENTERS (Sales and Service)

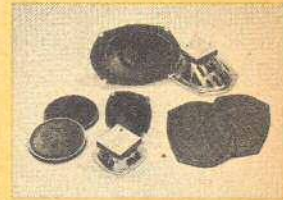
ARIZONA Phoenix, 85017 2727 W. Indian School Rd. Phone: 602-279-6247	MICHIGAN Detroit, 48219 18645 W. Eight Mile Rd. Phone: 313-535-6480 5 E. Detroit, 48221 18149 E. Eight Mile Rd. Phone: 313-772-0416
CALIFORNIA Anaheim, 92805 330 E. Ball Rd. Phone: 714-776-9420 El Cerrito, 94530 6000 Potrero Ave. Phone: 415-236-9870 Los Angeles, 90007 2309 S. Flower St. Phone: 213-748-0261 Pomona, 91767 1555 Orange Grove Ave. N. Phone: 714-623-3543 Redwood City, 94063 2001 Middlefield Rd. Phone: 415-365-8155 San Diego (La Mesa, 92041) 6363 Center Dr. Phone: 714-461-0110 Woodland Hills, 91364 22504 Ventura Blvd. Phone: 213-883-0531	MINNESOTA Minneapolis (Hopkins, 55343) Fair Lawn, 55120 Phone: 612-936-6371
CONNECTICUT Hartford (Avon, 06110) 395 W. Main St. (Rte. 44) Phone: 203-678-0323	MISSOURI St. Louis, 63123 9296 Gravois Ave. Phone: 314-838-5100
CONNECTICUT Hartford (Avon, 06110) 395 W. Main St. (Rte. 44) Phone: 203-678-0323	NEW JERSEY Fair Lawn, 07410 35-07 Broadway (Rte. 4) Phone: 201-791-6935
FLORIDA Miami (Hialeah, 33012) 4705 W. 16th Ave. Phone: 305-823-2280	NEW YORK Buffalo (Amherst, 14226) 3478 Sheridan Dr. Phone: 716-835-3090 Jericho, Long Island, 11753 15 Jericho Turnpike Phone: 516-334-8181 New York, 10036 35 W. 45th St. Phone: 212-765-4590 Rochester, 14626 1384 Long Pond Rd. (Long Ridge Plaza) Phone: 716-227-4750
GEORGIA Atlanta, 30305 5285 Roswell Rd. Phone: 404-252-4341	OHIO Cincinnati (Woodlawn, 45215) 10133 Springfield Pike Phone: 513-771-6850 Cleveland, 44129 5444 Pearl Rd. Phone: 216-886-2690
ILLINOIS Chicago, 60645 3462-46 W. Devon Ave. Phone: 312-583-3920 Chicago (Downers Grove, 60515) 224 Ogden Ave. Phone: 312-852-1304	PENNSYLVANIA Philadelphia, 19149 6318 Roosevelt Blvd. Phone: 215-288-0180 Pittsburgh, 15235 3482 Wm. Penn Hwy. Phone: 412-824-3564
INDIANA Indianapolis, 46220 2112 E. 62nd St. Phone: 317-267-4321	TEXAS Dallas, 75201 2715 Ross Ave. Phone: 214-826-4053 Houston, 77027 3705 Westheimer Phone: 713-823-3090
KANSAS Kansas City (Mission, 66202) 5960 Lamar Ave. Phone: 913-362-4486	WASHINGTON Seattle, 98121 2221 Third Ave. Phone: 206-682-2172
MARYLAND Rockville, 20852 5542 Nicholson Lane Phone: 301-881-5420	WISCONSIN Milwaukee, 53216 5215 Fond du Lac Phone: 414-873-8250
MASSACHUSETTS Boston (Wellesley, 02181) 165 Worcester St. Phone: 617-237-1510	

Watch for the new Heathkit Electronic Center opening in Baltimore, Md., in July.

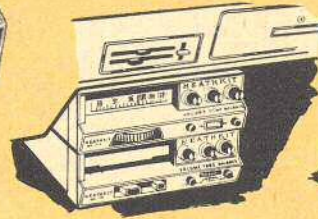
Now— Component-quality Sound For Your Car



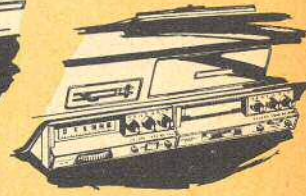
One CRA-1000-1 Power Amp. is all you need to power either the FM car Tuner, or Cassette, or both.



Choice of 5" cone speakers for door panel installation or 6"x9" rear-deck models.



Units may be stack mounted on transmission hump or under dash.



Units may be mounted side by side under dash.

EXPECTED SHIPPING DATE JUNE 23

New mobile Heathkit FM Stereo Tuner...

The new Heathkit CR-1000 FM Stereo Tuner brings living-room fidelity in stereo broadcasting to the privacy of your own automobile. And simplified circuit board assembly plus a factory-assembled & aligned FM tuning unit make it all an enjoyable four-evening project. Combined with the GRA-1000-1 Power Amplifier, the Tuner offers performance specifications rivaling those of many costly home stereo hi-fi systems...an honest 7 watts of car-filling power (3.5W min. per channel into 4 ohms) with less than 2% THD; frequency response ± 1 dB, 3 Hz to 15,000 Hz; 3 μ V sensitivity; 60 dB selectivity; 40 dB min. separation. Ten transistors, 4 ICs and 4 diodes make up the reliable solid-state tuner circuitry. Advance-design features include a muting circuit for noise quieting between stations; automatic frequency control (AFC) for locking-in FM stations. Front-panel convenience features include large Tuning, Volume, Tone and Balance control knobs; on-off rocker switch; high-visibility stereo indicator light and center-tune indicator light...all designed to give you fingertip control of FM stereo programming without taking your eyes off the road. All hardware supplied for under-dash or transmission hump mounting. Tuner, Power Amplifier and your choice of speakers are all you need to enjoy true-fidelity FM stereo in your car, camper, trailer or boat. Stereo Cassette can be added now or later (additional amplifier not required).

Kit CR-1000, Tuner only, 6 lbs., mailable 64.95

Kit CRA-1000-1, Power Amplifier, 3 lbs., mailable 29.95

(See next column for speaker options)

CR-1000 SPECIFICATIONS — FM MONO — Intermediate Frequency (IF): 10.7 MHz. Antenna Input Impedance: 50-75 ohm unbalanced. Sensitivity: 3 μ V max. THD: 2% or less at rated output. IM Distortion: 0.5% max. Image Rejection: 45 dB min. at 98 MHz. Spurious Rejection: 65 dB min. at 98 MHz. IF Rejection: 65 dB min.

Noise: 65 dB min. Selectivity: 60 dB min. Capture Ratio: 1.8 dB. Tone Control Cutoff (Ref. 1 kHz): 18 dB at 10 kHz, typical. FM STEREO — 19 kHz and 38 kHz Suppression: 20 dB min. SCA Suppression: 45 dB min. Separation: 40 dB min. (measured using 15 kHz low-pass filter). THD: 2% or less at rated output. GENERAL — Tuning Range: 88 to 108 MHz. Frequency Response: ± 1.5 dB, 30 Hz to 15 kHz. Power Requirements: 13.8 VDC at 1.5 A. Controls: Tuning, Volume, Tone, Balance and OFF/ON switch. Indicators: Center Tune & Stereo. Transistor Component: 10 transistors. Integrated Circuit Complement: 4 ICs. Diode Complement: 4 diodes. Dimensions: 2 1/2" H x 7 5/8" W x 7" D (8" D with CRA-1000-1).

New mobile Stereo Cassette Deck...

Teamed with the matching Power Amplifier, the new CT-1001 Stereo Cassette Deck puts high fidelity stereo cassette entertainment — as well as single-channel dictation — right in your front seat. And it's a fun kit to build — with printed circuit boards and preassembled tape transport simplifying assembly. To use, simply insert a cassette cartridge into the front-panel slot and the unit starts to play. An electronic shut-off circuit automatically ejects the cartridge when tape plays through or if tape breaks or hangs up, or if power fails. An automatic "record interlock" protects prerecorded tapes from being accidentally erased. Three knobs give you fingertip control of Volume, Tone and Balance, while another control and indicator lamp give you peripheral-vision control of recording level. A single 3-way Reject Bar performs fast-forward, rewind and reject functions. A separate Record Bar is provided, with the Reject Bar acting as interlock. Microphone plugs into side panel. Solid-state circuitry, regulated motor and quality power amp. combine to deliver 30 Hz to 10 kHz response; 45 dB S/N; 0.3% wow & flutter; 2% THD; and 30 dB channel separation. Hardware supplied for under-dash or transmission hump mounting. Microphone included. Cassette, Power Amp & choice of speakers make up the system. Add the tuner now or later, with no additional amplifier required.

Kit CT-1001, Cassette Deck only, 9 lbs., mailable 89.95

Kit CRA-1000-1, Power Amplifier, 3 lbs., mailable 29.95

CRA-1000-2, two 5" cone, 4-ohm door-mount hi-fi speakers for Radio or Cassette (including grilles, adapter plates for most speaker size openings, and 24' speaker lead, 6 lbs., mailable 19.95

CRA-1000-5, two 6" x 9" 4-ohm read deck mount hi-fi speakers for Radio or Cassette (including grilles and 24' speaker lead), 7 lbs., mailable 19.95

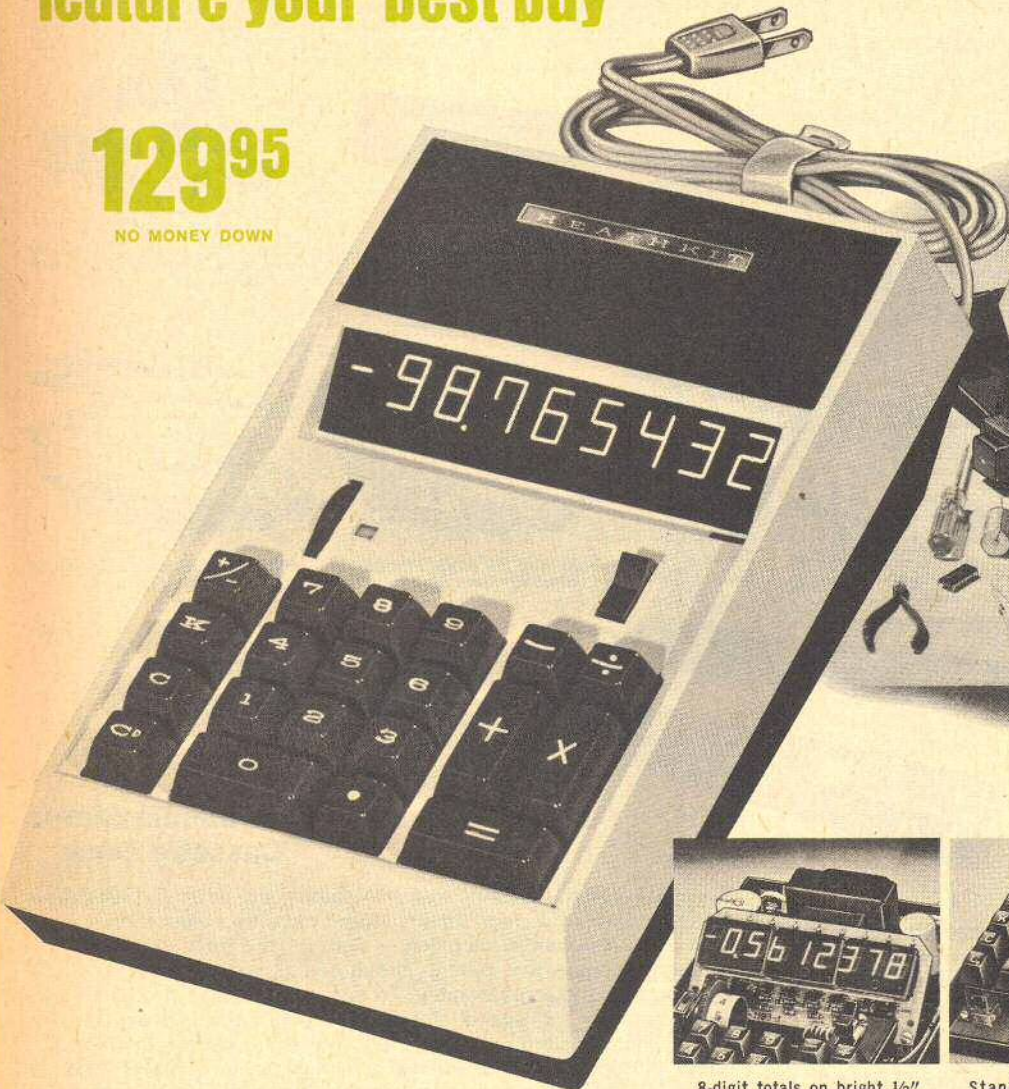
CT-1001 SPECIFICATIONS — PLAYBACK — Response: 30 Hz to 10 kHz. Signal to Noise: 45 dB. Wow & Flutter: 0.3%. THD: 2%. Channel Separation: 30 dB. Tone Control Cutoff: 18 dB at 10 kHz (1 kHz reference). RECORD — Signal to Noise: 35 dB. THD: 5%. Signal to Noise: 45 dB. GENERAL — Motor: DC, solid-state regulated. Tape Speed: 1 7/8" in/sec. Tape Cartridge: C-30, C-60, C-90 Cassettes. Primary Controls: Volume, Tone, Balance. Secondary Controls: Fast Forward-Reject-Rewind, Record, Mic. Level. Transistor Component: 18 transistors. Diode Complement: 5 diodes. Power requirements: 13.8 VDC at 1.5 A. Dimensions: 2 1/2" H x 7 5/8" W x 8" D.

No money down on any kit — up to 2 years to pay — see order blank for details.

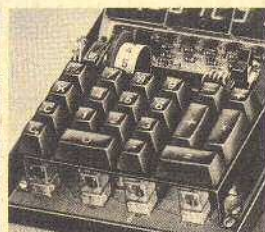
Heathkit 8-Digit Electronic Calculator...feature for feature your best buy

129⁹⁵

NO MONEY DOWN



8-digit totals on bright 1/2" neon display tubes



Standard keyboard helps eliminate mistakes in calculation



American LSI circuit design operates on 120/240 VAC

it all adds up to one of the finest kit values we've ever offered . . . the Heathkit Electronic Desk-Top Calculator

Here's a full-featured, 8-digit desk-top calculator you can assemble yourself and save! Just a couple of evenings puts it all together. And, like all Heathkit assembly manuals, the non-technical instructions lead you a simple step at a time to successful completion, even if you've never built anything before. The new Heathkit IC-2008 Calculator performs addition, subtraction, multiplication and division electronically, and gives you the answers in up to 8-figure totals on extra-bright, easy-to-read 1/2" seven-segment neon display tubes. You punch up a problem the same way you would write it out (7x8=) . . . and the answer is there before your eyes. And the screen displays each number as you hit the key, so you can check your work as you go. The simplified keyboard provides 10 numerical keys (0-9), decimal, plus, minus, multiply, divide, and + / - for performing algebraic calculations with positive and negative numbers. You can use the Heathkit Calculator for either constant or chain operation. Simply push the K (constant) key and you can multiply or divide a series of figures by one preselected number, or multiply the constant by itself for squaring or taking it to a power. Release the constant key and you can perform any function or series of functions with the calculator holding all data until you push the total key.

FLOATING DECIMALS

The IC-2008 can automatically indicate a minus result — making it ideal for credit balancing. To balance the family checkbook, for

instance, you merely punch in your credits and debits to come up with a total. It's one easy operation with no need to sub-total. A thumbwheel lets you place the decimal in one of 7 fixed positions. Or, you can select the floating decimal mode for totals carried out to completion.

OVERFLOW CAPABILITIES, TOO

Overflow for plus or minus totals is indicated on the ninth display tube at the extreme left of the readout screen. This tube also displays a minus sign when using a negative number or in the case of negative result as: (10 - 11 = -1). In the event of overflow, the calculator always protects the most significant portion of the total (the largest portion of the number, or that portion to the left of the decimal), and retains these figures on the display screen.

TWO CONVENIENT CLEARANCE KEYS

Should you make an error in setting up a problem, the clear-display (Cd) key permits erasing the last entry from the circuit and proceeding ahead without losing the entire problem. At the completion of a problem, or to correct an overflow, you simply push the "C" key to clear the machine completely. For state-of-the-art features and performance in an electronic calculator — at kit-form savings — order your Heathkit IC-2008 today.

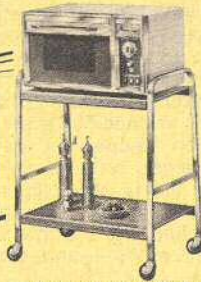
Kit IC-2008, 5 lbs., mailable **129.95**

SPECIFICATIONS — Operating Temperature: 0 to 40 degrees C; 32 to 104 degrees F. Line Voltage: 120/240 volts AC, 50/60 Hz. Power Dissipation: 6.5 watts. Protection: 1/8-ampere slow-blow fuse (120 VAC operation); 1/4-ampere slow-blow fuse (240 VAC operation). Initial Display Light Up Time: Up to 60 sec., depending on ambient light. Dimensions: 3 1/2" H x 6" W x 10 1/4" D.

Only the Heathkit Microwave Oven offers build-and-service-it-yourself savings



379⁹⁵



Optional roll-around cart

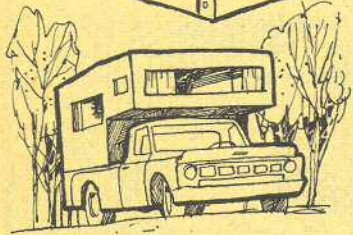


Heathkit Deluxe Microwave Oven

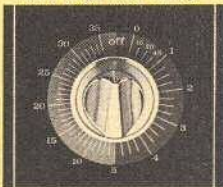
In just a few spare-time evenings you can put together this modern miracle of microwave cooking. Precise instructions and big pictorial diagrams lead you every step of the way to successful completion. And since you build it yourself you can service it yourself for even greater savings. This great time-saver will have mom baking potatoes in 4 minutes, baked beans in 7, a five-pound roast in 45. Features one of the largest oven cavities in the industry, yet the handsome, low-profile cabinet fits neatly on a countertop or on the optional, attractive roll-around cart. Other deluxe features include an exclusive 3-way door safety interlock; warm-air purging device to eliminate condensation; long-life Litton magnetron tube; vinyl-clad steel case luxuriously styled in textured antique white with "stainless" front panel accents. Measures 15 1/8" H x 25 1/2" W x 14 3/4" D (15 1/16" including handle). Operates on standard household current. Kit includes self-service instructions, and illustrated cookbook by Home Economist Ann Balcam with recipes and timing charts for your favorite dishes. Cut cooking time up to 70% ... order a Heathkit microwave oven for your kitchen, camper, or boat today.

Kit GD-29, 97 lbs., Exp./Frt. **379.95**
 GDA-29-1, cart of hardwood solids, walnut finish, sturdy 5/8" x 1" tubing & sealed-in disc casters, 31 5/8" H x 27" W x 15 5/8" D, 20 lbs., Exp./Frt. **27.50**

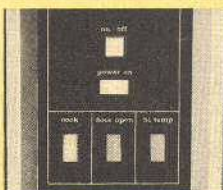
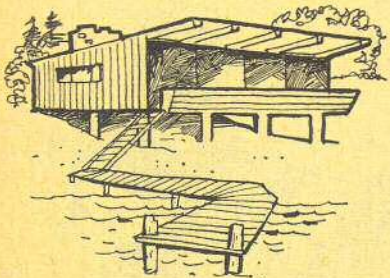
NOTE: The GD-29 complies with all requirements of the Performance Standard for Microwave Ovens (42 CFR 78.212) as set forth by the U.S. Dept. of Health, Education & Welfare.



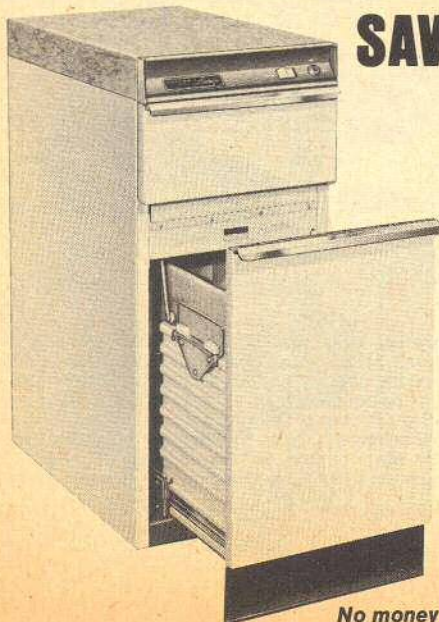
Extra large oven cavity



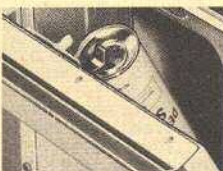
Automatic timer



Front panel lights



SAVE \$20
NOW ONLY
179⁹⁵



Built-in deodorizer



Safety key lock switch

Build the Heathkit "Minimizer" and put the squeeze on trash



In as little as two evenings you can build the "Minimizer". Uncomplicated drawings and simple instructions speed assembly time ... so you'll be carrying out the trash only once a week. The "Minimizer" compresses cans, bottles and kitchen trash into one lock-folded, moisture-proof bag ... holds up to a week's trash for an average family of four. A packing ram descends with 2,000-lb. force to reduce refuse to almost 1/4 its original size. When the bag's full, you simply fold over the top and remove a neat, dry package for normal rubbish pickup. And the "Minimizer" deodorizes the contents each time the drawer is used. For safety, a key lock switch is provided, and an interlock automatically turns unit off if drawer is not fully closed. Unit fits under counter or can be used free-standing. Measures 35 5/8" H x 15" W x 25 1/2" D. Bright white enamel finish and marble-tone vinyl-clad top complement any decor. Kit includes troubleshooting instructions so you can do any periodic adjustments or servicing yourself. Five plastic-lined bags and 9-oz. can of deodorant included. Operates from any conventional 120 VAC 3-wire grounded household outlet. Let the "Minimizer" take over your chores. Order yours, today.

Kit GU-1800, 210 lbs., Exp./Frt. **179.95**
 GUA-1800-1, 15 plastic lined bags. 10 lbs., mailable **4.99**

No money down on any kit - up to 2 years to pay - see order blank for details.

The prospecting Heathkit Metal Locator

**an easily-assembled treasure-tracker
that can pay for itself in booty**

Here's the kit with all the plusses for starting a new kit-building/treasure-finding hobby. The Heathkit Metal Locator is a quality piece of equipment at a pleasingly low price. And you can put it together in as little as two evenings. Easy, step-by-step instructions and only two printed circuit boards simplify assembly and speed building time. Then this great take-along outdoor companion is ready to go whenever or wherever you like. It detects metal objects as small as a dime and performs prospecting jobs comparable to detectors selling for much more. And, unlike many locators using a beat frequency requiring you to notice a change in constant tone, the Heathkit Metal Locator produces no tone until a metal object enters the field of the search coils and upsets the balance between them. You hear the tone either through the speaker or earphone. As buried metal is approached, the tone gets louder. A built-in meter helps you estimate size/depth ratio of find. You can set the locator to work at specific levels, too — to comb surface for small objects, or probe deeper for larger items. All solid-state circuitry means light weight, reliable operation and minimum battery drain (typical battery life is about 80 hours). Coil housing is 10½" in diameter. Locator measures 36" long extended and 26" long collapsed. Power is supplied by a single 9-volt battery (not supplied). Dig out your treasure maps — and send for your Heathkit Metal Locator today.

Kit GD-48, metal Locator, 6 lbs., mailable 74.95
GDA-48-1, 9-volt battery, 1 lb., mailable 1.50
GD-396, headphones, 2000 ohm (Superex), 1 lb., mailable 4.50

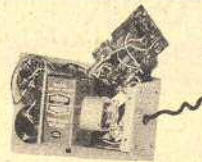


74.95

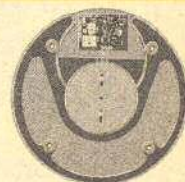
NO MONEY DOWN



Tone volume control & size/depth ratio meter



Printed circuit boards speed easy assembly



Factory aligned search coil minimizes adjustment

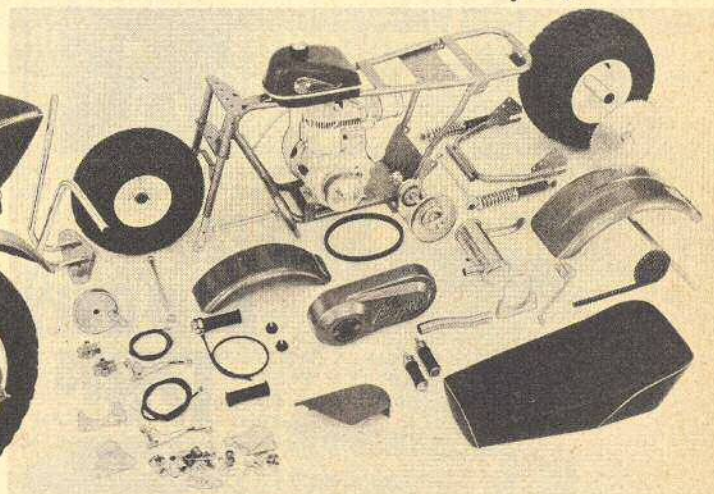
Save 50.00 on the stout-hearted "Hilltopper"

**2
EVENING
KIT**

**WAS 299.95
NOW ONLY**

249.95

NO MONEY DOWN



Here's the gutsy-goer you'll have assembled in only two evenings . . . simple instructions and large pictorials combine to make the "Hilltopper" one of the most easily-assembled kits ever. Features include a tubular steel frame, Tecumseh 5 hp engine, built-in alternator and a load-sensing automatic torque converter for no shifting in the rough . . . or for speeds up to 35 mph. Other features are front & rear suspension, oversize front & rear tires for great traction and stable steering, front & rear brakes, steel skid pan, crash bar assembly, cycle-type twist throttle, ignition-off switch, optional lights and ski. Bike is bronze with white engine, 44" wheel base, 39" H & 24" W at handlebars, 27¾" H at seat. For cycle-style looks and handling at a minibike price — order your Hilltopper today.

Kit GT-101, 180 lbs., Exp./Frt. 249.95
GTA-101-1, ski accessory, 12 lbs., Exp./Frt. 19.95
GTA-101-2, running lights, 5 lbs., mailable 19.95

Handy bumper carrier attaches to car or camper bumper in minutes to carry Boonie Bike or Hilltopper safely, securely.
GTA-101-3, 24 lbs., mailable . . 22.95

Heathkit assembly manuals are famous for their simplicity and completeness

New Heathkit Intercom System for your home.

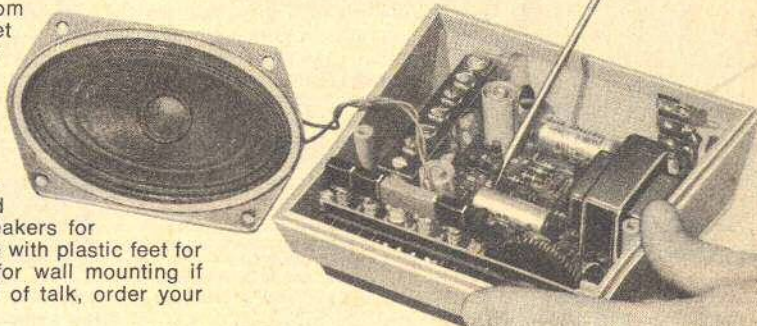
reliable 2-way communication begins here . . . with a 2 unit home intercom system you can build and install over a weekend

This newest Heathkit Home Intercom System is a "natural" for the first-time kit builder. Simple, step-by-step instructions make the assembly an easy weekend project! And the low price means that the novice kit-builder can enjoy the convenience of a quality home intercom system . . . on a budget. And what convenience! You get step-saving room-to-room communication or babysitter monitoring in the home. Great at the office, too, for paging, interoffice communication or "hands-off" dictation. Master station accommodates up to two remotes. Either remote can initiate "private" only calls to Master. Master can call either or both remote stations. Master controls include Sta. 1, Sta. 2, Talk, Dictate, & Volume. Remotes have Talk & Dictate controls. Both Master and remotes feature big 3" x 5" combination microphone-speakers for crisp, clear sound reproduction. Low-profile cabinets come with plastic feet for desk, shelf or tabletop use, as well as mounting holes for wall mounting if desired. For a home intercom that's sure to cause a lot of talk, order your Heathkit GD-140 today.

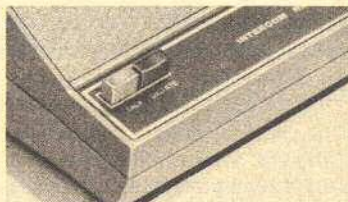
- Kit GD-140, one Master, one Remote, 5 lbs., mailable **29.95**
- Kit GDA-110-2, 100 ft. 4-conductor cable, 2 lbs., mailable **5.95**
- Kit GD-120, one extra Remote, 3 lbs., mailable **12.95**

29⁹⁵

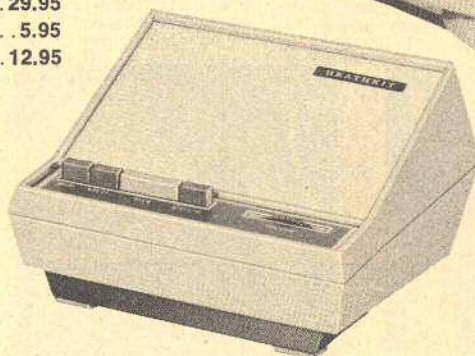
NO MONEY DOWN



Master controls let you talk, dictate, monitor & regulate volume



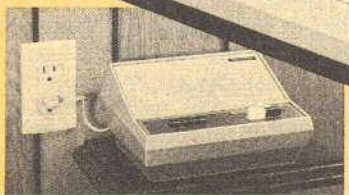
Versatile Remote lets you talk or dictate to Master



29⁹⁵

NO MONEY DOWN

Convenient plug-in capability means you can move GD-113 units anywhere in your home to fit your needs.

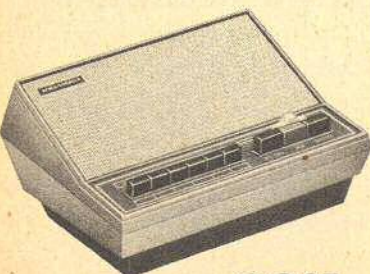


Heathkit "Wireless" Home Intercom System

extra-easy installation because you just plug these Heathkit conversation pieces into your home electrical outlets

It takes as little as one evening to assemble each of the stations you'll want in your Heathkit "Wireless" Intercom System. Just assemble the intercoms you need, plug them into your home electrical outlets. That's all there is to it. With no special wiring, you can move units at will — monitor the nursery tonight, use in the workshop tomorrow. Each intercom has three channels. In a three-unit installation one station can talk to another without disturbing the third. In a six-intercom system, you can carry on three separate conversations at the same time. Pushbuttons provide channel selection, "Talk" mode, and "Dictate" position to hold channel open for extended one-way conversation. Linear slide controls volume, and internal squelch adjustment suppresses noise when no signal is present. Each GD-113 uses about as much current as an electric clock, so you leave them plugged in all the time. Attractive light green cabinet measures 4 1/8" H x 8 1/2" W x 6 3/4" D.

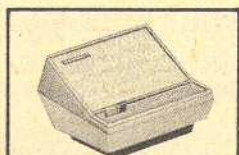
- Kit GD-113, 5 lbs., mailable (each) **29.95**



Master

39⁹⁵

NO MONEY DOWN



Indoor Remote features "Talk" & "Dictate"



Outdoor Remote identifies front-door visitors.

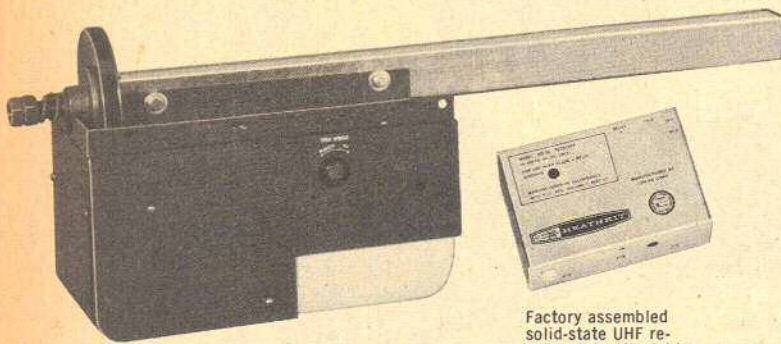
Indoor-Outdoor Intercom handles up to six channels

Non-technical instructions for assembly and complete installation will have you breezing through this Indoor-Outdoor Intercom System in short order. And what versatility. GD-110 master functions include "All Call", "Talk", "Dictate" and volume control . . . plus monitoring of up to four Remotes. Individual Indoor Remotes can be rendered private to shut out monitoring. GD-110 and GD-120 have light green cabinets, measure respectively 4 1/2" H x 8 1/2" W x 6 3/4" D and 3 3/4" H x 6" W x 5 3/4" D. GD-130 has weatherproof crinkle finish cabinet, measures 5 3/8" H x 3 5/8" W x 2 5/8" D.

- Kit GD-110, Master Station, 4 lbs., mailable **39.95**
- Kit GD-120, Indoor Remote, 3 lbs., mailable **12.95**
- Kit GD-130, Outdoor Remote, 3 lbs., mailable **9.95**
- GDA-110-2, 100' 4-conductor cable for indoor units, 2 lbs., mailable **5.95**
- GDA-110-4, 100' 2-conductor cable for outdoor units, 3 lbs., mailable **2.95**

No money down on any kit — up to 2 years to pay — see order blank for details.

Automate your garage door in a couple of evenings

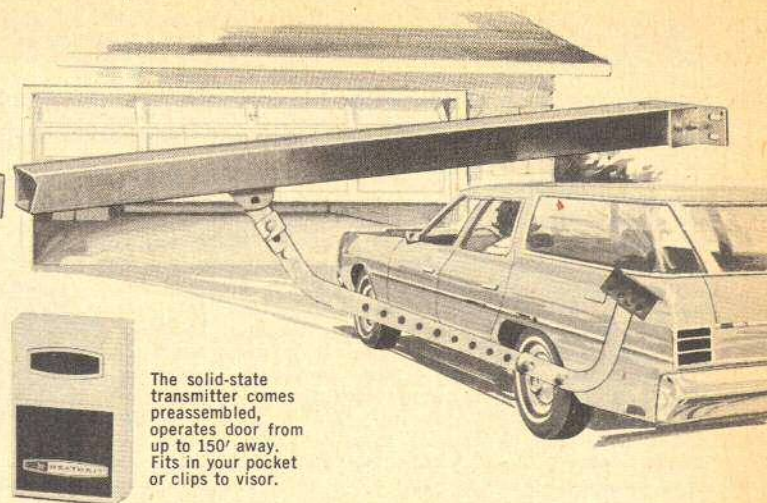


139⁹⁵

NO MONEY DOWN



Factory assembled solid-state UHF receiver has adjustable tone coding to prevent interference from neighboring units.

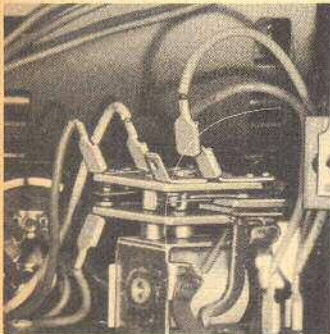


The solid-state transmitter comes preassembled, operates door from up to 150' away. Fits in your pocket or clips to visor.

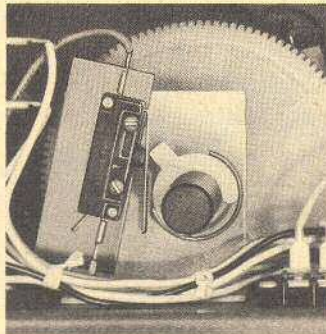
Assemble the GD-209 system in an evening, install it the next day. The easy-to-follow sequence of operations in the Heathkit manual takes you start-to-finish without a hitch. A husky 1/4-hp motor drives the virtually maintenance free screw-drive mechanism. Has self-locking feature, time-delay light for extra security. Operates 7 1/2' track doors, or jamb & pivot doors with GDA-209-2 adaptor.

- Kit GD-209A, system with 1 transmitter, 66 lbs., Express/Frt. . . **139.95**
- Kit GD-209B, system with 2 transmitters, 66 lbs., Express/Frt. . . **154.95**
- Kit GDA-209-1, mechanism only, 61 lbs., Express/Frt. **104.95**
- Kit GDA-209-2, adaptor for jamb & pivot doors, 3 lbs., mailable . . **7.95**
- GDP-99, transmitter, 1 lb., mailable **17.95**
- GDP-119, 1 transmitter, 1 receiver, 2 lbs., mailable **39.95**
- GDP-129, 2 transmitters, 1 receiver, 2 lbs., mailable **54.95**

KIT MECHANISM SPECIFICATIONS: 120" long x 12" high x 9" wide. 117 VAC 1/4 HP. Open and Close Time: Approximately 11 seconds. **Safety:** Door travel reverses, returns to full open position, and stops if obstructed while closing. **Mounting Clearance:** 3" above highest point of door travel. **Safety Lamp:** 75 watt max., automatically turns on when mechanism is activated. Delay circuit keeps lamp on for approx. 90 sec. after motor stops. **UHF TRANSMITTER SPECIFICATIONS:** Powered by standard 9-volt transistor type battery. RF Frequencies: 290 to 320 MHz. Useful Temperature Range: -50°F. to +140°F. **RF RECEIVER SPECIFICATIONS:** Powered by 24 VAC from opener mechanism. Usable on any mechanism having 24 volt AC NEC class II circuit. R.F. Frequencies: 290 to 320 MHz. Useful Temperature Range: -55°F. to +140°F.



All wiring has plug-in connectors to make assembly quick and easy.



Adjustable cams on idler gear shaft give you infinite adjustment of up & down door travel.



99⁹⁵

NO MONEY DOWN



Assembled transmitter and receiver.



Chain-drive opener for economy minded kitbuilders

Build and install your Heathkit GD-309 system in a weekend. Just follow the step-by-step operations in the manual, compare your installation with the detailed illustrations and you have a 1/4-hp chain drive opener for a great price. Operates 7 1/2' track doors, or jamb & pivot doors with GDA-309-2 adaptor . . . with self-locking security, automatic reversing if obstructed, quick-release pin to disengage mechanism in the event of power failure.

- Kit GD-309A, system with 1 transmitter, 51 lbs., mailable **99.95**
- Kit GD-309-B, system with 2 transmitters, 51 lbs., mailable . . **114.95**
- Kit GDA-309-1, mechanism only, 52 lbs., mailable **69.95**
- Kit GDA-309-2, adaptor for jamb & pivot doors, 3 lbs., mailable . . **3.95**
- GDP-99, transmitter, 1 lb., mailable **17.95**
- GDP-119, 1 transmitter, 1 receiver, 2 lbs., mailable **39.95**
- GDP-129, 2 transmitters, 1 receiver, 2 lbs., mailable **54.95**

SPECIFICATIONS: Door Size and Type: Overhead residential garage doors up to 7' high. (Max. travel of opening mechanism 8 1/2"). **Control:** Wall-mounted, doorbell-type push-button switch, or optional devices (transmitter-receiver, key switch, etc.). **Opening Force:** 100 lbs. **Closing Force:** Adjustable up to 100 lbs. **Maximum Door Opening or Closing Time:** Approximately 9 seconds (on 7' high door). **Safety:** Door travel reverse, returns to fully open position, and stops if obstructed while closing. **Overhead Mounting Clearance:** 2 1/2" above highest point of door travel. **Safety Lamp:** 60-watt, lamp automatically turns on when the door starts to open and stays on until door is fully closed. **Motor:** 120 VAC, 60 Hz, 1/4 horsepower, capacitor-run, 1500 rpm. **Power requirements:** 120 VAC, 60 Hz, 660 W (excluding lamp). **Dimensions:** 123" long x 10" high x 8 1/2" wide. **TRANSMITTER SPECIFICATIONS:** See above.

Outfit your hobby shop with Heathkit tools

- New Heathkit solder/de-solder set:** Weller W-PS 25-watt pencil soldering iron and de-solder squeeze bulb with heat resistant nozzle. Makes assembly, and disassembly easy. **Model GDP-1009, 2 lbs., mailable 6.95**
- Extension lamp kit:** 45-in. reach, 360° sweep; vented shade, moveable base clamp. Bulb not included. **Kit GDP-202, 5 lbs. (mfrs. list 14.50), mailable 12.95**
- Weller W-PS 25-watt pencil soldering iron:** develops 860° heat fast, ready to go to work in seconds. U.L. and C.S.A. approved. **Model GDP-207, 1 lb., mailable 5.50**
- Kit builders tool set:** Combination wire stripper/diagonal side cutter midjet long-nose pliers; three screwdrivers (3/32", 1/8", 3/16"); Weller W-PS soldering iron; 5 nut drivers (3/16", 1/4", 5/16", 3/8", 1/2"); nut starter; soldering aid; solder; and "Kit-Builder's Guide". **Model GH-25, 4 lbs., mailable 19.95**

- Speedex wire & cable stripper:** no. 10, 12, 14, 16, and 22 wire. **Model GDP-663, 2 lbs., (mfrs. list 9.95), mailable 6.50**
- Vaco hollow shaft nut driver set:** Seven drivers, most common nut sizes, 3/16", 1/4", 5/16", 1/2", 3/8", 5/8" and 1/2". Handles color-coded for easy identification. **Model GDP-204, 3 lbs., mailable 7.95**
- Heathkit soldering iron:** Low, medium and high heat ranges. 6-ft. cord. 117 VAC. **Kit GH-17A, 5 lbs., mailable 15.95**
- Heathkit motor speed control:** Saves power, blades, bits, saws, etc. A feedback circuit lets you slow down power tools while maintaining almost full torque. **Kit GD-973A, 1 lbs., mailable 17.95**

Custom build your RC system

The GD-19 dual-stick system utilizes GDA-19-4 servos to give you a low 16.6 oz. flight weight. The slim line transmitter has factory-assembled high output RF stage, Kraft sticks for precise control, built-in charging circuit that charges both transmitter and receiver batteries with one cord. Also includes Heathkit miniature receiver with three ceramic IF filters for increased selectivity & reliability without bothersome alignment, double tuned front end, RF amplifier and dual AGC for interference-free reception, and high impact nylon case. Four servos and nickel cadmium batteries for both transmitters & receiver complete package. See frequencies below.

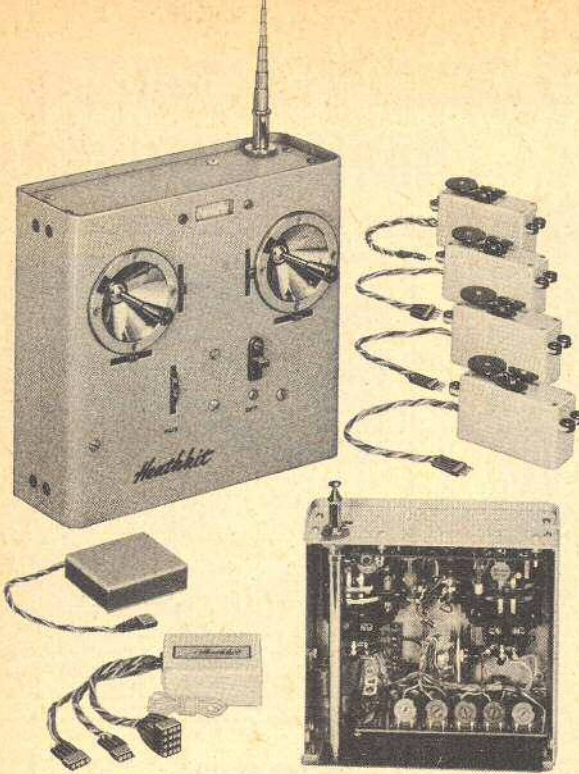
System Kit GD-19, with standard servos, specify frequency desired. 11 lbs., mailable **199.95**
Kit GDA-19-1, transmitter, battery, charging cord, specify frequency; 6 lbs., mailable **86.50**
Kit GDA-19-2, receiver only, specify frequency; 1 lb., mailable **49.95**
Kit GDA-19-3, receiver battery pack only; 1 lb., mailable **9.95**
Kit GDA-19-4, one standard servo only; 1 lb., mailable **19.95**

GDA-19-1 SPECIFICATIONS — TRANSMITTER — RF Carrier frequency: 1 channel, crystal controlled on 27, 53 or 72 MHz. Frequency stability: $\pm 0.005\%$ on 27 MHz, $\pm 0.002\%$ on 53 and 72 MHz. Temperature: 0° to $+160^\circ\text{F}$. RF Output Circuit: Pi-network. Modulation: On-off carrier keying. Approximate current drain: 100 mA. Controls: 5 channels; 4 with trim, on-off switch. Power supply: Internal 9.6 volt nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 40 mA from 120V. Dimensions: $6\frac{3}{8}''$ H x $6\frac{3}{4}''$ W x $2\frac{3}{8}''$ D. Net weight: $2\frac{3}{4}$ lbs. with battery.

GDA-19-2 SPECIFICATIONS — RECEIVER-Frequency: 1 channel, crystal controlled on 27, 53 or 72 MHz. Frequency stability: $.003\%$ on 27 MHz, $.002\%$ on 53 and 72 MHz. Temperature range: 0° to $+160^\circ\text{F}$. Sensitivity: 5 μV or better. Selectivity: 6 dB at ± 4.0 kHz, 30 dB at ± 9.0 kHz. Approximate current drain: 6 mA. Intermediate frequency: 453 kHz. Power supply: Heath GDA-19-3 battery pack. Controls: On-Off switch. Dimensions: $2\frac{3}{8}''$ H x $2''$ W x $2\frac{3}{8}''$ D. Net receiver weight: 2.3 oz.

GDA-19-3 SPECIFICATIONS — RECEIVER BATTERY — Type: Nickel-cadmium. Rechargeable. Voltage: $+2.4$ and $+4.8$ V outputs. Dimensions: $5\frac{1}{8}''$ H x $2\frac{3}{8}''$ W x $2\frac{3}{8}''$ D. Net weight: 3.9 oz.

Frequencies Available: 27 MHz (11 meters) — 26.995, 27.045, 27.095, 27.145 & 27.195. 53 MHz (6 meters) — 53.100, 53.200, 53.300, 53.400, 53.500. 72 MHz (4 meters) for R/C planes only — 72.080, 72.240, 72.400, 72.960 & 75.640. (NOTE: An amateur radio operator's license is required for 6 meter operations. Class C Citizen's Band license required for 27 and 72 MHz.)



Heathkit sub-miniature servo

GDA-19-42 SPECIFICATIONS — Input signal: Pulse 1-2 msec. wide; 4 volts, P-P. Thrust: 3 lbs. at rotor. Rotary output travel: 90 degrees rotation. Temperature range: 0 degrees to $+160$ degrees F. Power requirements: Battery, 4.8 V CT; idle current, 15 mA maximum; stall current, 450 mA nominal; no load current, 80 mA. Gear train backlash: Less than $.002''$. Mechanical output: 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. Position accuracy: 1.0%. Dimensions: $1\frac{1}{32}''$ H x $2\frac{3}{32}''$ W x $1\frac{1}{8}''$ L (length includes mounting ears, height includes the outputs). Net Weight: 1.25 oz.

Kit GDA-19-42, 1 lbs., mailable **24.95**

Heathkit miniature servo

GDA-19-41 SPECIFICATIONS — Input signal: Pulse 1-2 msec. wide, 4 V P-P. Thrust: 3 lbs. at rack; 24 in./oz. at rotor. Travel time: 0.6 seconds. Linear output travel: $\frac{1}{2}''$ end to end. Rotary output travel: 90 degrees rotation. Temperature range: 0 to 160 degrees F. Power requirements: Battery — 4.8 V DC. Idle current — 15 mA. Stall current — 450 mA. No load current — 80 mA. Gear train backlash: Less than $.002''$. Mechanical output: 1 rotary wheel; 2 linear racks. Position accuracy: 1.0%. Dimensions: $1\frac{5}{8}''$ H x $7/8''$ W x $2\frac{1}{32}''$ long (length includes mounting ears; height includes outputs). Net weight: 1.75 oz.

Kit GDA-19-41, 1 lb., mailable **24.95**

Heathkit standard servo

GDA-19-4 SPECIFICATIONS — Thrust: 3 lbs., minimum. Transit Time for $5/8''$ Travel: 0.7 seconds. Linear Output Travel: $5/8''$ end-to-end $1/2''$ nominal. Rotary Output Travel: 0 to $+100$ degrees. For GDA-19-41 specifications, see above. Mechanical Output: 1 — rotary arm, 1 — rotary wheel, 2 — linear arms. Dimensions: $1\frac{3}{4}''$ H x $1\frac{1}{2}''$ W x $3\frac{1}{4}''$ L. (Net weight includes mounting ears; height includes arms). Net weight: 2.5 oz.

Kit GDA-19-4, 1 lb., mailable **19.95**

A great 3-channel kit for the novice RC modeler

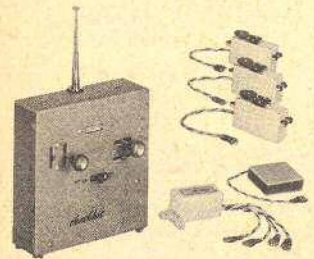
Ideal for R/C newcomers. Perfect for model cars, boats, small planes and gliders, the GD-57 System gives you a powerful 500 mW transmitter with factory-assembled and aligned RF section, safety switch lock and trim control that leaves sticks centered; miniature receiver with ceramic IF filters and rugged nylon case; nickel cadmium batteries (GDA-19-3 for receiver); two standard servos (GDA-19-4).

Kit includes all cables, connectors and charging cord.

System Kit GD-57, specify frequency (same as GD-19) 8 lbs., mailable **129.95**

Kit GDA-57-1, transmitter, battery, charging cord; specify frequency desired, 5 lbs., mailable .. **54.95**

Kit GDA-57-2, receiver only, specify freq., 3 lbs., mailable **34.95**



Heathkit servo simulator

Replaces transmitter and receiver for making servo adjustments — just plug in servo — runs from either optional internal battery or 120 VAC line. Can also be used to charge both receiver and glow plug batteries from 120 VAC line. Kit GD-206,

2 lbs., mailable **19.95**

Kit GDA-19-3, receiver battery pack only; 1 lb., mailable .. **9.95**

Heathkit "Thumb" Tach

Two rpm ranges: 0-5000, 0-25,000. Ideal for needle valve adjustments, selection of glow plugs, gears and props — permits peaking engine for rpm change you can't hear.

Kit GD-69, 2 lbs., mailable **19.95**



Veco .19 Engine

For R/C-car side-winder mounting. Has solid aluminum hemispherical head, coupled exhaust/intake throttle control linked to carburetor for smooth idle. Includes glow plug.

Assembled GDA-101-2, 1 lb., mailable .. **29.95**

The Heathkit Spectre

Kit includes snap-on high-impact body, chassis, coil-spring suspension (independent at front wheels), wheels and special formula rubber locking tires, fuel tank, oil-proof, dustproof R/C equipment case, 5.5:1 gears, axles (adjustable for caster and toe-in at front), servo linkages, all hardware, decals.

Kit GD-101, R/C car only, 11 lbs., mailable **29.95**

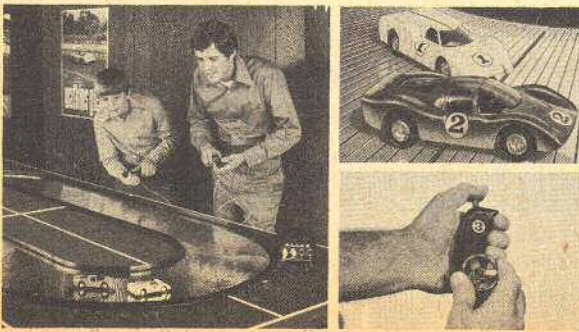


Heathkit 1/32 "slotless" raceway

Each car is driven by two motors, one for each rear wheel. Each motor has its own control circuit, which responds to only one specific frequency. Control signals originate in the control handle plugged into the power supply, which in turn sends independent signals through the track to the cars via brush contacts underneath the vehicles. When the steering wheel on the controller is turned, it slows the motor at one wheel while speeding up on the other, causing the car to turn. The throttle control increases the speed of both motors simultaneously for acceleration. Each car and controller combination has its own specific frequencies, assuring independent operation of all cars (up to 4) on the track. Kit includes enough track for an 8' x 4' oval with guard rails. Power transformer that can be wired for either 110 or 220 VAC household current with plug-in jacks for up to 4 controller handles. Two cars (Ferrari and Ford J). Two hand-grip controllers with identification decals to match cars.

Kit GD-79, 23 lbs., mailable **129.95**

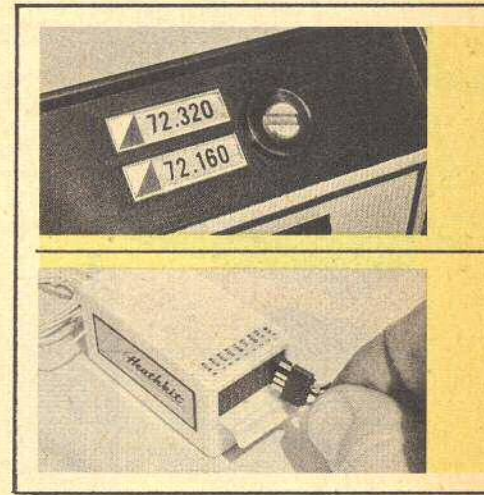
Kit GDA-79-1, one extra car, controller and frequency module, 3 lbs., mailable **21.95**



Build 8-Channel control into Heathkit single or



**NO MONEY DOWN
UP TO 2 YEARS TO PAY**
See Order Blank



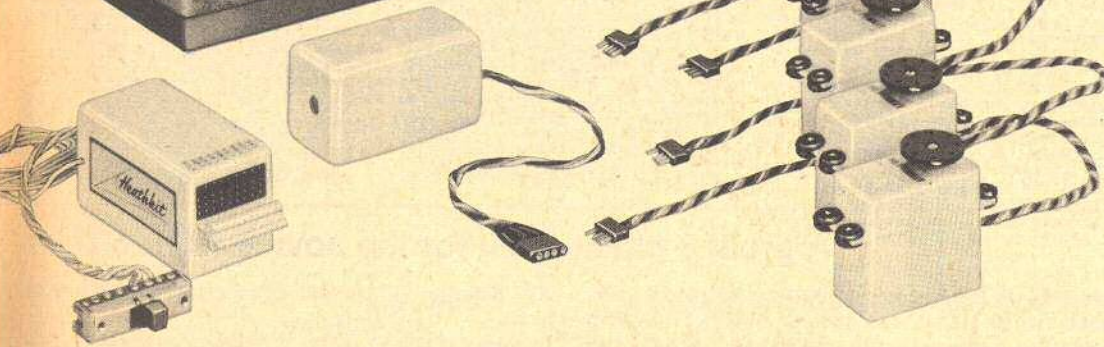
**Buy the system . . .
SAVE \$34.70**

Special system price: Order GDA-405-S Single Stick Transmitter with GDA-405-2 Receiver, GDA-405-3 Battery Pack, any combination of four GDA-405-4 Miniature Servos or four GDA-505-4 Sub-Miniature Servos.

269⁹⁵

**Includes all batteries
(up to \$39 retail value)**

NO MONEY DOWN



If you are into RC modeling, Heathkit-building is a natural extension of your hobby. It gives you the top-quality electronics — to pull the maximum performance from your models — at low kit-form prices. Literally thousands of the RC fraternity use Heathkit systems. And these great new 8-channel rigs are bound to bring many more into the ranks.

The Heathkit GD-405 series transmitters put eight independent channels in a package no larger than most 4-channel units. An exclusive Heath-designed IC encoder in the transmitters and 8-channel decoder IC in the receiver keep the size and weight to a minimum — while substantially increasing reliability. Now you can choose between single or dual-stick proportional control! Both are housed in blue-vinyl-covered extra light aluminum cases with telescoping antenna. This clean, thin-profile design — uncluttered by exposed fastenings — now gives you high-style electronics to complement your most beautiful model. And there are special system prices for both new transmitters when ordered with receiver, battery pack and your choice of four Miniature or Sub-Miniature Servos. Each system includes all inter-connections and batteries.

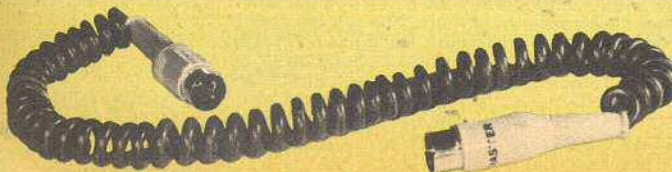
The new GDA-405-S Single-Stick Transmitter provides one-hand simultaneous control of three independent channels. The stick utilizes a gimbal coupling to actuate two functions, while the third is controlled by the return-to-center knob at the top of the stick. The GDA-405-D Dual-Stick Transmitter provides two-hand control of four

independent channels. A friction adjust permits removing the spring from one function at each stick to retain the control in any desired position. And both transmitters have positive trim adjust tabs for neutralizing channel action without effecting stick position. A relative power meter monitors radiated signal.

Secondary controls common to both 8-channel transmitters include: A two-position switch that's perfect for landing gear; finger adjust tabs for any auxiliary functions you have in mind. But that's just the beginning.

Each transmitter is equipped with two coin-switch selected adjacent channels (except when 75.640 is specified). Trainer jacks accommodate the new Heathkit Trainer Link (shown below left) for inter-connecting two transmitters for beginner training purposes. A master pushbutton puts the student in command, releasing the button gives full control back to the instructor. Internal circuitry and an external jack let you charge both the transmitter battery and the receiver battery pack simultaneously with no more than an inter-connecting line cord and 120 VAC source. Eight range controls, one for each channel, provide a method of adjusting servo travel for a given amount of transmitter control movement.

The new GDA-405-2 super lightweight receiver has been given the same exacting attention to detail. Weighing in at a mere 2.5 ounces, it has its own on-off switch, features an external two-channel fre-



New Heathkit Trainer Link

Six foot coiled cord connects two GDA-405 Transmitters for in-flight instruction. Automatically makes one unit "master" with override capability, the other a "slave".

GDA-405-6, 1 lb., mailable 7.95

your RC model with new dual-stick systems



**NO MONEY DOWN
UP TO 2 YEARS TO PAY**
See Order Blank

Unmistakable channel identification

A complete set of frequency identification decals is supplied with each GD-405 series Transmitter. The coin slot frequency selector switch on the transmitter makes it impossible to accidentally actuate adjacent channel.

Hook-up's easier, neater than ever

The newly-designed 8-channel connector block on the GDA-405-2 receiver is built right into the case. In-line connectors that add weight and clutter to your model are a thing of the past.

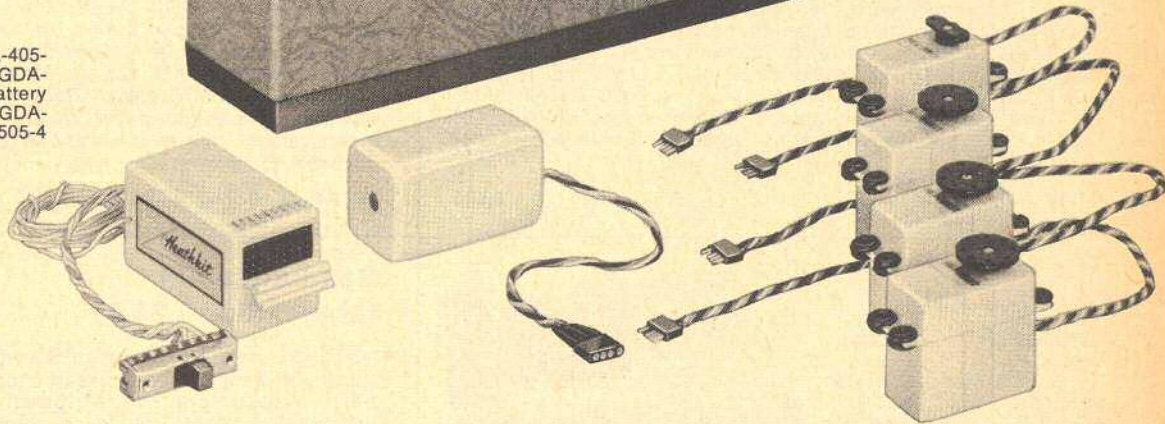
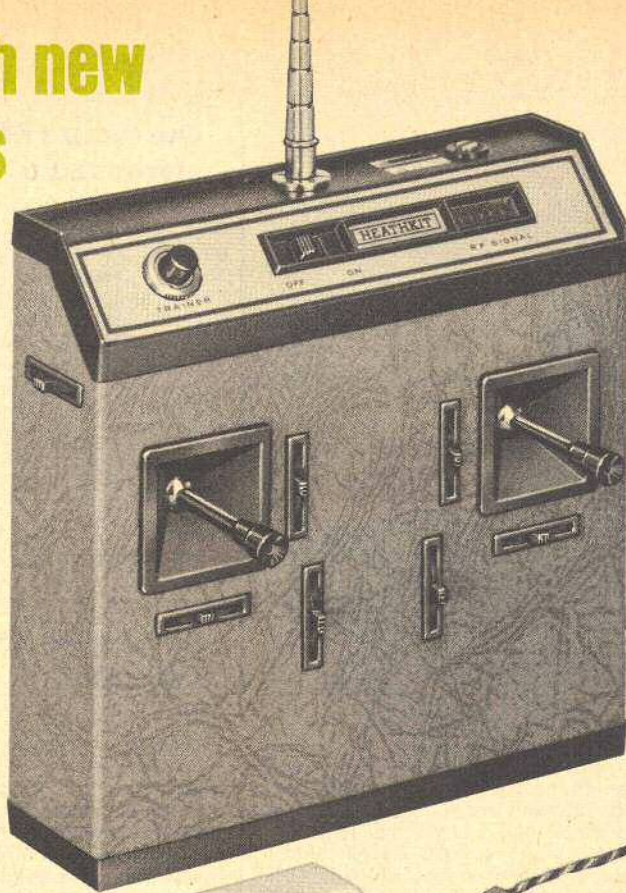
Buy the system . . . SAVE \$34.70

Special system price: Order GDA-405-D Dual-Stick Transmitter with GDA-405-2 Receiver, GDA-405-3 Battery Pack, any combination of four GDA-405-4 Miniature Servos or GDA-505-4 Sub-Miniature Servos.

249⁹⁵

Includes all batteries
(up to \$39 retail value)

NO MONEY DOWN.



quency switch, plus a newly designed internal connector block to take the wasted space and time out of servo and battery hookups.

When ordering either GD-405 system, you may select either Heathkit GDA-405-4 Miniature Servos or Heathkit GDA-505-4 Sub-Miniature Servos. With receiver, battery pack and four miniature servos airborne weight is 13.3 oz. Substituting four Sub-Miniatures brings system weight down to 11.3 oz.

For the man who wants 8-channel flexibility, the Heathkit GD-405 RC Systems are unquestionably the most exciting rigs we've ever offered. And at build-it-yourself Heathkit prices, they're the best buy too.

Kit GDA-405-S, single stick transmitter only, 4 lbs., mailable . . . **139.95**

Kit GDA-405-D, dual stick transmitter only, 5 lbs., mailable . . . **119.95**

Kit GDA-405-2, receiver only, 1 lb., mailable **54.95**

Kit GDA-405-3, receiver battery pack only, 1 lb., mailable **9.95**



Heathkit GD-405 transmitters sport super-thin profile cases, with a heft and feel that make for hours of fatigue free flying. The removable back panel lets you get at everything for quick adjustment in the field.

GDA-405-4, one miniature servo only, 1 lb., mailable **24.95**
GDA-505-4, one sub-miniature servo only, 1 lb., mailable **24.95**

GDA-405-S & GDA-405-D SPECIFICATIONS — TRANSMITTER — RF carrier frequency: Crystal controlled on 27 MHz, 53 MHz, and 72 MHz. **Frequency stability:** Within $\pm 0.005\%$ on 27 MHz band. Within $\pm 0.002\%$ on 53 and 72 MHz bands. **Temperature range:** 0 to 160 degrees F. **RF output circuit:** Pi network. **RF input power:** 500 mW Min. **Modulation:** On-Off carrier keying. **Approx. current drain:** 100 mA on all bands. **Controls:** Eight channels, four with trim. On-Off switch. Frequency selector switch. Trainer push button. **Power Supply:** Internal 9.6V 500 mA nickel-cadmium battery. Rechargeable simultaneously with receiver battery at 35 to 400 mA from 120 volt power line. **Dimensions:** 7" H x 7" W x 2" D. **Net weight:** w/battery, 2 3/4 lbs.

GDA-405-2 SPECIFICATIONS — RECEIVER — Local oscillator operating frequency: Crystal controlled on 27 MHz, 53 MHz and 72 MHz. **Frequency stability:** .003% on 53 and 72 MHz bands. **Temperature range:** 0 to +160 degrees F. **Sensitivity:** 5 μ V or better. **Selectivity:** 6 dB down at \pm kHz; 30 dB down at \pm 9 kHz. **Current Drain:** 10 mA. **Intermediate frequency:** 453 kHz. **Power supply:** 4.8 V Battery Pack GDA-405-3. **Controls:** ON-OFF switch. Frequency selector switch. **Dimensions:** 1 3/2" H x 1 3/4" W x 2 1/4" D. **Net weight:** 2.5 oz.

GDA-405-3 SPECIFICATIONS — RECEIVER BATTERY — Type: Nickel-cadmium. Rechargeable simultaneous with the transmitter batteries at 35 to 40 mA from 120 V power line. **Voltage:** +2.4 V and +4.8 V outputs. **Current rating:** 500 mA hours. **Dimensions:** 1 1/4" H x 1 1/4" W x 2 3/4" D. **Net weight:** 3.8 oz.

GDA-405-4 SPECIFICATIONS — Input signal: Pulse 1-2 msec wide, 4 V P-P. **Thrust:** 3 lbs. at rack; 24 in./oz. at rotor. **Travel time:** 0.6 sec. **Linear output travel:** 1/2" end to end. **Rotary output travel:** 90° rotation. **Temperature range:** 0°-160° F. **Power requirements:** Battery - 4.8 VDC, idle current - 15 mA. **Stall current - 450 mA.** **Gear train backlash:** Less than .002". **Mechanical output:** 1 rotary arm; 1 rotary wheel; 2 linear racks. **Position accuracy:** 1.0%. **Dimensions:** 1 5/8" H x 7/8" W x 2 1/2" L (length includes mounting ears; height includes outputs). **Net weight:** 1.75 oz.

GDA-505-4 SPECIFICATIONS — Input signal: Pulse, 1-2 msec. wide; 4 V, P-P. **Thrust:** 3 lbs. at rotor. **Rotary output travel:** 90° rotation. **Temperature range:** 0°-160° F. **Power requirements:** Battery, 4.8 V CT; idle current, 15 mA maximum; stall current, 450 mA nominal. **Gear train backlash:** Less than .002". **Mechanical output:** 1 large rotary arm, 1 small rotary arm, 1 offset rotary arm, 1 rotary wheel. **Position accuracy:** 1.0%. **Dimensions:** 1 7/8" H x 3/2" W x 1 7/8" L (length includes mounting ears, height includes the outputs). **Net weight:** 1.25 oz.

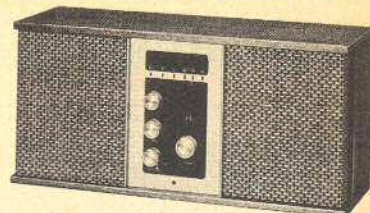
FREQUENCY COMBINATIONS AVAILABLE — Adjacent channels: 27 MHz: 26.995/27.045, 27.095/27.145, 27.145/27.195, 53 MHz: 53.1/53.2, 53.3/53.4, 53.4/53.5, 72 MHz: 72.08/72.24, 72.16/72.32, 72.40/72.96. Available only as single channel: 75.640.

No money down on any kit — up to 2 years to pay — see order blank for details.

Heathkit home-made entertainment for the family



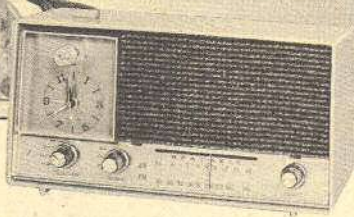
Our deluxe FM stereo radio . . . 69.95



This two or three evening kit makes a great family project. Automatic frequency control provides drift-free tuning. High 5 uV sensitivity delivers impressive station-pulling power. Automatic switching to stereo and stereo indicator light provided. Adjustable phase control for maximum stereo separation. Two 5 1/4" wide-range speakers and 2 1/2 watts (EIA) of audio provide life-like stereo reproduction. Adjustable tone control allows you to vary the sound to suit your taste, from deep, rich bass to clean, natural highs. Assembled & aligned front end for better performance, easier assembly. Attractive walnut finish wood cabinet included blends easily with any decor. Measures just 9 1/4" H x 19" W x 6 1/2" D.

Kit GR-36, 24 lbs., mailable 69.95

Solid-state AM/FM clock radio . . . 49.95



Our most versatile clock radio. And the kit goes together in two or three evenings' time. "Snooze Alarm" wakes you to music in the morning, 10 minutes before the alarm goes off. Enjoy the clear, bright sound of FM, or news & weather on AM with just a turn of a knob. Auxiliary clock-controlled 120 watt socket on rear panel for perking coffee in the morning. Backlighted clock dial for easy reading at night. Built-in AM & FM antennas. AGC on AM; AFC on FM. Compact powder blue cabinet measures just 5 3/8" H x 10" W x 4 7/8" D. Color coordinated grille cloth supplied or custom design your own.

Kit GR-58, 6 lbs., mailable 49.95

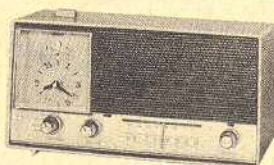
Solid-state AM/FM table radio . . . 39.95



What better way to learn what Heathkit-building is all about? Everything mounts on one roomy circuit board, and final adjustment is simple thanks to the prealigned and assembled tuner. Delivers the clear, refreshing sound of FM . . . news, weather & "pop" sound of AM. AFC on FM for drift-free tuning . . . AGC on AM keeps volume constant. Built-in AM & FM antennas for better reception. Back-lighted dial for easy reading in the dark. Avocado green cabinet with matching grille cloth or design your own grille. 5 1/4" H x 10" W x 4 7/8" D.

Kit GR-48, 5 lbs., mailable 39.95

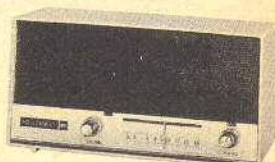
Solid-state AM clock radio . . . 32.95



Get it all together in two entertaining evenings. Features "Snooze Alarm" that wakes you up with music ten minutes before the alarm goes off. Auxiliary rear panel clock-controlled 1200 W socket ideal for perking coffee, turning lights on. Back-lighted clock dial is easily read at night. High sensitivity, extra untuned RF stage and built-in antenna. AGC provides constant volume under varying signal conditions. Attractive coral cabinet with matching grille . . . or add your own grille. Compact . . . 5 3/8" H x 10" W x 4 7/8" D.

Kit GR-38, 6 lbs., mailable 32.95

Solid-state AM table radio . . . 24.95



Build it in one or two evenings. Seven-transistor, 3-diode circuit assures top performance, long life. Automatic gain control keeps volume constant. Ferrite rod antenna, extra untuned RF stage and high sensitivity for excellent reception. Husky audio output to the big 3x5" speaker for clean, natural sound. Full wave transformer power supply eliminates annoying line hum. Styled in handsome gold & brown with matching grille cloth supplied . . . or design your own to match drapes or carpet. An excellent "first" kit . . . easy, enjoyable with the famous Heathkit manual. Measures 5 1/4" H x 10" W x 4 7/8" D.

Kit GR-28, 5 lbs., mailable 24.95

Build additional security into your home

Early-Warning Receiver Alarm. For use with the Heathkit Fire Detector/Transmitter and Utility Transmitter to alert your family to intrusion, fire, freezing, power failure, etc. Emits piercing tone to raise the soundest sleeper. Has "fail-safe" continuously charged nickel-cadmium battery to trigger alarm in case of power failure.

Kit GD-77, 4 lbs., mailable 49.95

Fire detector/transmitter triggers Receiver Alarm upon detecting very low density smoke or 133°F. heat. "Fail-safe" circuit, adjustable smoke sensitivity. Remote heat sensors can be added.

Kit GD-87, 4 lbs., mailable 49.95

Utility transmitter accepts any switch or sensor that produces a closed circuit, such as Heathkit GDA-97-1 miniature magnetic-reed switch or GDA-97-2 miniature micro switch for doors and windows, or GDA-97-3 133°F. heat sensor switch. "Fail-safe" circuit.

Kit GD-97, 3 lbs., mailable 35.95

GDA-97-1, 1 lb., mailable 1.80

GDA-97-2, 1 lb., mailable 2.00

GDA-97-3, 1 lb., mailable 2.25



Heathkit Workshops let youngsters learn by doing

Heathkit Electronic Workshops take a simple modular teaching approach to basic electronic circuitry. First, the child becomes familiar with the "hardware" and language of electronics by mounting transistors, resistors, capacitors, etc. into specially designed component modules marked with the proper schematic symbols. Now he's ready to build actual working circuits by snapping the modules onto the working platform, then making connections with the pre-cut plug-in wiring supplied. There's no soldering required. The extra-large, fully illustrated manual guides the novice every step of the way — showing him how to build circuits and, more important, why they work. And every project can be taken apart and rebuilt as often as the youngster desires.

The Electronic Workshop "36" has 36 interesting and educational experiments: continuity tester, 1½-volt battery tester, 6-volt battery tester, transistor tester, wheatstone bridge, diode tester, capacitor bridge, code flasher, timing device, earphone code oscillator, rain alarm, electronic flasher, metronome, sound level meter, public address amplifier, siren, loudspeaker code oscillator, experimental multivibrator, electronic organ, capacity switch, field strength meter, two-transistor receiver, three-transistor receiver, code transmitter, voice transmitter, light meter, listening device, intercom, electronic target hit alarm, light sensing alarm, L.D.R. flasher, L.D.R. oscillator, voice indicator, four-transistor receiver, automatic radio, burglar alarm. Kit includes master and remote control consoles, four working platforms, parts and components for 36 different experiments.

Kit JK-1033, 11 lbs., mailable 29.95

The Electronic Workshop "25" includes master control console, three working platforms, parts and components for twenty-five different experiments: continuity tester, 1½-volt battery tester, 6-volt battery tester, transistor tester, wheatstone bridge, diode tester, capacitor bridge, code flasher, timing device, earphone code oscillator, rain alarm, electronic flasher, metronome, sound level meter, public address amplifier, siren, loudspeaker code oscillator, experimental multivibrator, electronic organ, capacity switch, field strength meter, two-transistor receiver, three-transistor receiver, code transmitter, voice transmitter.

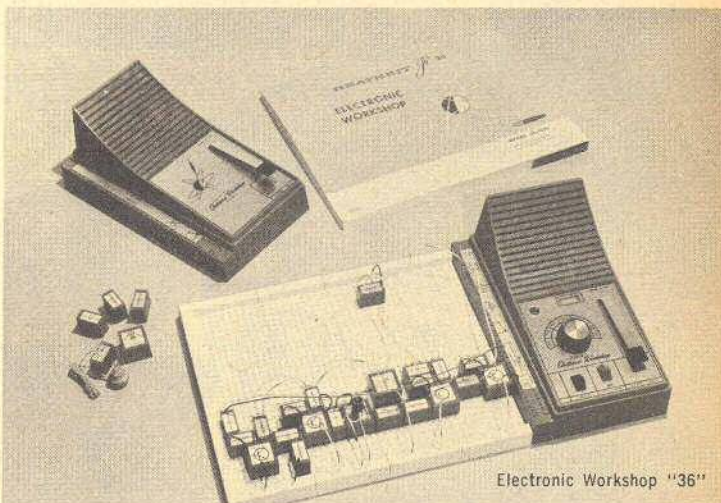
Kit JK-1022, 8 lbs., mailable 24.95

The Electronic Workshop "12" includes master control console, two working platforms, parts and components for twelve different experiments. Continuity tester, 1½-volt battery tester, 6-volt battery tester, transistor tester, wheatstone bridge, diode tester, capacitor bridge, code flasher, timing device, earphone code oscillator, rain alarm, and electronic flasher.

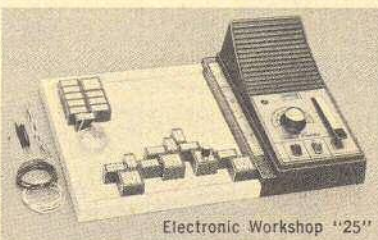
Kit JK-1011, 6 lbs., mailable 19.95



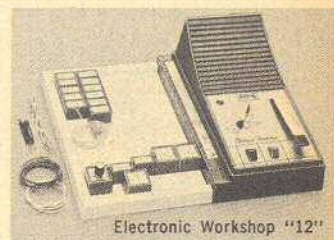
Actual components mount inside modules carrying the component's schematic symbol.



Electronic Workshop "36"

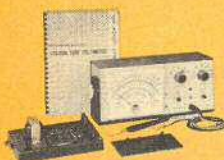


Electronic Workshop "25"



Electronic Workshop "12"

These Heathkit/courses serve students of all ages



How to understand & use your VTVM. Theory & applications of the VTVM. Power supply & text lets you learn-by-doing. For beginner or professional.

Kit EF-1, text & power supply (for VTVM owners), 3 lbs., mailable 10.95

Kit EF-1-5, includes EF-1 and IM-18, 13 lbs., mailable 39.95

Kit EF-1-6, includes EF-1 and IM-28, 15 lbs., mailable 49.95

Manuals Only for EF-1, (single copy) 5.00; (10 or more) ea. 3.00



How to understand & use your oscilloscope includes experimental chassis for constructing many different circuits. Change circuits as desired . . . special solderless spring-clip connectors. Large 150-page textbook for future reference.

Kit EF-2, text, special chassis & parts, 4 lbs., mailable 11.95

Manuals Only for EF-2, (single copy) 5.00; (10 or more) ea. 3.00

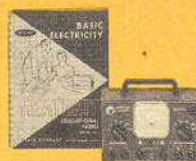


How to understand & use your signal generator. Text covers theory, and use of RF and AF generators. Textbook a valuable reference.

Kit EF-3, text, test chassis & parts, 4 lbs., mailable 14.95

Kit EF-3-2, includes EF-3 and IG-102, 17 lbs., mailable 44.95

Manuals Only for EF-3 (single copy) 5.00; (10 or more) ea. 3.00



Basic electricity kit/course. Learn about electricity and electronic theory, do interesting experiments to demonstrate principles, and you build a handy DC volt-ohm milliammeter.

Kit EK-1, 4 lbs., mailable 24.95



Basic radio — 2 parts kit/course. Start by building a simple crystal receiver . . . improve it chapter by chapter. Result: a regenerative tube-type receiver! In Part II you learn more advanced circuits and build a 2-band superheterodyne receiver. Requires EK-1 meter or equivalent . . . EK-2A required for completion of EK-2B.

EK-2A, part I, 7 lbs., mailable 21.95

EK-2B, part II, 5 lbs., mailable 21.95

AK-8, cabinet for radio, 3 lbs., mailable 3.95



Basic transistors kit/course. Simple, thorough introduction to solid-state electronics. No difficult math involved. Builds a handy two-station intercom.

Kit EK-3, 4 lbs., mailable 21.95

No money down on any kit — up to 2 years to pay — see order blank for details.

Heathkit Solid-State Ignition Analyzer



the heart of a great tune-up team that helps you detect ignition problems like a pro

Simple step-by-step instructions will guide you through the complete assembly of the Heathkit Ignition Analyzer in as little as three evenings. And the comprehensive operational instructions help you track down even the most elusive auto ignition problems in practically any engine...in the shop or on the road. The Heathkit CO-1015 Ignition Analyzer can be used with any standard, transistorized or capacitive discharge system on three, four, six or eight-cylinder engines to detect shorted spark plugs, bad points, defective wiring, worn distributor parts, incorrect dwell time, coil, condenser or transistor or CD circuitry problems.

129⁹⁵

BUILT IN TACH AND CONSTANT SWEEP PATTERN

An added convenience feature in the CO-1015 is a built-in tachometer on the front panel with 0 to 1000 and 0 to 5000 ranges, allowing you to make carburetor adjustments at the same time the ignition system is being checked. Another feature is the constant pattern width circuitry, which means there is no need for you to continually readjust the sweep width for changes in rpm. You simply set the sweep or pattern width once...and the specially-designed circuitry holds it constant throughout the servicing procedure. Convenient front-panel controls give you selection of four different patterns — primary or secondary, in either parade or superimposed displays. And you can expand the views for more detailed analysis through horizontal expansion of 10 to 1 and vertical expansion of 2 to 1. Manual shows typical tell-tale patterns for various ignition conditions.



ON-THE-ROAD TESTING CONVENIENCE

The optional Heathkit inverter shown at left can be mounted permanently to the rear panel of the analyzer and, with the cigar lighter adapter, gives you on-the-road testing capability of the vehicle under load. Whether you're a pro or a part time mechanic, you'll find the CO-1015 Ignition Analyzer an invaluable trouble-shooting tool. Order yours today.

- Kit CO-1015, 22 lbs., mailable 129.95
- Kit COA-1015-1, 4 lbs., mailable 24.95

CO-1015 SPECIFICATIONS — Power Requirements: 120/240 50/60 Hz, 16 W. RPM Range: 400-5000. Cylinders: 3, 4, 6 or 8. Ignition Systems: Standard Transistorized or Capacitive Discharge. Displays: Parade or superimposed on both primary and secondary waveforms. Vertical Expand: Approx. 2 to 1. Horizontal Expand: Approx. 10 to 1. Sweep Length: (Referenced to Calibrate Position) ±5% over entire RPM range. Intensity: Fixed. Presets: Focus, Astigmatism, Trigger Adjust, Tac Cal. Connection Cables: 12' pick-up clamp; ground and secondary clip leads extend 2' beyond pick-up clamp. Front Panel Controls: Vertical Position; Vertical Expand (Pull Vert. Pos.); Horizontal Expand; Horizontal Position; Parade/Superimposed (Pull Horiz. Pos.); Power On/Off; Function Switch — Standard ignition primary, secondary; Calibrate; Capacitive Discharge primary, secondary. Tac Hi/Lo. Tac 6/8 cyl. (pull Horiz. Exp.). Tachometer: 0-1000 RPM, 0-5000 RPM ±5% of full scale. Dimensions: 7" H x 10½" W x 17½" D.



Complete set of cables supplied with kit for all testing procedures.



Optional power inverter mounts on rear panel for convenient on-the-road testing capability.

Heathkit Solid-State Timing Light

You can build this completely self-contained Heathkit Timing Light in a couple of hours. It provides a high intensity flash that won't wash out even in direct sunlight. And a high-impact focusing lens concentrates the light beam for even more accurate ignition set up. Just connect one cable to the car's battery, the other cable to the number one spark plug. An adapter is included for distributor cap hook-up. The rugged, charcoal green, high-impact plastic housing resists oil, gas and corrosion...and protects you from electrical shock. Other features include circuit protection against damage from reversing polarity and a built-in calibrator. The manual includes complete operational instructions. Order yours today.

- Kit CI-1020, 3 lbs., mailable 19.95

CI-1020 SPECIFICATIONS — Useful light range: Up to 2 feet in daylight. Engine speed range: Full flash brightness up to 2000 rpm. Operation above 2000 rpm should be intermittent only. Triggering requirements: Direct connection to number one spark plug of engine ignition system. Connecting cables: Battery cable with clips (7 feet). High voltage cable with clip (5 feet). Adapter/connector: Connects to either a spark plug or distributor. Power requirements: Automotive storage battery or separate 15 volt DC power supply. Size: 6½" H x 10" L x 2" W.



Ideal beginner kit

19⁹⁵

Nothing beats the personal satisfaction of assembling your very own Heathkit product

Heathkit Three-in-one Tune-up Meter

...assembles in an evening!

29⁹⁵



here's the auto test instrument that's a "natural" for the first-time kit builder/car buff

The famous Heathkit assembly manual with clear, concise check-by-step instructions, and an evening of your spare time puts together this top-quality automotive test instrument. No car buff, "do-it-yourselfer" or professional alike, should be without this convenient and useful addition to his tune-up tool collection. The Heathkit ID-29 is three automotive test instruments in one. Measures dwell on all 4-cycle 3, 4, 6 or 8 cylinder engines with conventional (not solid-state) ignitions (0-20 degrees depending on number of cylinders). Has two rpm scales — 0-1500 and 0-4500. Analyzes DC voltage from 0 to 15 volts. Operating the ID-29 is as simple as connecting two leads, with auto engine providing both signal and power. There's no need to reconnect probes to change from dwell to rpm measurement.

The Heathkit ID-29 features versatile operation, portable convenience and accurate performance. It can be used on both 6 and 12 volt systems without changing leads, can be operated day to day on engine after engine without recalibration. Stable solid-state circuitry assures accuracy within 3%. And the Heathkit 3-in-1 Tune-Up Meter is completely portable, too, enclosed in a rugged unbreakable case that's unaffected by water, oil, gasoline and most acids.

Kit ID-29, 5 lbs., mailable 29.95

ID-29 SPECIFICATIONS — Dwellmeter: Four direct reading scales; 8 cyl. — 0-45 degrees; 6 cyl. — 0-60 degrees; 4 cyl. — 0-90 degrees; 3 cyl. — 0-120 degrees. Tachometer: Two RPM ranges; Low range — 0-1500 RPM; High range — 0-4500 RPM. Voltmeter: Direct reading scale, 0-15 VDC. Power requirements: 10 mA approximate average current. Meter: 4½", 1 mA (100 degree movement). Accuracy: ±3% of full scale. Dimensions: 4¼" H x 8½" W x 7¼" D (including handle).



SYMPTOMS OF IMPROPER CONNECTIONS:

1. Erratic readings on Dwell or Tach
2. Low or no reading on Dwell or Tach
3. Meter pointer moves to left of zero on Volts.
4. Erratic and high readings on Dwell

POSSIBLE CAUSES:

- A. Reversed connections.
- B. In Tach or Dwell, one lead connected to engine or system ground.
- C. Combination of above.

An easy-to-understand illustration, showing proper connection both positive and negative ground systems, is located inside the snap-down top of the Heathkit Three-in-one Tune-up Meter.

The Hanson Basic Auto Tester Set



12.95

The Hanson basic tester set brings you four fundamental tools used in all automotive tuneup work. Set includes Model 1604 Remote Starter Switch with push button and long leads for under the hood starting; Model 1605 Compression Tester that reads 0-300 lbs., has 15° offset to reach back cylinders; Model 1606 Vacuum/Fuel Pump Tester with 2½-in. three-color dial, calibrated 0-30 inches for vacuum and 0-7 lbs. for pressure; Model 1603 Engine Timing Light with molded plastic case, long leads and rubber covered connections. Send for this handy set, today.

GFP-83, 2 lbs., mailable 12.95

Heathkit Solid-State Tachometer... 29.95

Less Case

Wide angle 250° edge lighted dial with white indicator, adjustable pointer, non-scratch glass face. Available with black and chrome case, or for panel mount. Triggers from breaker points or inductive pickup.

Kit MI-18-1, panel model, 3 lbs., mailable 29.95
 Kit MI-18-2, with case, 3 lbs., mailable 32.95

MI-18 SPECIFICATIONS — Trigger Sensitivity (Minimum Requirements): Pickup Coil, 25 mA peak, 5 μs rise time. Tach Connection: 30 V negative pulse, 20 μs rise time. Meter Range: 0-6000 r/min, or 0-9000 r/min. Engine Capability: 1 to 6 cyl., 2 cycles; 2 to 8 cyl., 4 cycles. Accuracy: ±3% at calibrating temperature (when calibrated at full scale). ±5% from 0° F. to +120° F. Power Requirements: 10.5 to 17.5 V DC, 25 mA at 12 V DC, 125 mA with lamp. Dimensions: Model MI-18-1: 3¾" overall face diameter. Mounts in 3¼" hole, 2¼" overall case depth. Model MI-18-2: 3¾" overall face diameter, 4¼" high, 3" overall case depth.



Inductive pick-up coil snaps easily into place on coil wire when points are inaccessible.

Heathkit 10-amp Automatic Battery Charger

29⁹⁵



You can build the Heathkit GP-21 Battery Charger in an evening. It's completely automatic, virtually foolproof, and ideal for motorists, boaters, campers and farmers. Simply won't overcharge, no matter how, or how long it's hooked up. Just plug it into a convenient 120 VAC outlet and hook up the terminal cables. When battery voltage reaches 13.4 volts (full charge), the GP-21 shuts itself down, maintaining just enough current through the battery to compensate for internal leakage. And you can leave the cables connected indefinitely — for weeks or months. There's no charge-rate selector, so amperage can't be set too high or too low. The GP-21 automatically senses the condition of the battery and continuously adjusts to the needs of the cells. A lifesaver for any 12-volt battery, the GP-21 will not start up unless it's correctly connected, ending ruined batteries because of reversed cables and "hot", sparking cables. Order yours now.

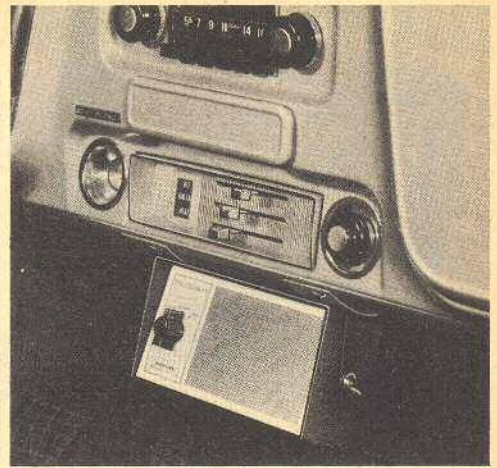
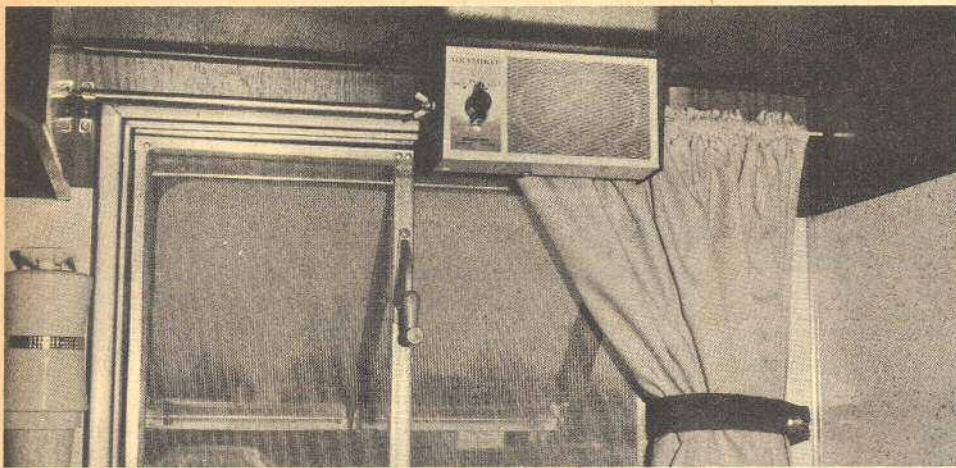
Kit GP-21, 13 lbs., mailable 29.95

GP-21 SPECIFICATIONS — Charge rate: 10 amperes maximum at 120 VAC line, decreasing to leakage rate of battery. Output voltage: Between 13.2 VDC and 13.6 VDC depending on battery condition. Power requirements: 105-130 VAC, 60 Hz, 200 watts maximum (at 10 amperes charge rate.) Dimensions: 5½" H x 9" W x 6¾" D.



Ideal beginner-kit

No money down on any kit — up to 2 years to pay — see order blank for details.

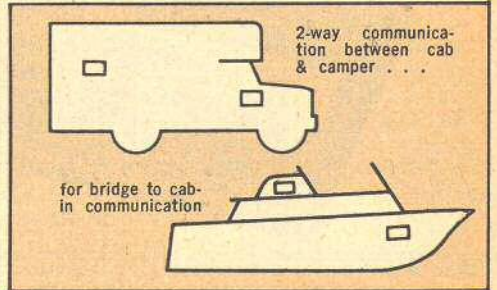


Heathkit "Mobilink" Cab-to-camper Intercom . . . 25.95

You can build this convenience-kit in as little as one evening . . . and enjoy the safety and convenience of 2-way mobile communication aboard your RV, season after season. Mobilink is great for boats, too, or any application where 12-volt, 250 milliamp DC power is available. Three-position switch at the cab-mounted master selects "Standby", "Talk" and "Monitor" functions. In "Standby" mode, it is open to receive calls from the remote unit. To initiate a call, the driver turns and holds the knob in the spring-loaded "Talk" position. Turning the indicator to "Monitor" enables those in the cab to listen to the remote for baby-sitting purposes. The camper-mounted remote also provides "Standby" and "Talk" settings as well as a "Radio" position which permits use of the intercom as a remote speaker connected directly to the cab radio. The GD-160 Mobilink kit includes both intercoms, brackets for horizontal or vertical mounting, 15-ft. connecting cable. An optional quick-disconnect plug permits unhitching camper or trailer without disturbing intercom wiring.

Kit GD-160, 5 lbs., mailable 25.95
 GDA-160-1, quick-disconnect plug, 1 lb., mailable 2.50

GD-160 SPECIFICATIONS — Number of Stations: Two; one master and one remote. Controls — Master Unit: Three-position function switch: Std. by, Monitor, and Talk. Gain control; accessible through rear of cover. Controls — Remote Unit: Three-position function switch: Radio, Std. by, and Talk. Circuit: Transistor 3-stage class A amplifier. Speaker/Microphone: 25 ohm nominal, 3" x 5" weather resistant. Power Output: 1 watt. Interconnecting Cable: 5-conductor (fifteen feet furnished). Power Requirements: 13.2 volts DC at 250 milliamperes. Dimensions: Unit Size, 3 7/8" H x 7 3/4" W x 3" D. Required Mounting Area: 4" H x 8 3/4" W x 3 3/4" D.



Perfect kit for beginners



Optional quick-disconnect plug



Heathkit Siren/PA System . . . for emergency vehicles . . . 104.95

The Heathkit GD-18 Siren/PA System assembles in only two evenings . . . and offers you performance that compares with the best, at a fraction of the cost. Functions as an electronic siren at a full 55 watts, with adjustable

pitch. Functions as a PA system with 20 watts for booming voice communication. Functions as a radio call alert by letting you hear calls away from your vehicle. Choice of speakers, concealed or exposed horn. Concealed speaker requires 4 1/2" x 4 1/2" x 13" behind grille.

Kit GD-18, Siren/PA Amplifier, 6 lbs., mailable 59.95
 Assembled GDA-18-1, exterior horn, 10 lbs., mailable 49.95
 Kit GDA-18-2, concealed horn, 10 lbs., mailable 49.95
 GD-18A (GD-18 & exterior horn), 16 lbs., mailable 104.95
 GD-18B (GD-18 & concealed horn), 16 lbs., mailable 104.95

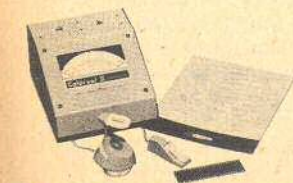


Heathkit 5-watt Citizens Band Transceiver . . . 89.95

Anyone can build this one and enjoy instant, reliable 2-way communication from car to car, home to office. The GW-14A offers you 23-channel capability with crystal-controlled reliability. Solid-state circuit provides

instant operation, long life, minimum battery drain. Draws only 0.75A in transmit mode, 0.12A on receive. Husky 3W RF minimum output for reliable communication over maximum range. 12 to 14 VDC operation.

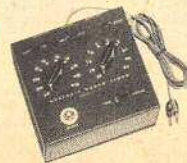
Kit GW-14A, 8 lbs., less crystals, mailable 89.95
 GWS-14A System: GW-14A plus 23 channel crystal pack, 9 lbs., mailable 159.95
 Kit GWA-14-1, AC power supply, 5 lbs., mailable 14.95
 GWA-14-2, 23 channel crystal pack, 1 lb., mailable 79.95



Heath/Mitchell Colorval II Computer . . . 99.95

Enlarger light passes through scan pack on top of probe, reflection of area under study is seen in small mirror. This spot is compared to adjustable neutral reference light around it, and rendered neutral by adjusting enlarger printing pack. Includes permanent scan filter, visual color-integrating scrambler, exposure probe, 35 mm test negatives, filter mosaics.

Kit PM-17A, includes color wheel, 8 lbs., mailable 99.95



Heathkit Electronic Photo Timer . . . 34.50

Provides you with accurate exposure control of all contact and enlarging operations. Two switch-selected ranges — up to 99 sec. in 1-sec. steps, 9.9 sec. in 0.1 sec. steps. Repeatable to 2%. AC outlets for enlarger and safelight.

Kit PT-15, 4 lbs., mailable 34.50

The Heathkit SB-650 Digital Frequency Display



179⁹⁵



another impressive "first" from the hams at Heath . . . to put you right on frequency everytime . . . and it assembles in as little as three evenings!

It promises to be the ham radio accessory that will bring your station into the computer age. The new Heathkit SB-650 is a digital frequency counter that counts the three different frequencies produced in your receiver, then computes and displays operational frequency to within 100 Hz accuracy. Six bright digital readout tubes show you exactly where you are as you tune across the 80 through 10 meter bands. You read kHz to five places, plus tenths of a kHz. And there's no bandswitching necessary on the SB-650 itself.

Compatible with Heathkit gear

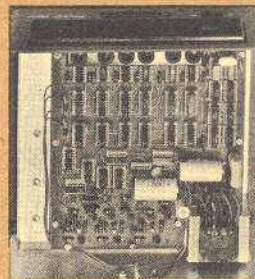
The SB-650 is designed to operate with all Heathkit SB-Series Receivers and Heathkit SB- or HW-Series Multiband Transceivers. When used with transceivers the counter calculates and displays both transmitted and received frequencies. Installation couldn't be simpler. The SB-650 manual fully describes and illustrates all interconnections necessary for the specific Heath gear you own. The addition of a Digital Frequency Display will in no way degrade your station's performance — and when teamed with budget equipment, such as the Heathkit HW-101, the SB-650 can give you pinpoint tuning accuracy to rival transceivers costing hundreds of dollars more!

Computer age circuitry

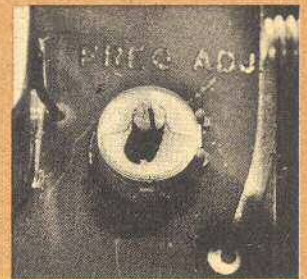
The Heathkit SB-650 has all solid-state circuitry with 35 ICs and six transistors. An IC voltage regulator protects the devices from failure due to overvoltage, a common problem with discrete regulators. A built-in "memory" assures non-blinking operation, plus there's a special circuit to minimize the last-digit jitter found in many low-cost counters.

Easy assembly

You can have your Heathkit SB-650 together in just 4-5 hours. All ICs and display tubes plug into sockets on the double-sided glass



Double-sided circuit board and extensive use of socket mounted ICs make assembly an enjoyable 4-5 hour project. Readout tubes are socket mounted, too.



Manual gives you step-by-step procedure for installation with your Heathkit receiver or transceiver. Unit computes received or transmitted frequencies by reading internal values at heterodyne oscillator, LMO and BFO.

epoxy board — and, since there are no tuned circuits, four easy internal adjustments are all that are needed to have your counter peaked up and ready to go.

Upgrade your station — now

Get your order in now for what is bound to be one of the most popular pieces of ham gear — and one of the nicest values — we've ever offered. The Heathkit SB-650 Digital Frequency Display will bring your station into the computer age with a true digital readout and circuitry providing unrivaled station-frequency accuracy and tuning convenience.

Kit SB-650, 9 lbs., mailable 179.95

SB-650 SPECIFICATIONS — Frequency range: 3-40 MHz (80-10 meters). Frequency display: 6 display tubes (kHz to 5 places, plus tenths of kHz). Maximum viewing distance: 30 ft. Maximum input signal: 5V rms. Accuracy: 100 Hz \pm 1 count. Compute time: 160 msec. Sensitivity: Adjustable. Input impedance: 2 k ohm. Internally generated spurious frequencies: Less than 0.25 μ V equivalent signal level. Crystal (clock) frequency: 1 MHz. Crystal aging rate: Approx. 10 ppm/yr. Ambient crystal stability: Approx. 10 ppm from +10 to +65° C. Ambient operating temperature: 0° — +40° C. Ambient storage temperature: -55° to +80° C. Power source: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 3 1/2" H x 10" W x 10" D.

No money down on any kit — up to 2 years to pay — see order blank for details.



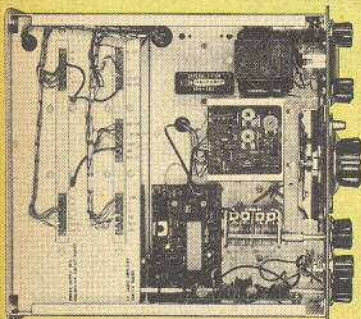
The maximum receiver from the hams at Heath

the Heathkit SB-303 has all the stability, selectivity and sensitivity you could look for in a solid-state receiver . . . plus an easy-assembly time of only eight evenings



If you're a General-through-Extra Ham, the Heathkit SB-303 delivers all the signal seeking capability you could possibly want, plus a complement of performance features most other receivers can only offer as a lengthy (and costly) list of options. The "303" brings you USB, LSB, AM, CW and RTTY, 80-10 meters; 15 MHz WWV reception; solid-state instant warmup, 100 Hz stability in 10 minutes, and superior tracking. The exclusive Heath LMO with 1 kHz dial readout is factory-assembled and aligned for peak performance and incredibly smooth linear tuning. And an RF attenuator lets you adjust sensitivity for optimum signal handling. Other standard features are complete SSB/CW transceive compatibility with the famous Heathkit "400" or "401"; three-position AGC (off, fast, slow); 25 kHz and 100 kHz crystal calibrator for spotting the new subbands; antenna & power connections for up to two VHF converters, with front panel switch eliminating need for changing cables; four spare sockets on rear panel for connecting a wide range of Heathkit station accessories. Compare the specs . . . then order your "303" today.

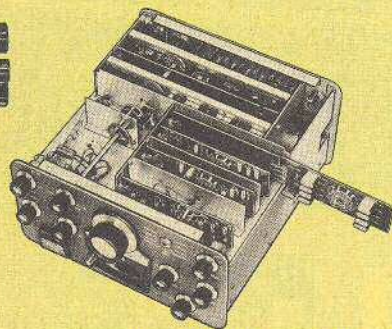
- Kit SB-303, 21 lbs., mailable **\$319.95**
- SBA-301-1, optional 3.75 kHz AM crystal filter, 1 lb., mailable . . **\$21.95**
- SBA-301-2, optional 400 Hz CW crystal filter, 1 lb., mailable . . **\$22.95**



Plug-in bandswitch, power supply and IF/audio amplifier circuit boards mount easily and conveniently on the bottom of the chassis.

319⁹⁵

No money down

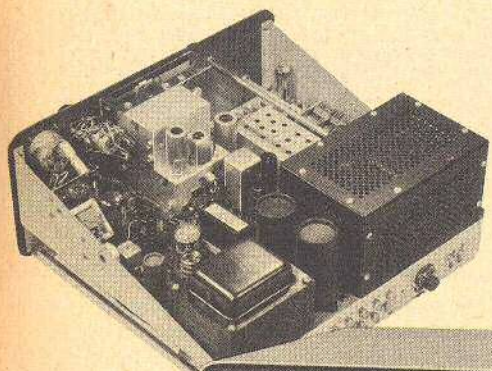


Exclusive Heath extender boards allow easy Switch-Board and circuit board access for in-circuit voltage and resistance measurements.

SB-303 SPECIFICATIONS — Frequency range (MHz): 3.5 to 4.0, 7.0 to 7.3, 14.0 to 14.5, 15.0 to 15.3, 21.0 to 21.5, 28.0 to 30. Intermediate frequency (IF): 3.395 MHz. Frequency stability: Less than 100 Hz drift/hr. after 10 min. warmup under normal ambient conditions. Less than 100 Hz drift for +10% line voltage variation. Frequency selection: Built-in Linear Master Oscillator. Modes of operation: SSB, CW, AM, RTTY. Sensitivity: Less than 0.25 uV for 10 dB S+N/N for SSB operation. Overall gain: Less than 1.5 uV input for 0.5 audio output (single tone SSB). AGC Characteristics: Blocking — Greater than 3.0 V CW/SSB/RTTY. Dynamic Range — Greater than 150 dB CW/SSB. RF Attenuator — Variable 0-40 dB nominal. Selectivity: SSB — 2.1 kHz @ 6 dB down, 5.0 kHz maximum at 60 dB down (crystal filter supplied). CW — 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). AM — 3.75 kHz at 6 dB down, 10 kHz maximum at 60 dB down (crystal filter available as an accessory). RTTY — 2.1 kHz at 6 dB down, 5.0 kHz maximum at 60 dB down (uses SSB crystal filter). Image rejection: 60 dB or better. IF rejection: 3.395 — greater than 55 dB. 8.595 — greater than 50 dB. Spurious response: All below 1 uV equivalent signal input. Temperature ranges: 10°C-50°C ambient. Dial accuracy: Electrical — Within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual — Within 200 Hz. Calibration: Every 100 kHz or 25 kHz. Dial Accuracy: No more than 50 Hz. Antenna Input Impedance: 50 ohm nominal unbalanced. Audio response: SSB — 350-2450 Hz nominal at 6 dB. CW (with accessory filter) — 800-1200 Hz nominal at 6 dB. AM (with accessory filter) — 200-3500 Hz nominal at 6 dB. RTTY — 1840-3940 Hz nominal at 6 dB. Audio output impedance: Speaker — 8 ohm. Headphones — Low impedance. Audio Output Power: 4 W at less than 10% distortion. Muting: Open external ground at mute socket. Power Requirements: 120/240 VAC, 40 W max. Front Panel Controls: Main tuning dial; function switch; mode switch; band switch; AGC switch; converter switch; AF gain/power on-off; RF gain/speaker disable; preselector; RF Attenuator. Circuit board controls: IF/Audio — Bias adjust; meter zero; meter full scale. Power Supply/BFO — +15 V adjust; 100 kHz adjust. RTTY — Wide shift; narrow shift; CW shift. Connections: Rear Panel — Phones; HF antenna; VHF antenna #1, VHF antenna #2; mute, anti-vox; speaker; HFO out; LMO out; BFO out; CW shift; 3 spare sockets; 3-wire line cord socket; accessory socket. VHF Converter, +15 VDC @ 25 mA, switched. RTTY Keyboard. Cabinet Dimensions: 6 5/8" H x 12 1/4" W x 13" D. Overall Dimensions (with knobs & feet installed): 7 1/4" H x 12 1/4" W x 14" D.

Heathkit SB-401 transmitter . . . perfect partner for the "303"

operates USB/LSB & CW, "separate" or "transceive"



Covers 80-10 meters; USB, LSB & CW. Single front panel switch selects transceive or independent operation of "401" and 300-series receiver. Usable with any receiver when optional SBA-401-1 crystal pack is installed. Built-in 120/240 VAC power supply. Modular sub-pack packaging and assembly procedure add to kit-building ease.

- Kit SB-401, 36 lbs., mailable **\$299.95**
- SBA-401-1, crystal pack, 1 lb., mailable **\$29.95**



SB-401 SPECIFICATIONS — Emission: SSB (upper or lower sideband) and CW. Power input: 170 W CW, 180 W P.E.P. SSB. Power output: 100 W (80-15 meters), 80 W (10 meters). Output impedance: 50-75 ohm — less than 2:1 SWR. Frequency range: (MHz) 3.5-4.0; 7.0-7.5; 14.0-14.5; 21.0-21.5; 28.0-28.5; 28.5-29.0; 29.0-29.5; 29.5-30.0. Frequency stability: Less than 100 Hz/hr. after 20 min. warmup. Carrier suppression: 55 dB below peak output. Unwanted sideband suppression: 55 dB @ 1 kHz. Intermodulation distortion: 30 dB below peak output (two-tone test). Keying characteristics: Break-in CW provided by operating VOX from a keyed tone (Grid block keying). CW sidetone: 1000 Hz. ALC characteristics: 10 dB or greater @ 0.2 mA final grid current. Noise level: 40 dB below rated carrier. Visual dial accuracy: Within 200 Hz (all bands). Backlash: Less than 50 Hz. Oscillator feedthrough or mixer products: 55 dB below rated output (except 3910 kHz crossover which is 45 dB). Harmonic radiation: 35 dB below rated output. Audio input: High impedance microphone or phone patch. Audio frequency response: 350-2450 Hz ±3 dB. Power requirements: 80 W STBY, 260 W key down @ 120/240 VAC, 50/60 Hz. Dimensions: 6 5/8" H x 14 3/8" W x 13 3/8" D.

299⁹⁵

NO MONEY DOWN

Built-in Heathkit self-service features save you money

385⁰⁰
NO MONEY DOWN

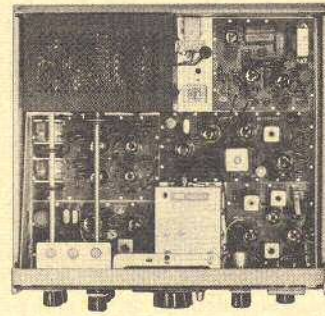
Incomparable Heathkit SB-102 80-10 meter transceiver

the compact, easily-assembled Heathkit transceiver that's at home in the shack or in the field

Proud descendant of the SB-100 & 101, the Heathkit SB-102 gives you an all solid-state, factory-assembled and aligned Linear Master Oscillator. Result: a rig that stabilizes from a cold start in half the time and tracks more accurately than ever. Other features include front panel selection of built-in 2.1 kHz SSB or optional 400 Hz crystal filters; built-in CW side-tone; built-in VOX; full coverage of 10 meters; complete metering facilities. Find out why the Heathkit SB series has become the talk of the ham bands — order your SB-102 today.

- Kit SB-102, 24 lbs., mailable **385.00**
- Kit SB-600, 8 ohm desk speaker, matches SB-Series gear; provides mounting space for AC supply, 7 lbs., mailable **19.95**
- SBA-301-2, optional 400 Hz CW crystal filter, 1 lb., mailable .. **22.95**
- Kit HP-23A, AC power supply, 19 lbs., mailable **51.95**
- Kit HP-13A, DC power supply, 7 lbs., mailable **69.95**
- SBA-100-1, mobile mount, 6 lbs., mailable **15.95**

SB-102 SPECIFICATIONS — RECEIVER SECTION: Sensitivity: Better than 0.35 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. SSB selectivity: 2.1 kHz minimum at 6 dB down, 5 kHz maximum at 60 dB down — 2:1 nominal shape factor — 6 to 60 dB. CW Selectivity: (With optional CW filter SBA-301-2 installed) 400 Hz minimum at 6 dB down, 2.0 kHz maximum at 60 dB down. **Input Impedance:** Low impedance for unbalanced coaxial input. **Output impedance:** Unbalanced 8 and 600 ohm speaker, and high impedance headphone. **Power output:** 2 watts with less than 10% distortion. **Spurious response:** Image and IF rejection better than 50 dB. Internal spurious signals below equivalent antenna input of 1 microvolt. **TRANSMITTER SECTION: DC power input:** SSB 180 watts P.E.P. continuous voice. CW: 170 watts — 50% duty cycle. **RF power output:** 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). **Output impedance:** 50 ohms to 75 ohms with less than 2:1 SWR. **Oscillator feed-through or mixer products:** 55 dB below rated output. **Harmonic radiation:** 45 dB below rated output. **Transmit-receive operation:** SSB: Push-to-talk or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. CW side-tone: Internally switched to speaker in CW mode. Approx. 1000 Hz tone. **Microphone input impedance:** High impedance. **Carrier suppression:** 50 dB down from single-tone output. **Unwanted sideband suppression:** 55 dB down from single-tone output at 1000 Hz reference. **Third order distortion:** 30 dB down from two-tone output. **Noise level:** At least 40 dB below single-tone carrier. **RF compression (TALC):** 10 dB or greater at .1 ma final grid current. **GENERAL: Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 28.5 to 29.0; 29.0 to 29.5; 29.5 to 30.0 (megahertz). **Frequency stability:** Less than 100 Hz per hour after 10 minutes warm-up from normal ambient conditions. Less than 100 Hz for +10% line voltage variations. **Modes of operation:** Selectable upper or lower sideband (suppressed carrier) and CW. **Visual dial accuracy—"Resetability":** Within 200 Hz on all bands. **Electrical dial accuracy:** Within 400 Hz after calibration at nearest 100 kHz point. **Dial mechanism backlash:** Less than 50 kHz. **Calibration:** 100 kHz crystal. **Audio frequency response:** 350 to 2450 Hz +3 dB. **Phone patch impedance:** 8 ohm receiver output to phone patch; high impedance phone patch input to transmitter. **Front panel controls:** Main (LMO) tuning dial; Driver tuning and Preselector; Final tuning; Final loading; Mic and CW Level Control; Mode switch; Band switch; Function switch; Freq. Control switch; Meter switch; RF gain control; SSB-CW filter switch. **Audio Gain control. Internal controls:** VOX Sensitivity; VOX Delay; Anti-Trip; Carrier Null (control and capacitor); Meter Zero control; CW Side-Tone Gain control; Relative Power Meter Adjust control; P.A.—Bias; Phone Vol (headphone volume); Neutralizing. **Rear Apron Connections:** CW Key jack; 8 ohm output; Spare A; Spare B; Phone patch input; ALC input; Power and accessory plug; RF output; Driver Output for SB-500. **Power requirements:** 700 to 800 volts at 250 ma; 300 volts at 150 ma; —115 volts at 10 ma; 12 volts at 4.76 amps. **Cabinet dimensions:** 14 7/8" W x 6 1/2" H x 13 3/4" D.



Bottom View — Printed circuit board construction greatly simplifies kit assembly.

Top View — Circuit board-wiring harness construction for greater reliability and easier assembly.



Solid-state LMO for fast warm-up, less drift.



Built-in 2.1 kHz SSB Crystal filter.



Built-in VOX with readily adjustable controls.



Final amp stage is shielded for maximum TVI protection.

Heathkit SB-220 linear amplifier . . . dynamic teammate for the "102"

the complete 2 kW rig in a compact desktop unit with a "compact" price to match

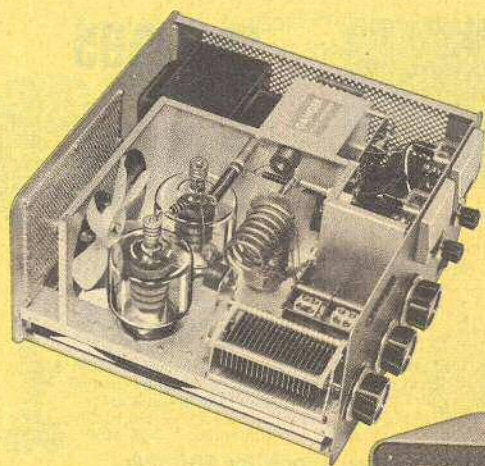
The "220" uses a pair of conservatively rated Eimac 3-500Z's in grounded grid circuitry to provide up to 2000 watts PEP SSB input. And it can be loaded to a full 1 kW input on both CW and RTTY. A broadband pre-tuned pi-input delivers maximum efficiency with low distortion over 80 thru 10 meters. Requires only 100 watts drive. Built-in solid-state power supply can be wired for either 120 or 240 VAC. Built-in circuit-breaker protection. Zener diode regulated operating bias reduces idling current for cooler running, extended tube life. A large quiet fan is another plus feature.

Just set band-switch, push CW-Tune/SSB rocker switch to CW-Tune position, adjust Tune & Load controls for maximum relative power. Push rocker switch to SSB position and you're ready with a full 2 kW PEP input, a full gallon on CW or RTTY.

Other features include ALC to the driving unit to prevent overdriving; front panel switch-selected monitoring of grid current, relative power and high voltage; easy, enjoyable 20 hour assembly.

Kit SB-220, 69 lbs., mailable **369.95**

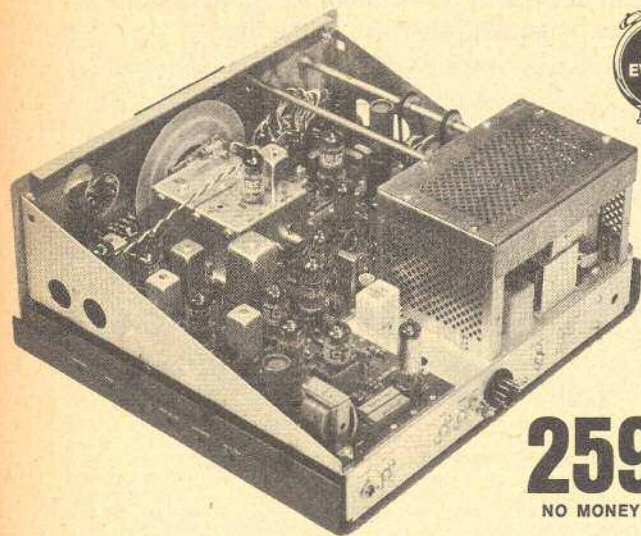
SB-220 SPECIFICATIONS — Band coverage: 80, 40, 20, 15 and 10 meters. **Driving power:** 100 W. **Max. power input:** SSB, 2000 W. PEP; CW, 1000 W.; RTTY, 1000 W. **Duty cycle:** SSB, Continuous voice modulation. CW, Continuous (maximum key-down 10 minutes). RTTY, 50% (maximum transit time 10 minutes). **Third order distortion:** —30 dB or better. **Input impedance:** 52 ohm unbalanced. **Output impedance:** 50 ohm unbalanced; SWR 2:1 or less. **Front panel controls:** Tune, Load, Band, Sensitivity Meter Switch, Power, CW/Tune — SSB, Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage). **Rear panel:** Line cord, circuit breakers (two 10 A), Antenna Relay (phone), ALC (phone), RF Input (SO-239), Ground post, RF Output (SO-239). **Tubes:** Two Eimac 3-500Z. **Power required:** 120 VAC, 50/60 Hz at 20 amp. max. 240 VAC, 50/60 cycles, at 10 amp. max. **Cabinet size:** 8 1/4" H x 14 7/8" W x 14 1/2" D.



369⁹⁵
NO MONEY DOWN



Move up to a 5-band transceiver at a kit-form price



259⁹⁵
NO MONEY DOWN

Clean open chassis features completely shielded final; chassis-side control of meter zero adjust, bias, VOX delay, sensitivity & anti-trip, and rear panel connections for key, speaker, ALC, spare equipment, power supply & antenna.



Looking to move up to a full five-band rig? Looking for a good buy in a rough-and-ready take-along base station? The Heathkit HW-101 gives you full 8-10 meter capability on SSB and CW, with dial drive front-panel SSB/CW filter selection. The incomparable Heathkit manual leads you step-by-step to finished product in something less than nine evenings. Shows you how to maintain and trouble-shoot your rig too. Check the specs, check the price, then take advantage of this unsurpassed Heathkit bargain.

Kit HW-101, 21 lbs., mailable 259.95
Kit HP-23A, AC power supply, 19 lbs., mailable 51.95
Kit HP-13A, DC power supply, 7 lbs., mailable 69.95
SBA-301-2, 400 Hz crystal filter, 1 lb., mailable 22.95
SBA-100-1, mobile mount, 6 lbs., mailable 15.95
Kit HS-24, mobile speaker, 4 lbs., mailable 9.50

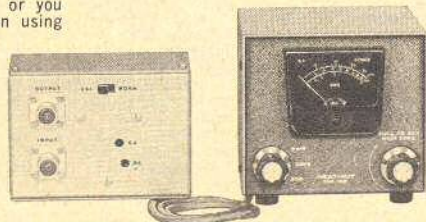
HW-101 SPECIFICATIONS — RECEIVER: Sensitivity: Less than 0.35 microvolt for 10 dB signal-plus-noise to noise ratio for SSB operation. SSB selectivity: 2.1 kHz minimum at 6 dB down; 7 kHz maximum at 60 dB down (3.395 MHz filter). CW selectivity: (with optional SBA-301-2 CW crystal filter installed); 400 Hz min. @ 6 dB down; 2.0 kHz max. @ 60 dB down. Input: Low impedance for unbalanced coaxial input. Output impedance: 8 ohm speaker, and high impedance headphone. Power output: 2 watts with less than 10% distortion. Spurious response: Image and IF rejection better than 50 dB. **TRANSMITTER:** DC power input: SSB (A3J emission), 180 watt PEP (normal voice, continuous duty cycle). CW (A1 emission) 170 watts (50% duty cycle). RF power output: 100 watts on 80 through 15 meters; 80 watts on 10 meters (50 ohm non-reactive load). Output impedance: 50 ohm to 75 ohm with less than 2:1 SWR. Oscillator feed-through or mixer products: 55 dB below rated output. Harmonic radiation: 45 dB below rated output. Transmit-receive operation: SSB: PTT or VOX. CW: Provided by operating VOX from a keyed tone, using grid-block keying. CW sidetone: Internally switched to speaker or headphone in CW mode. Approximately 1000 Hz tone. Microphone input: High impedance with a rating of -45 to -55 dB. Carrier suppression: 45 dB down from single-tone output. Unwanted sideband suppression: 45 dB down from single-tone output at 1000 Hz reference. Third order distortion: 30 dB down from two-tone output. RF compression (TALC*): 10 dB or greater at .1 mA final grid current. **GENERAL:** Frequency coverage: 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 29.0 to 29.5; 29.5 to 30.0 (megahertz). Frequency stability: Less than 100 hertz per hour after 45 minutes warmup from normal ambient conditions. Less than 100 Hz for ±10% line voltage variations. Modes of operation: Selectable upper or lower sideband (suppressed carrier) and CW. Dial calibration: 5 kHz. Calibration: 100 kHz crystal. Audio frequency response: 350 to 2450 Hz. Transistors: MPF105 FET-VFD; 2N3393—Voltage regulator. Rear apron connections: CW key jack; 8 ohm output; ALC input; Power and accessory plug; RF output; Spare. Power requirements: 700 to 850 volts at 250 mA with 1% maximum ripple; 300 volts at 150 mA with .05% maximum ripple; -115 volts at 10 mA with .5% maximum ripple; 12 volts AC/DC at 4.76 amps. Cabinet dimensions: 6 3/4" H x 14 3/4" W x 13 3/8" D.

*Triple Action Level Control

Build yourself a wattmeter/SWR bridge and add precision

You can install your Heathkit wattmeter/SWR bridge as a one-piece unit, or you can separate the detector portion using the cable supplied.

29⁹⁵
NO MONEY DOWN

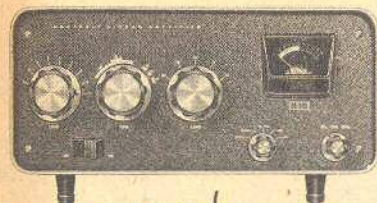


With the HM-102, there's no doubt about proper operation or tune-up. Two switch-selected ranges allow measurement of RF output from 10-200 and 100-2000 W...built-in SWR capability for proper tune-up, transmission line to antenna Z matching...ideal for antenna experimenters. Negligible loss for permanent insertion into 50 ohm line. Remote detector permits placement of meter in any convenient location. (6 ft. of cable supplied.)

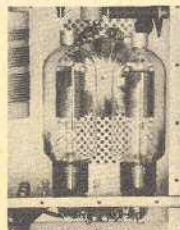
Kit HM-102, 4 lbs., mailable 29.95

HM-102 SPECIFICATIONS — Frequency range: 1.8 to 30 MHz. Wattmeter accuracy: ±10% of full-scale reading. Power capability: 10 to 2000 watts. Impedance: 50 ohm nominal. Connectors: UHF type SO-239. Dimensions: 5 1/4" H x 5 1/4" W x 6 1/2" D.

Power-up with 1200 watts on SSB, 1 kw on CW



229⁹⁵



Rugged, well rated components are used throughout. Partitioned chassis gives added strength, isolates parts.

Two 572B (or T-160-L) in parallel give years of top performance. Large fan provides maximum cooling.

You can build this Heathkit linear amplifier in just five evenings. Provides 1200 W PEP SSB input, 1000 W CW. Built-in solid-state power supply with circuit breaker protection. Metering for SWR, grid current, plate current, relative power, plate voltage. ALC output. Shielded, fan-cooled amplifier compartment. Pre-tuned cathode input circuit for maximum efficiency and low distortion. The sturdy, yet lightweight construction is achieved with a heavy-gauge one-piece aluminum chassis partitioned for extra strength.

Kit SB-200, 50 lbs., mailable 229.95

SB-200 SPECIFICATIONS — Band coverage: 80, 40, 20, 15 & 10 meters. Maximum power input: 1200 W P.E.P. SSB, 1000 W CW. Driving power required: 100 W. 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 W P.E.P. Output impedance: 50-75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broadband pretuned input circuit requires no tuning. Meter functions: 0-100 mA grid current, 0-1000 mA plate current, 0-1000 relative power, 1:1-3:1 SWR, 1500-3000 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/T-160-L (in parallel). Power requirements: 120 VAC @ 16 A (max.), 240 VAC @ 8 A (max.). Cabinet size: 6 3/4" H x 14 7/8" W x 13 3/8" D.

Fixed-station power supply for SSB rigs

Kit HP-23A, AC supply, 19 lbs., mailable . . . 51.95

HP-23A SPECIFICATIONS — Power requirements: 120/240 VAC, 50-60 Hz, 350 watts maximum. High voltage output: 820 VDC no load; 700 VDC @ 250 mA ±10%. AC ripple: Less than 1% @ 250 mA. Duty cycle: 150 mA continuous to 300 mA @ 50%. 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 .05% AC ripple @ 150 mA, continuous duty to 175 mA. Fixed bias: -130 VDC ±10%, no load; -100 VDC @ 20 mA. Adjustable bias: -40 to -80 VDC @ 1mA maximum. Less than .5% AC ripple. Filament voltage: 6.3 VAC @ 11 amps; 12.6 VAC @ 5.5 amps. Dimensions: 9" L x 4 3/4" W x 6 3/4" H.



Solid-state mobile power supply for SSB rigs

Kit HP-13A, DC supply, 7 lbs., mailable . . . 69.95

HP-13A SPECIFICATIONS — Input voltage: 12 to 16 VDC (neg. ground only). Input current: 25 amp. max. full load. High voltage output: 800 VDC, no load; 750 volts DC @ 250 mA. AC ripple: less than 1% @ 250 mA. Duty cycle: Continuous up to 150 mA; 50% up to 300 mA. Low voltage output: (high tap) 310 VDC, no load; 300 VDC @ 150 mA. (low tap) 265 VDC, no load; 250 VDC @ 150 mA. AC ripple: Less than .05% @ 150 mA. Continuous duty cycle to 175 mA. Adjustable bias voltage: -40 to -130 VDC @ 20 mA max. Duty cycle: Continuous. Switching frequency: 1500 Hz (approx.). Ambient temperature: -10°C to 122°F. Dimensions: 7 3/4" W x 7 3/4" L x 2 3/8" D. All voltages referenced at 13 VDC.



Heathkit single-banders

The Heathkit transceivers designed to get you on the air on a budget. Choice of 80, 40, or 20 meter models with full 200W PEP input SSB; choice of fixed or mobile operation with Heathkit power supplies (page 28); 2 kHz dial calibration, ALC input; S-meter; VOX & PTT. Order your favorite model, today.

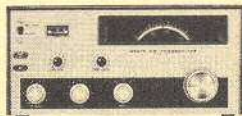


- Kit HW-12A, 80-meter, 15 lbs., mailable 112.50
- Kit HW-22A, 40-meter, 15 lbs., mailable 112.50
- Kit HW-32A, 20-meter, 15 lbs., mailable 112.50
- Kit HRA-10-1, plug in 100 kHz crystal calibrator, 1 lb., mailable 9.95
- Kit HP-13A, DC Power Supply, 7 lbs., mailable 69.95
- Kit HP-23A, AC Power Supply, 19 lbs., mailable 51.95

SPECIFICATIONS — RF input: 200 watts PEP. Sideband generation: Crystal lattice band-pass filter method. Stability: 200 Hz per hour after warm-up. Carrier & unwanted sideband suppression: 45 dB. Frequency coverage: HW-12A, 3.8–4.0 MHz; HW-22A, 7.2–7.3 MHz; HW-32A, 14.2–14.35 MHz. Receiver sensitivity: 1 μ V for 15 dB (S+N)/N ratio. Operation: LSB, USB. Audio output: 1 watt @ 8 ohms. Mike input: Hi-Z. Tube complement: Fourteen tube heterodyne circuit; (3) 6EAB's mic. amp. VOX relay amp., IF amp., RF amp., Recvr. mixer; (5) 6AU6's, VFO, VOX amp., IF amps., Xmtr. mixer; (1) 6BE6, VFO isolator (HW-12A), Het. osc. and mixer (HW-22A & HW-32A); (1) 12BY7 Driver; (1) 12AT7 Xtal. osc., product det., (1) 6EB8 Audio amp. and output; (2) 6GE5 RF output. Power requirements: 800 VDC @ 250 mA peak, 250 VDC @ 100 mA, -130 VDC @ 5mA, 12 VAC or VDC @ 3.75 amperes. Cabinet dimensions: 6 1/4" H x 12 3/4" W x 10" D.

Our high performance CW rig

Operates on the first 250 kHz of the 80, 40 & 15 meter bands. Has adjustable input from 50-90 W; crystal control transmit with VFO receiver tuning; provision for external VFO such as Heathkit HG-10B.



Kit HW-16, 25 lbs., mailable 99.95

HW-16 SPECIFICATIONS — TRANSMITTER SECTION: RF power input: 50-90 W (adjustable). Frequency control: 80-meter crystal or VFO on 80-meter band, 80 or 40-meter crystal, or VFO on 40-meter band, 40-meter crystal or VFO on 15-meter band. Keying: Grid-block. Break-in with automatic antenna switching and receiver muting. Output impedance: 50 ohm, unbalanced. SWR less than 2:1. Sidetone: Neon lamp relaxation oscillator. RECEIVER SECTION: Sensitivity: Less than 1 μ V for 10 dB signal-plus-noise to noise ratio. Selectivity: 500 Hz at 6 dB down. Intermediate frequency: 3396 kHz. Antenna impedance: 50 ohm, unbalanced. External speaker impedance: 8 ohm. GENERAL: Frequency coverage: 3.5 to 3.75 MHz, 7.0 to 7.25 MHz, 21.0 to 21.25 MHz. Power: 120 VAC, 50-60 Hz. Dimensions: 6 1/2" H x 13 3/4" W x 11 1/2" D.

External speaker

Eight-ohm speaker in grey aluminum cabinet matches other Heathkit SB and HW gear. Audio response shaped from 300 to 3000 Hz for optimum voice reproduction. Enclosure has mounting for HP-23 and HP-23A power supplies. Measures 6 1/2" H x 10" W x 10 1/2" D.



Kit SB-600, 7 lbs., mailable .. 19.95

Spectrum analyzer

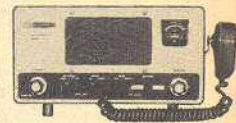
Offers 10 and 50 kHz sweep widths for single signal analysis. Variable width to 500 kHz for IFs above 455 kHz, up to 100 kHz for 455 kHz IFs. Has log and linear displays, operates with common receiver IFs up to 6 MHz. Grey aluminum cabinet matches SB series, measures 6 1/2" H x 10" W x 10 1/2" D.



Kit SB-620, 15 lbs., mailable 129.95

Heathkit CAP SSB transceiver

Complies with FCC CAP frequency tolerance ruling of .005%. Features 200W SSB input & 40W input with carrier for compatibility with AM stations; 2 crystal-controlled channels; clarifier control for \pm 100 Hz frequency variation; solid-state T/R switching; local/distance switch; 45 dB carrier & sideband suppression; 2.1 kHz selectivity; 1 μ W sensitivity for 15 dB S + N/N; 50 ohm coax output; PTT mike & built-in speaker; fixed or mobile operation with HP-13A or HP-23A power supplies. Mobile mount included. Requires voltmeter, ohmmeter & dummy load for alignment. 6 1/4" H x 12 1/4" W x 10" D.



Kit HW-18-1, w/crystals for 2 channels, specify from list below, 16 lbs., mailable 124.95

CAP Crystals: 4506.0, 4466.0, 4469.0, 4509.0, 4583.5, 4586.5, 4601.0, 4604.0, 4628.5, 4631.5, kHz channel frequencies. 1 lb., mailable each 4.95

Mobile speaker

Rugged 8 ohm mobile speaker in steel forest green cabinet. Gimbals mount included. 6 1/2" W x 4 3/4" H x 2 1/2" D. A "must" for mobile "Single-Banders"!

Kit HS-24, 4 lbs., mailable 9.50

Solid-state electronic keyer

Features 15-20 wpm speed range with 10-20 wpm slow-speed option; self-completing dashes; adjustable paddle "feel"; right or left hand & semi-automatic adaptability; variable dot-space ratio; "hold" for transmitter tuning; built-in side-tone, speaker, transformer-operated power supply. For use only with transmitters with grid-block keying circuits, negative 105V @ 35 ma max. 4 3/4" H x 3 3/4" W x 10 1/2" D.



Kit HD-10, 6 lbs., mailable ... 39.95

"Cantenna" transmitter dummy load

Provides 50 ohm non-inductive load with SWR less than 1.5:1 for frequencies of 1.5-300 MHz. Coax fitting to transmitter line, & phone jack for relative power measurements. One gal. coolant oil capacity (oil not included) permits power up to 1 kw.



Kit HN-31, 3 lbs., mailable 10.95



Hybrid phone patch

Has individual receiver-to-line & line-to-receiver gain controls; VU meter; 30 dB isolation for positive VOX operation. Matches 3-16 ohm speakers & hi-Z or 600 ohm inputs; operates VOX or PTT. 2 1/2" H x 9 1/4" W x 3 5/8" D.

Kit HD-15, 3 lbs., mailable 24.95

100 kHz crystal calibrator

Produces a signal every 100 kHz thru 54 MHz. Can be calibrated with trimmer against WWV. 9V battery, not included.



Kit HD-20, 1 lb., mailable 14.95

Mobile PTT mike

Rugged, high impedance ceramic mike ideal for mobile work. Color matches SB & HW-Series gear. With cable, less connector. Excellent accessory for "Single-Band" gear.



GH-12A, 1 lb., mailable 9.95

Ham desk mike

High impedance dynamic mike recommended for SB-series gear. Ideal SSB response. Grip-to-talk switch w/lock. Wiring diagram & cables included.



HDP-21A, 4 lbs., mailable .. 29.95

Ham starter group

Group includes 4 ARRL handbooks, HD-16 code practice oscillator, 3 code-teaching records.

- HDP-22, all above, 6 lbs., mailable 18.95
- HDP-32, records only, 3 lbs., mailable 9.50
- HDP-42, books only, 2 lbs., mailable 2.50
- Kit HD-16, osc. & key, 3 lbs., mailable 9.95



Code practice oscillator

For beginning CW ops. Unijunction transistor with separate controls for tone & volume. Built-in speaker; head-phone jack; blinker light. Includes key, phone plug, cord. Uses 2-9V & 1 "C" batteries, not supplied.



Kit HD-16, 3 lbs., mailable 9.95

Amateur's handbook

Latest edition of ARRL handbook with reliable, up-to-date info on radio communications & electronics. Covers theory, construction and operation of HF, UHF, FM and SSB equipment.



HDP-293, 3 lbs., mailable 4.50

Put together an exciting Heathkit short wave-listening hobby

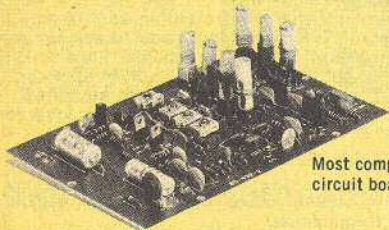


3
EVENING
KIT

Tune in the world on a budget

Band	Frequency Range	Bandwidth	Mode
A	550 kHz - 1500 kHz	10 kHz	AM
B	1.5 - 4 MHz	10 kHz	SSB, CW
C	4 - 10 MHz	10 kHz	SSB, CW
D	10 - 30 MHz	10 kHz	SSB, CW

- Local AM entertainment band
- Marine, weather and local amateur band
- Europe, Latin America, Asia & U.S. (amateur)
- U.S. & Foreign (amateur), overseas, local (CB)



Most components mount on single circuit board for easy assembly.



Heathkit 4-band solid-state "Beginners" SWL Receiver tunes from "Rock" to Russia for only...

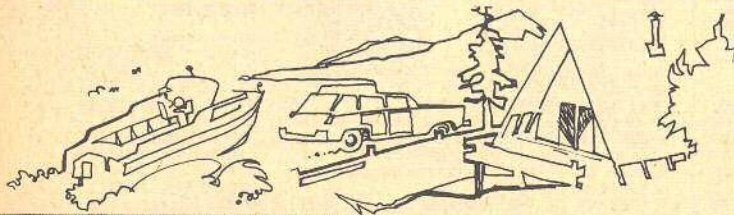
59⁹⁵
NO MONEY DOWN

Ideal beginner's kit... most components mount on single circuit board for easy check-by-step assembly in about three evenings. Tunes foreign broadcasts from around the globe — weather reports — ships at sea — amateur and CB bands — plus local AM entertainment. Features slide-rule tuning; log-scale; bandspread tuning for separating adjacent stations; variable BFO for clear code reception; built-in speaker; front panel jack for headphone or external speaker; switched automatic noise limiting; signal strength meter; built-in AM rod antenna plus connection for SWL antenna.

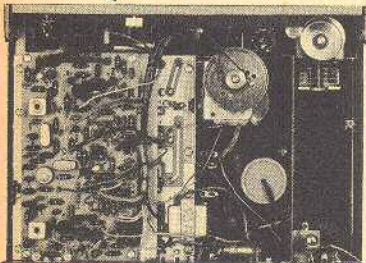
Kit SW-717, 10 lbs., mailable **59.95**

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; Bandspread Tuning; ANL on/off. Transistor Complement: 40673, Mixer & RF amplifier; 2N3393, Audio preamplifier; 2N5232A, IF amplifier, AGC amplifier; 2N5308, IF amplifier; MPF105, oscillator; S2090, final audio amplifier; S2091, final audio amplifier; X29A829, Audio driver. Power Supply: Transformer operated; full-wave bridge rectifier. Voltage Requirements: 120/240 VAC, 50-60 Hz, 8 W. Dimensions: 5 1/2" H x 14 1/2" W x 8" D.

Versatile Heathkit 6-band solid-state SWL portable you can pack along



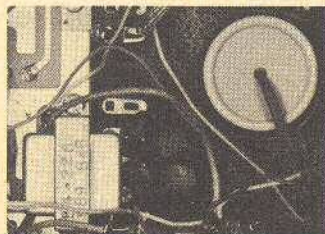
8
EVENING
KIT



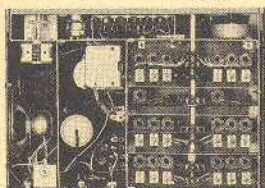
Modular, solid-state circuit board design simplifies assembly

129⁹⁵

NO MONEY DOWN



Nickel cadmium battery with built-in recharger



Bottom panel provides easy access for alignment



Built-in 500 kHz crystal calibrator for tuning accuracy

Tunes 6 bands:

- A) 200 kHz to 400 kHz
- B) 550 kHz to 1300 kHz
- C) 1.3 MHz to 3.0 MHz
- D) 3.0 MHz to 7.5 MHz
- E) 7.5 MHz to 18.0 MHz
- F) 18.0 MHz to 30 MHz



Modular circuit board design makes the GR-78 an enjoyable six-evening project. A favorite of discriminating SWLs, hams needing a reliable standby receiver, and campers, hunters, travelers and vacationers wanting a ready-to-go portable. 190 kHz to 30 MHz coverage in 6 bands; AM or SSB/CW reception; AVC; switched ANL; signal meter; external antenna connection; receiver/standby switch; muting connection; headphone jack; 500 kHz crystal calibrator; carry-handle; whip antenna. Runs on nickel-cadmium battery with built-in charger.

Kit GR-78, 14 lbs., mailable **129.95**

GR-78 SPECIFICATIONS — Frequency coverage: Band A, 190 kHz-410 kHz; Band B, 550 kHz-1300 kHz; Band C, 1.3 MHz-3.0 MHz; Band D, 3.0 MHz-7.5 MHz; Band E, 7.5 MHz-18.0 MHz; Band F, 18.0 MHz-30 MHz. Meter: Indicates relative signal strength. Intermediate frequency: Band A thru E: 455 kHz; Band F (Double conversion): 1st IF, 4.034 MHz; 2nd IF, 455 kHz. Sensitivity*: 0.2 uV — 10 uV depending on band and portion thereof. Selectivity: 7.5 kHz ±1 @ 6 dB down. Audio output: 300 milliwatts @ 10% distortion. Battery: 9.6 VDC 500 mAh Nickel-Cadmium rechargeable. Battery charge rate: The battery is always being charged at 20 to 25 mA when the built-in trickle charging circuit is connected to an external power source with the Receiver turned off. A full battery charge will be maintained if the Receiver is connected to an external power source and used an average of 5 hours daily at a normal listening level. Overall size: 6 1/4" H x 11 1/2" W x 9" D.

*Signal level for 10 dB signal + noise/noise ratio.

Obsolescence protection — Heathkit parts are available for 7 years after models are discontinued



Heathkit Professional SWL receiver covers 9 bands for only **269⁹⁵** NO MONEY DOWN

last call on this popular receiver
order now

9 switch-selected bands: 49, 41, 31, 25, 19 and 16 meter shortwave, 11 meter CB and 80, 40 and 20 meter amateur bands. And to receive AM, CW and SSB with crystal-clear fidelity, a 5 kHz crystal filter is included. Features a crystal controlled front end for same tuning rate on all bands; true linear tuning with 1 kHz dial calibrations; tuning knob ratio of approximately 4 to 1; built-in switch-selected automatic noise limiter; prebuilt and aligned LMO; separate RF and AF gain controls; calibrated "S" meter; switch-selected mode; separate diode (AM) and product (SSB, CW) detectors; built-in 100 kHz crystal calibrator; headphone jack for easy DX-ing. 20 hours gets it all together.

- Kit SB-310, less speaker, 24 lbs., mailable 269.95
- Kit SB-600, 8 ohms, 6"x9" speaker & cab., 7 lbs., mailable 19.95
- SBA-301-2, deluxe CW filter, 1 lb., mailable 22.95
- SBA-310-1, SSB filter, 1 lb., mailable 23.95
- SBA-310-2, deluxe SSB filter, 1 lb., mailable 39.95

SB-310 SPECIFICATIONS — Frequency range (Megahertz): 3.5–4.0; 5.7–6.2; 7.0–7.5; 9.5–10.0; 11.5–12.0; 14.0–14.5; 15.0–15.5; 17.5–18.0; 26.9–27.4. Sensitivity: Less than 0.3 uV for 10 dB signal-plus-noise to noise ratio for SSB operation. Selectivity: AM, 5.0 kHz @ 6 dB down; 15 kHz max. @ 60 dB down (crystal filter supplied). CW, 400 Hz @ 6 dB down; 2.0 kHz max. @ 60 dB down (crystal filter available as an accessory). SSB, 2.1 kHz @ 6 dB down; 5.0 kHz max. @ 60 dB down (deluxe SSB crystal filter available as an accessory), or 2.1 kHz @ 6 dB down; 7.0 kHz max. @ 60 dB down (regular SSB crystal filter available as an accessory). Power requirements: 105-125 or 210-250 VAC, 50-60 Hz, 50 W. Cabinet dimensions: 6 $\frac{3}{8}$ " H x 14 $\frac{7}{8}$ " W x 13 $\frac{3}{8}$ " D. External connections: Front panel: phones. Rear apron: antenna, mute 500 ohm audio output, speaker 8 ohm, hi-fi output, 1 spare socket, line cord socket. Tube complement: 10 tubes (13 functions). Diode complement: 8.

Heathkit Fire, Weather, Police & Aircraft Monitors ... **49⁹⁵** NO MONEY DOWN

Both feature vernier tuning, single channel crystal (not supplied), squelch, solid-state battery operation, carrying handle/stand, whip antenna, external antenna jack, rugged brown leatherette case.

- Kit GR-88, Fire, Weather, Police Monitor, 5 lbs., mailable 49.95
- Kit GR-98, Aircraft Monitor, 5 lbs., mailable 49.95
- Kit GRA-88-1, AC power supply for both above, 2 lbs., mailable 8.50

GR-88 SPECIFICATIONS — Tuning range: 152-174 MHz. Antenna input: 50-75 ohms. Sensitivity: 2.0 uV or less for 20 dB quieting. IF frequency: 10.7 MHz. IF selectivity: \pm 40 kHz @ 6 dB down. Image rejection: 40 dB or greater. IF rejection: 80 dB or greater. Audio output: 250 mW at less than 10% distortion. Speaker: 3" round, 24 ohms, permanent magnet. Transistor complement-tuner: (2) 2SC784 and (1) SE-5006. Transistor complement-IF audio: (5) 2N2369, (4) 2N3393, (1) X29A829, (1) 2N2430, (1) 2N2431, (1) 40481. Diode complement: (2) 1N191 and (2) 1N4646. Batteries: Six 1.5 V "C" cells, not supplied. Dimensions: 7 $\frac{1}{2}$ " H x 8 $\frac{3}{4}$ " W x 3 $\frac{1}{2}$ " D.

GR-98 SPECIFICATIONS — Tuning range: 108-136 MHz. Antenna input: 50 to 75 ohms. Sensitivity: 1.5 uV or less for 10 dB signal-to-noise plus noise ratio @ 1000 Hz 30% modulation. IF frequency: 10.7 MHz. IF selectivity: 40 kHz @ 6 dB down; 100 kHz @ 30 dB down. Image rejection: 40 dB or greater. IF rejection: 80 dB or greater. Audio output: 250 mW at less than 10% distortion. Speakers: 3" round, 24 ohm, permanent magnet. Transistor complement-tuner: (2) 2SC784 and (1) SE-5006. Transistor complement-IF & audio: (4) 2N2369, (3) 2N3393, (2) X29A829, (1) MPF-105, (1) 2N2430, (1) 2N2431 and (1) 40481. Diode complement: (2) 1N191, (1) 1N4646 and (1) S-160. Batteries: Six 1.5 V size "C" cells (not included). Dimensions: 7 $\frac{1}{2}$ " H x 8 $\frac{3}{4}$ " W x 3 $\frac{1}{2}$ " D.



Handy SWL Accessories

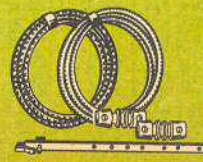


Superex headphones
...ideal for all Heath SWL receivers except GR-43A. Dual coils; wide headband; 2 k ohm impedance.
GD-396, 1 lb., mailable . . . 4.50



SWL guide

1972 edition...lists world-wide SW, FM, TV stations, call signs, frequencies & addresses.
GDP-315, 2 lbs., mailable 6.95



Long wire antenna

...includes a 75' long wire antenna with 30' of lead-in, all insulators & hardware.
GRA-72, 2 lbs., mailable 2.95

Build digital reliability into your bridge with the Heathkit MI-101 depth sounder

139⁹⁵

NO MONEY DOWN



Bright Numitron® display tubes read to 199 feet — even in direct sunlight

Outfit your craft with true digital instrumentation — at a fraction of what you would pay for most ready-built depth sounders. Even if you've never built a Heathkit product before, you can have the MI-101 together and working in a couple of evenings. All you need is a soldering iron and conventional tools. And you get offshore peace-of-mind thanks to solid-state reliability, eliminating discs and motors, and no-mistaking-it numerical readout you can see from across the bridge.

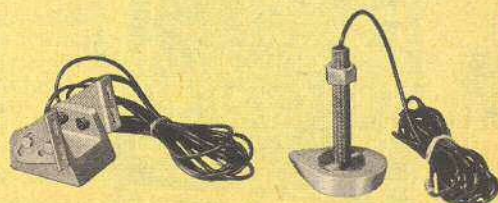
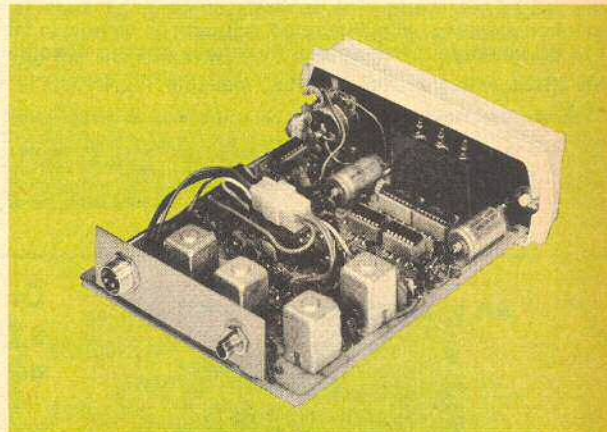
ENDS MARGINAL READINGS — With the Heathkit MI-101 Digital Depth Sounder, you know the depth at a glance. Bright numerical display tubes and solid-state digital circuitry eliminate the need to interpret dials or meter scales. A dual-range scale has automatic switching to give accurate depth readings from 2.5 ft. to 19.9 ft. in increments of 0.1 ft, and from 20 ft. to 199 ft. in increments of 1 ft. A red warning light alerts you to shoals of 10 ft. or less.

ONE-CONTROL OPERATION, RUGGED SOLID-STATE DESIGN — A single knob provides "on/off" control and light intensity adjustment for perfect visual display whether the unit's below deck or up on the bridge. Automatic noise rejection circuitry. Gain control is automatic, too, for maximum sensitivity. The MI-101 utilizes 42 silicon transistors, 7 TTL integrated circuits, with a regulated power supply that maintains accuracy over a wide range of varying DC supply voltages. And, since there are no discs or motors, the MI-101 is completely silent in use.

STYLED TO SET OFF ANY SHIP — The MI-101 features a weatherproof, splash-proof Cyclac® case with blue and white finish accented by grey tinted plastic window that turns midnight black when set is not in use. Order your Heathkit Digital Depth Sounder with either the permanent through-hull transducer, or high speed transom mount shown below. Kit includes 15 ft. of cable for through-hull installation, 25 ft. of cable for transom mount. Fit out now with the latest in marine digital electronics...order your MI-101, today.

Kit MI-101-1, with through-hull transducer, 6 lbs., mailable **139.95**
Kit MI-101-2, with transom transducer, 9 lbs., mailable **139.95**

MI-101 & -2 SPECIFICATIONS — Ranges: 2.5-19.9' and 20-199', automatically switched. Sounding frequency: 200 kHz. Sounding rate: Maximum of 11/sec on both ranges for a total of 22/sec. Normal rate of approx. 1/sec. Accuracy: ±2%, ±1 digit. Current drain: 300-500 mA. Power requirements: 10-17 VDC @ 500 mA. Display: 7 segment incandescent display tubes — 3 digit red warning indication for depths 10' or less. Controls: Display intensity with on-off switch. Transducer: Barium titanate ceramic element encased in watertight housing. Dimensions: 2 3/4" H x 6 5/8" W x 8 1/2" D (less gimbal hardware).

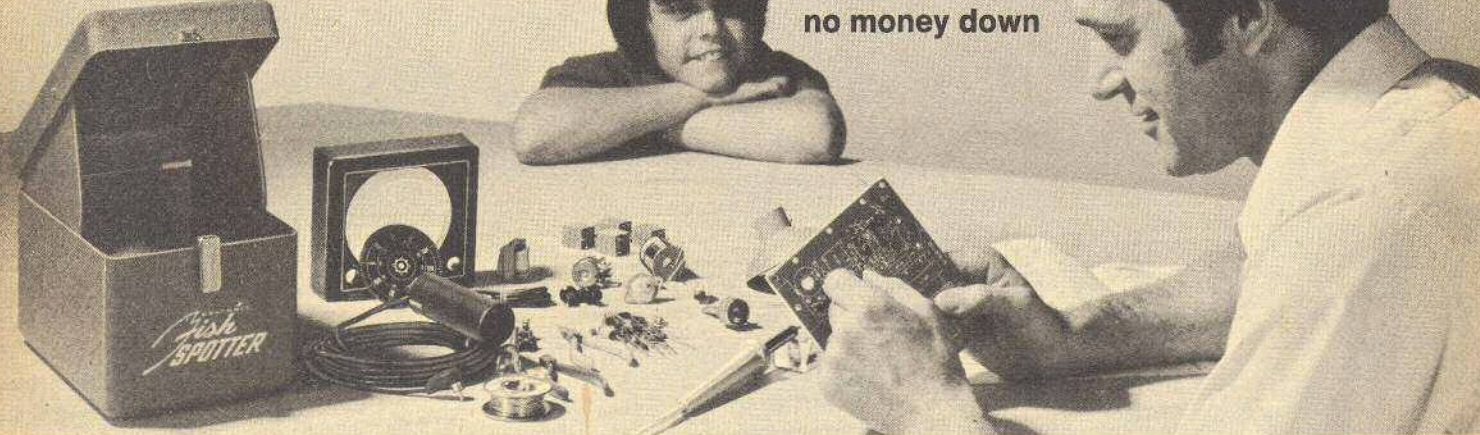


Transom-mount transducer (left above) is recommended for high-speed craft with planing hulls. Through-hull transducer (right above) is ideal for permanent installation in larger boats with displacement hulls.



The Heathkit fish spotter—a great father-son project that offers years of adventure afloat

89⁹⁵
no money down



a fully portable unit that detects fish down to 200 feet

An ideal kit for dad and son to build and enjoy together. The MI-29 fish spotter can be assembled easily in two evenings—with junior's help, the assembly can go even faster. This rugged portable will provide years of trouble-free use—years of great fishing. It has proved itself time and again to both charter skippers and amateurs in tracking Coho on the Great Lakes. The MI-29 detects schools or individual fish, indicates underwater terrain type, and reads depth to 200 feet.

Completely self-contained in weatherproof all-metal case, the MI-29 is powered by two 6 volt lantern batteries—available almost anywhere—and it utilizes solid-state circuitry for minimum current & drain. Cells last over 40 hours in normal use. The portable transducer can be suspended over the side of the boat, or quickly installed on the hull with the suction-cup mount supplied.

The MI-29 provides the exclusive Heath noise rejection circuit that lets you place the transducer near the engine without ignition interference; adjustable sensitivity control for achieving maximum signal; sun-shielding case, and glare-free dial.

The incomparable Heathkit assembly manual reduces building to simple step-by-step soldering operations—and there's a section to show you exactly how the fish spotter works. The separate operations manual is a complete guide to electronic fishing, with illustrated instructions on how to interpret dial readings, tips on using your fish spotter in various climate conditions, different waters.

Kit MI-29, with transducer, 8 lbs., mailable **89.95**

MI-29 SPECIFICATIONS—Range: 0-200' on hard bottom. Sounding: Rate 1440/min or 24/sec. Frequency, approximately 200 kHz. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashes at zero and again at the indicated depth from the object. Transducer: Barium titanate ceramic element encased in a watertight housing. Controls: Sensitivity, with on-off switch. Noise rejection level. Power requirements: 120 mA at 12 VDC. Batteries: 2 required (not supplied). 6V lantern type NEDA #908 or 916, Burgess F4M, Eveready #409 or 509, Ray-O-Vac #941. Dimensions: 7" H x 6 1/8" W x 10 1/8" D.



Complete with portable transducer transom mount

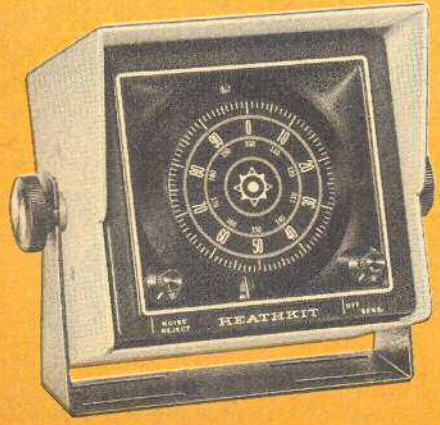
New "scanning" transducer bracket



Adds new versatility & convenience to your Heathkit Fish Spotter. "C" clamp mounting on gunwale or transom; scans 360° in horizontal plane (90° in vertical plane); locks in any position; bracket adjustable between straight down & parallel to water surface; entire bracket tilts & locks up out of water while under way; stainless steel & nickel-plated hardware for corrosion resistance; measures 45 in. overall; accepts 1 3/8" cylindrical transducers.

Kit MIA-2900-1, 4 lbs. **12.95**

An ideal beginner's kit



Our flasher-type depth sounder—a remarkable kit value

79⁹⁵ no money down

Goes together in one or two evenings.

The MI-19 shows depth down to 200 ft. Shows varying terrain and vegetation. Detects and gives separate readout for underwater floating logs and other obstacles. Even spots schools of fish. All solid-state circuitry gives you maximum reliability with minimum battery drain. An adjustable sensitivity control lets you set the sounder for maximum signal strength without extraneous echoes. An exclusive built-in noise rejection circuit makes it possible for you to install the transducer close to the engine without ignition interference. Unit can be powered by your ship's 12 VDC system or an external 12 VDC lantern battery. Has a sun-shielded calibrated dial, corrosion-resistant metal cabinet, stainless steel hardware, waterproof transducer with marine brass fittings. Choose either the through-hull transducer for permanent installation on larger boats, or the high-speed transom-mount transducer recommended for planing craft.

Kit MI-19-1, with through-hull transducer, 6 lbs., mailable **79.95**

Kit MI-19-2, with transom transducer, 8 lbs., mailable **79.95**

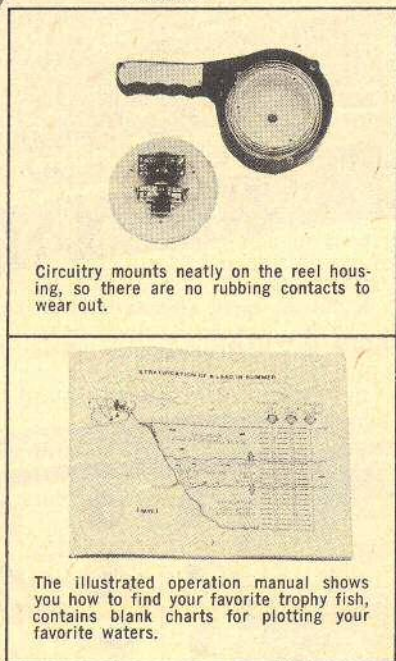
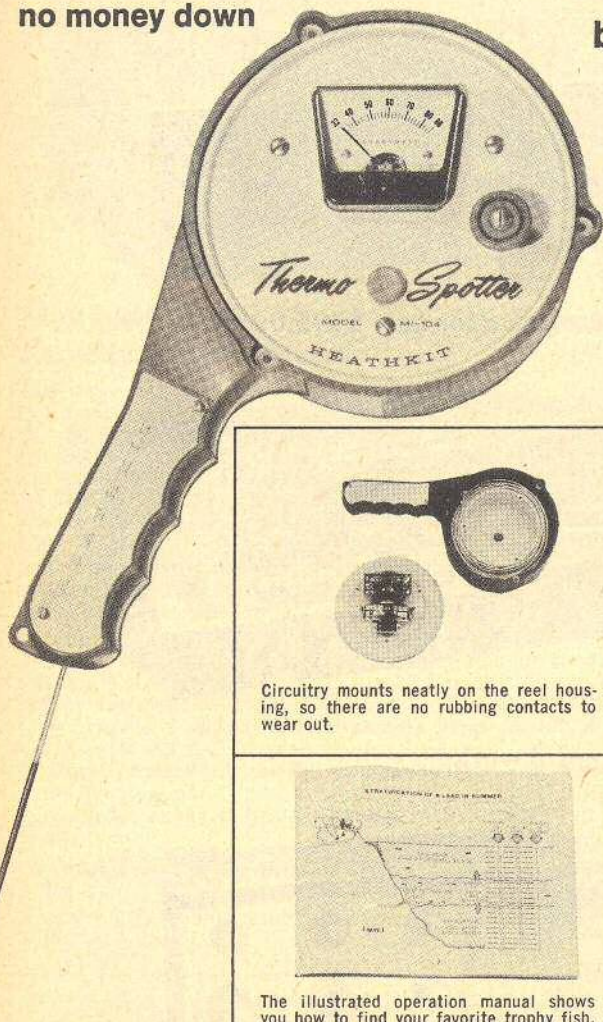
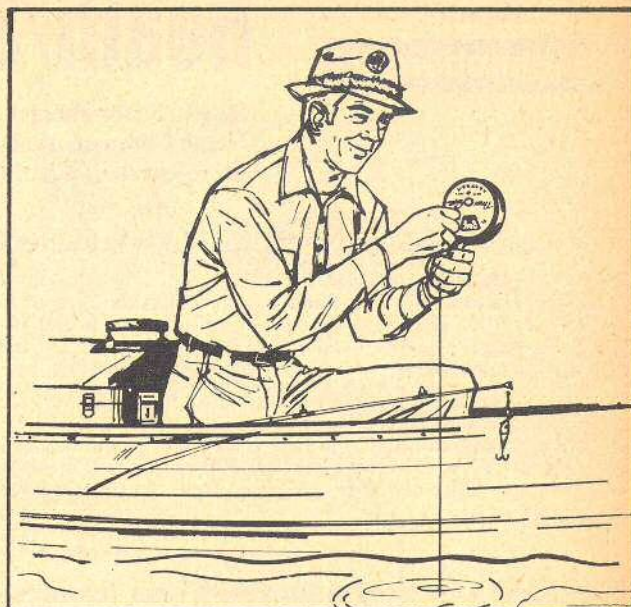
MI-19-1 & -2 SPECIFICATIONS—Range: 0 to 200 feet on hard bottom. Sounding: Rate, 1440 per minute or 24 per second. Frequency, approximately 200 kHz. Accuracy: Within 5% of actual depth. Depth indication: Neon lamp flashes at zero and again at the indicated depth from the object. Transducer: Barium titanate ceramic element encased in a watertight housing. Controls: Sensitivity, with on-off switch; Noise Rejection level. Transistor and diode complement: 9 transistors, 5 diodes. Power requirements: 120 milliamperes at 12-14 VDC with one return pulse. Dimensions: 6 1/8" W x 5 3/8" H x 5 3/4" D. Net weight: 4 1/2 lbs.

Built-in Heathkit self-service features save you money

Build yourself a thermo spotter and find the big ones fast

24⁹⁵
no money down

An ideal
beginner-kit



Circuitry mounts neatly on the reel housing, so there are no rubbing contacts to wear out.

The illustrated operation manual shows you how to find your favorite trophy fish, contains blank charts for plotting your favorite waters.

fish scientifically — this spotter helps you find the temperature level where specific fish feed

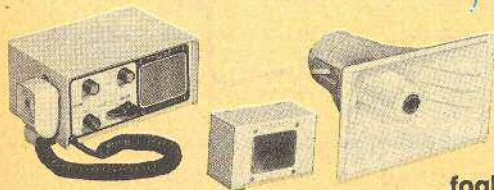
You can build this neat little kit in one or two hours — and it'll give you years of great fishing fun. Thermo fishing is science's latest contribution to angling. Studies show that fish live and feed at specific water/temperature levels, and the Heathkit Thermo Spotter makes finding those levels as easy as reeling out a line. Completely self-contained, the unit provides a submersible sensing element on a 100 foot cable, battery-powered meter circuitry — all housed in a rugged, high-impact plastic take-up reel case. To use, the fisherman simply lowers the line, presses the spring-loaded meter button for instant temperature readout, then checks depth as indicated by marks on the cable.

reliable thermistor bridge circuit

Neat, straight-forward design contributes to the Thermo Spotter's low price, yet gives superior performance. The circuit permits accuracy of well within $\pm 3^{\circ}\text{F}$. when properly calibrated. And all the electronics are located inside the reel hub so there are no rubbing contacts to malfunction. Kit includes operational manual with lake and fish temperature charts prepared by Stanley J. Lievens, Fisheries Division, Michigan Department of Natural Resources; reference thermometer; sensor line depth marking material. Easily assembles in a couple of hours. And the Heathkit Thermo Spotter can be put to good use by skin divers and pool owners, too!

Kit MI-104, 3 lbs., mailable **24.95**

MI-104 SPECIFICATIONS — ELECTRICAL: Circuit: Bridge type with thermistor sensor in one arm. Indicator: 50 μA meter. Temperature scale: $32^{\circ}\text{--}86^{\circ}\text{F}$. ($0^{\circ}\text{--}30^{\circ}\text{C}$). Accuracy: Within $\pm 3^{\circ}\text{F}$. Current drain: Less than 3 mA when in use. Battery: Size AA penlight cell (NEDA 15). **PHYSICAL:** Case: Molded high-impact plastic. Cable length: 100 ft. Reeling speed: 1 ft. per turn (approx.). Dimensions: $10\frac{1}{4}'' \times 5\frac{3}{4}'' \times 3\frac{1}{4}''$.



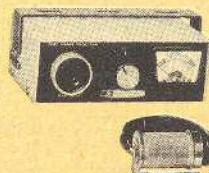
Heathkit 5-function foghorn/hailer

Foghorn, hailer, boathorn, listener, intercom — all in one handy package that runs on 12-volt DC. Kit includes 20-ft deck speaker cable and gimbal mount. Printed circuit-board and cable harness make assembly easy.

Kit MD-19A, with horn speaker, 16 lbs., mailable **89.95**

Kit MDA-19-1, optional intercom speaker, 2 lbs., mailable **9.95**

MD-19A SPECIFICATIONS — Output power: 55 W peak. Boat horn frequency: Approx. 530 Hz. Foghorn frequency: Approx. 390 Hz. Foghorn rate: Approx. 2-90 sec., variable. Foghorn duration: Approx. 2-20 sec., variable. Speaker: 8 ohm weather resistant horn. Microphone: Ceramic with push-to-talk switch. Controls: Call volume; Listen volume; Station select; Function; Foghorn rate and duration. Power requirements: 12 VDC nominal, 4.5 A max. Idle current: 750 mA or less. Dimensions: $4\frac{3}{4}'' \text{ H} \times 9\frac{3}{4}'' \text{ W} \times 7\frac{3}{4}'' \text{ D}$. Color: White wrinkle and dark blue.

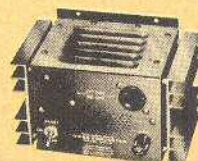


Visible & audible fuel vapor detector ... 47.95

Meter shows "Safe-Dangerous-Explosive" conditions. Alarm sounds when fumes are present. "Fail-safe" provision triggers alarm when any component fails; built-in relay circuits for bilge blower etc.

Kit MI-25, 3 lbs., mailable .. **47.95**

MI-25 SPECIFICATIONS — Voltage: 12 V DC, $\pm 10\%$. Current: 1.0 amp nominal. Panel size: $2\frac{1}{4}'' \text{ H} \times 5\frac{1}{4}'' \text{ W}$. Depth: 5". Detector head size: $1\frac{1}{2}''$ round x $2\frac{1}{2}''$ long. Length of interconnecting cable supplied: 15'. Color: Marine white & black. Material: Aluminum. Temp. range: -30°C . to $+50^{\circ}\text{C}$. Audio alarm: 2500 Hz.



Low cost power converter ... 34.95

Solid-state MP-10 converts 6 or 12 VDC to 117 VAC square wave, up to 175 watts continuous. Not for high starting current or sine wave applications. Write for bulletin.

Kit MP-10, 8 lbs., mailable **34.95**

MP-10 SPECIFICATIONS — Power source: 6 or 12 V storage battery. Power output: Nominal 117 V, 60 Hz AC; 12 V operation 175 W continuous, 240 W max.; 6 V operation, 120 W continuous and max. Input current for continuous ratings: 6 V operation, 25 A, 12 V operation, 16.5 A.

Heath/Schlumberger Scientific

Heath/Schlumberger Scientific Instruments is a division of the Heath Company specializing in fully assembled and calibrated instrumentation for research, industrial and educational applications.

New Heath/Schlumberger SM-114A Scaler extends the range of your counter to 600 MHz... for only \$365.00

The SM-114A will extend the useful range of any counter with more than 100 kHz capability. Pushbuttons allow division of input frequency by 1, 10 or 100. The $\div 1$ range provides 17 dB gain in the 10 MHz to 100 MHz range. The $\div 10$ and $\div 100$ ranges will scale frequencies between 40 and 600 MHz.

Output voltage and impedance matches virtually all counters... 50 ohm input impedance with 50 mV rms sensitivity and output of 1 V P-P into a 50 ohm load. The input is protected to 5 V rms and has a VSWR of less than 2:1 up to 2 V rms. The 1 V P-P output will drive almost all counters, and with only 50 mV required from the signal source.

Assembled SM-114A, 5 lbs. \$365.00



New SM-102A Programmable Timer features 100 nanosecond resolution for only \$395.00

A high performance timer for production, r&d and design work. The SM-102A provides measurement capability for time interval, period, period average, events, scaled events and frequency ratio. Resolution is 100 ns direct count. Both start and stop inputs are internally switch-selected to allow for zero-crossing or TTL-level signals. True differential input allows measurement of time interval between signals that do not have a common ground, as well as those referenced to ground. Input sensitivity is 100 mV rms; the input is protected to ± 50 V DC and 25 V rms at 20 MHz. Front panel binding post connectors and binding post to BNC adapters (supplied) provide wide connection flexibility.

Standard BCD output and programmability make automatic measurements easy. External control of range and reset is provided, as well as 5 digits of BCD output, overrange flag and completion flag. The SM-102A is completely computer and printer compatible.

Assembled SM-102A, 7 lbs. \$395.00

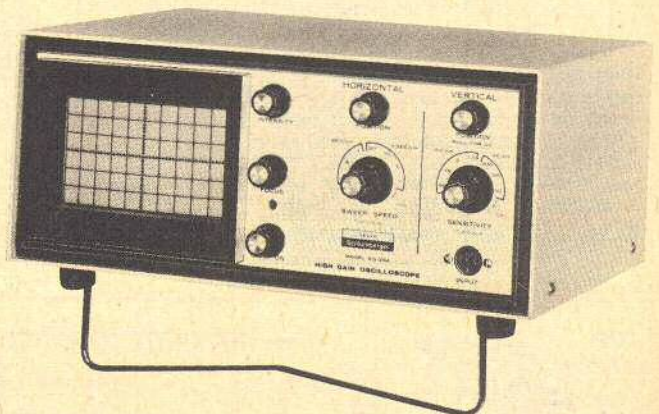


New High Gain DC Oscilloscope... ideal for biological, physiological work, transducer design and investigation... only \$495.00

The new SO-29A provides all the most-needed features for low level signal work. Sensitivity is 50 μ V/cm. An automatic triggered timebase provides 7 calibrated ranges from 3 sec/cm to 1 ms/cm. When the waveform is less than the trigger threshold, the timebase circuitry automatically generates a baseline after 3 seconds... a trace is always present whether the scope is actually triggered on a waveform or not. An external triggering terminal is also available. Two different voltages are available for powering transducers: 9 V @ 20 mA (regulated) and unregulated 20 V @ 30 mA. A vertical out jack on the rear panel provides one volt for every cm of deflection with DC-30 kHz response... ideal for connection to strip chart recorders, pen recorders or A/D converters.

Other features include 7 calibrated sensitivity ranges from 50 μ V/cm to 50 mV/cm... input protection to 150 V continuous, 500 V transient... extremely low input bias current of 10^{-11} amp... automatic trace restoration... automatic intensity ranging to protect the CRT phosphor on slow sweep speeds... all solid-state design.

Assembled SO-29A, 17 lbs. \$495.00



Heath/Schlumberger Scientific Instruments
Dept. 503-409
Benton Harbor, Michigan 49022

HEATH
Schlumberger

Please send the literature I have circled:

a b c d e f g h i j k l m

Name _____

Title _____

Company/Institution _____

Address _____

City _____ State _____ Zip _____

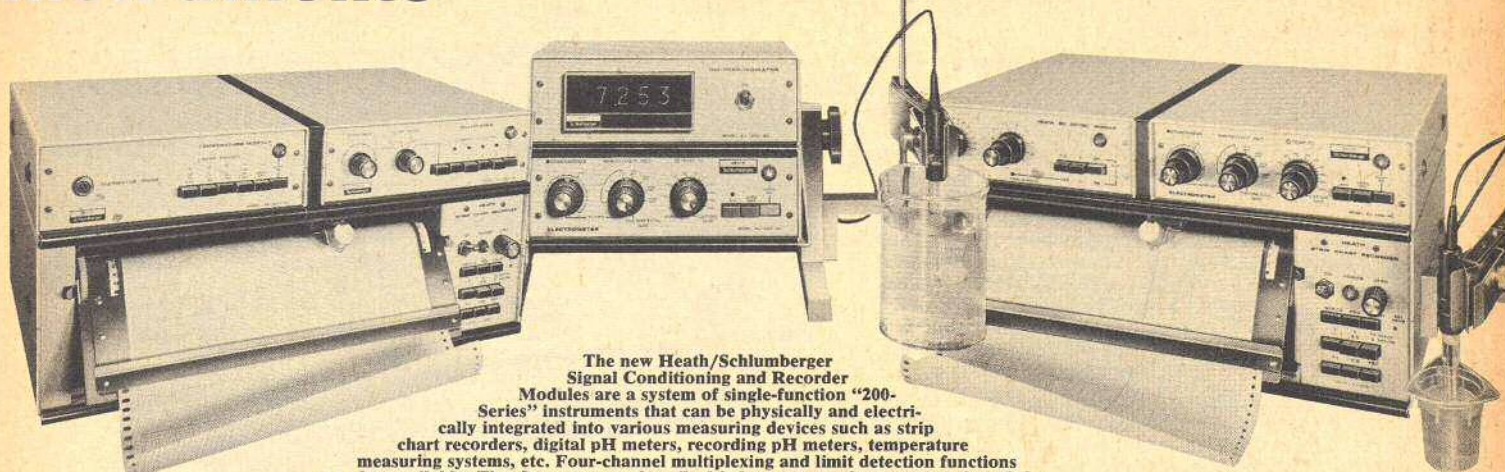
Instrumentation Catalog and specification sheets available

Our new catalog and/or detailed specification/description sheets will up-date you on the growing Heath/Schlumberger line of electronic and analytical instrumentation. Check over the list below and circle the appropriate letters on the coupon at left.

- a. Complete Instrumentation Catalog
- b. Ratio-Recording Spectrophotometer Brochure
- c. pH Meter brochure
- d. EU-205B Strip Chart Recorder System brochure

- e. SM-104A/SM-105A 80 MHz Frequency Counters brochures
- f. EU-81A 1 MHz Function Generator brochure
- g. EU-70A 15 MHz Dual Trace Scope brochure
- h. EU-801E Computer Interface brochure
- i. EU-101A Malmstadt-Enke Lab Station brochure
- j. SM-114A 600 MHz Scaler
- k. SM-102A Programmable Timer
- l. SO-29A DC Oscilloscope
- m. "200-Series" Modules

Instruments



The new Heath/Schlumberger Signal Conditioning and Recorder Modules are a system of single-function "200-Series" instruments that can be physically and electrically integrated into various measuring devices such as strip chart recorders, digital pH meters, recording pH meters, temperature measuring systems, etc. Four-channel multiplexing and limit detection functions are also available. The three systems described below are merely representative of the vast flexibility of the new "200-Series". Many other combinations suggest themselves to you.

Multiple-Channel Recording Thermometer

Many research and industrial applications require continuous recorded monitoring of multiple thermal media. This is easily accomplished by using the EU-205-11 Strip Chart Recorder, an EU-200-41 Temperature Module and an EU-200-92 Multiplexer Module. This configuration provides monitoring and recording capability for up to four channels of 0-100°C temperature information, with the option of expanding to many more channels with additional Multiplexer Modules.

Because of the fully programmable nature of the basic recorder and the control flexibility of the Multiplexer Module, each channel of data can be sequentially sampled and recorded at rates between 1 and 20 seconds/sample using the internal multiplexer programmer or up to 5 samples/second using a TTL-compatible external programmer.

- Assembled EU-205-11 23-spd recorder, 21 lbs. \$420.00
- Assembled EU-200-41 Temp. Module, 9 lbs. \$175.00
- Assembled EU-200-92 Multiplex Module, 9 lbs. \$175.00

Research-grade Digital pH/plon Meter

The Digital pH Meter configuration is produced by pairing the EU-200-30 Electrometer Module with the EU-200-62 Digitizer/Indicator Module. In combination with a suitable pH electrode, this system forms a precise, high impedance digital pH/plon meter with 4½ digit readout, 0-14 pH range, 0.001 pH resolution and ±0.002 pH accuracy.

Additional features include automatic temperature compensation with a suitable 700-series YSI or Heath temperature probe, convenient front panel selection of Cation, Anion or millivolt modes and Temperature and Standardization controls. Rear panel inputs available on the Electrometer Module accept standard Beckman-type connectors and BNC plugs. Pin and banana-type connectors are available for reference electrodes. Polarization current for the Karl Fisher Titration is also provided. 4½ digits of BCD TTL-compatible information are available on the rear of the Digitizer Module.

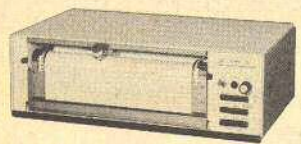
- Assembled EU-200-30 Electrometer 9 lbs. \$275.00
- Assembled EU-200-62 Digitizer/Indicator 9 lbs. \$495.00

Expanded Scale Recording pH/plon Meter

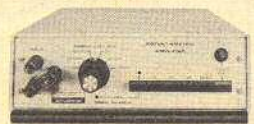
For high accuracy pH recording and scale expansion capability, combine the EU-205-11 Recorder Mainframe with the EU-200-30 Electrometer Module and the EU-200-02 DC Offset Module. This combination provides accuracy of ±0.003 pH, resolution of 0.0025 pH, manual or automatic temperature compensation from 0 to 100°C., standardization control and slope control.

The DC offset capability is especially useful for observing very small changes in pH. In this configuration, the system allows expansion of any one selected pH unit (4 to 5, 10 to 11, etc.) to a full 10" scale. 15.1 full scales of offset are available, with switchable positive or negative polarity.

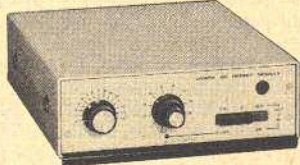
- Assembled EU-205-11 23 spd recorder, 21 lbs. \$420.00
- Assembled EU-200-30 Electrometer Module, 9 lbs. \$275.00
- Assembled EU-200-02 Offset Module, 7 lbs. \$100.00



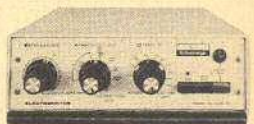
EU-205-11 Recorder Mainframe. Provides 23 speeds from 30 in/min to 0.2 in/hr ... digital chart drive ... complete programmability ... 20"/sec writing speed ... 10" chart.
Assembled EU-205-11, 21 lbs. \$420.00



EU-200-01 Potentiometric Amplifier Module. Provides a 1 V output for any input between 1 mV and 500 V. DVM compatible. Extremely high input Z at balance.
Assembled EU-200-01, 8 lbs. \$175.00



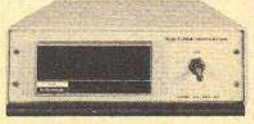
EU-200-02 DC Offset Module. Allows up to 15.1 full scales of calibrated suppress ... switchable polarity ... ±0.1% accuracy ... ±0.002%/C° zener reference stability.
Assembled EU-200-02, 7 lbs. \$100.00



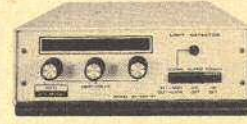
EU-200-30 Electrometer Module. Provides 0-14 pH range, extremely high input Z, ±0.0015 pH accuracy, manual or automatic temperature control, standardize & slope controls.
Assembled EU-200-30, 9 lbs. \$275.00



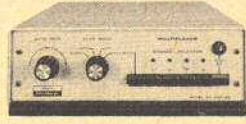
EU-200-41 Temperature Module. 4 pushbutton selected ranges of -5 to 45°C, -30 to 50°C, 0 to 100°C and 32 to 200°F. 10 mV/degree output. Compatible with all YSI 700 series temperature probes.
Assembled EU-200-41, 9 lbs. \$175.00



EU-200-62 Digitizer/Indicator Module. Provides 4½ digits of readout and four decades of BCD information to drive a digital printer.
Assembled EU-200-62, 9 lbs. \$495.00



EU-200-91 Limit Detector Module. Provides visual and audible alarms, relay control and TTL-compatible signals when the input voltage exceeds the preset limit of between -2 & +2 V.
Assembled EU-200-91, 8 lbs. \$260.00



EU-200-92 Multiplexer Module. Up to four channels can be sequentially sampled at variable rates between 1 and 20 seconds/sample. Manual & external scanning capability also provided.
Assembled EU-200-92, 9 lbs. \$175.00

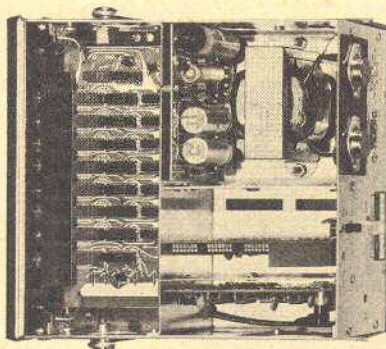
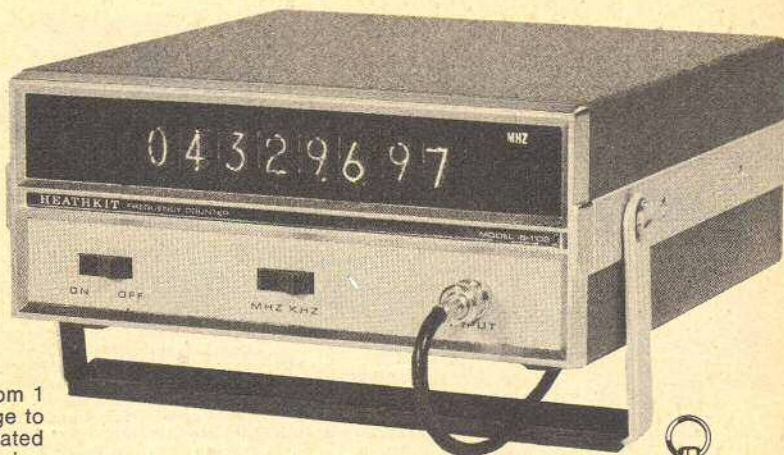
Our finest frequency counter kit- 120 MHz capability for only 349⁹⁵ no money down

Get this lab-quality solid-state eight-digit counter at an uncomparable kit price and you can learn a little, or a lot, about the latest ECL (Emitter Coupled Logic) circuitry too. Naturally, no electronics knowledge is needed for assembly. The manual keeps it as simple as ever. But if you really want to get into the circuitry, the supplementary sections contain a wealth of information. The Heathkit IB-1102 has an overrange lamp, gate lamp, and two range indicator lamps for an easy-to-read display. Overall accuracy is assured by the use of the temperature compensated "clock." The high-impedance (FET) input circuit presents minimum loading to the circuit under test. And an automatic triggering level feature offers simple "hands-off" operation.

The Heathkit IB-1102 features a sensitivity of 50 mV to 100 MHz and 125 mv. above. It will accept inputs up to 120V rms from 1 Hz to 150 Hz, 50V at 40 MHz, and 3V at 120 MHz without damage to the instrument. The time base crystal is a temperature compensated TCXO offering ± 1 ppm stability from $+10^\circ$ to $+40^\circ$ C and an aging rate of less than ± 1 ppm/yr. The full eight-digit cold-cathode readout lets you read frequencies with the best possible resolution (down to 1Hz) without bothering to switch the time base.

Kit IB-1102, 12 lbs., mailable 349.95

IB-1102 SPECIFICATIONS — FREQUENCY MEASUREMENTS — Range: 1 Hz to 120 MHz. Gate time: 1 msec or 1 sec. Accuracy: ± 1 count \pm time base stability. Readout: kHz or MHz with fixed decimal point. **SIGNAL INPUT —** Sensitivity: 45 mV rms to 80 MHz, 50 mV to 100 MHz, and 125 mV to 120 MHz. (Typical response of input amplifier.) Impedance: 1 megohm in parallel with 15 pF. Trigger level: Automatic. Overload: Diode protected input circuit. **TIME BASE —** Crystal Frequency: 4 MHz, TCXO (Temperature Compensated Crystal Oscillator). Stability: Aging rate: ± 1 ppm/year. Short term: Better than 0.5 ppm in 1 sec. Temperature: ± 1 ppm between 15° C to 50° C. Line voltage: 0.5 ppm with $\pm 10\%$ voltage change. Frequency trimming: Accuracy: ± 1 ppm. Range: ± 10 ppm. Sample rate: 500 msec. (Time between two openings of counting gate.) External time base input: Frequency: 1 MHz with stability $> 10^{-7}$. Input impedance: 1000 Ω . Maximum input: 3V rms. **GENERAL —** Display: 8 digits plus overrange, gate, kHz, and MHz lamps. Operating temperature range: Operating 10° C to 40° C. Power requirements: 120/240 VAC, 50/60 Hz, 30 W. Connectors: Two BNC's. Input on front panel; external clock on rear panel. Cabinet dimensions: 8 $\frac{1}{2}$ " W x 3 $\frac{5}{8}$ " H x 9 $\frac{1}{4}$ " D.



All ICs are mounted on plug-in connectors, and three of the four fiberglass circuit boards plug into the chassis for ease of construction and service. The counter can be wired for either 120 or 240 VAC operation. And the detachable test cable and line cord, and convenient bail handle make it completely portable.

Our IB-1101 gives you 100 MHz range for just 269⁹⁵ no money down

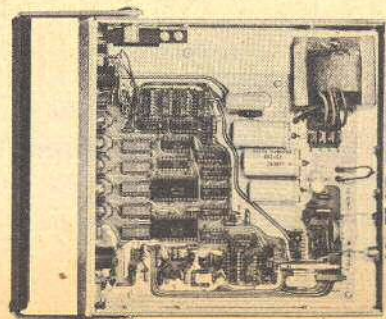
The Heathkit IB-1101 has an exclusive Heath-designed input circuit that will accept input levels from less than 50 mV to 140 V RMS, depending on frequency, without damage to the instrument. The full five-digit readout can be expanded to eight-digit capability by a simple method using the overrange circuitry. To read the least significant Hz digit of a frequency greater than 100 kHz, you simply switch the range selector from the MHz position to kHz. To make accurate readout and operation even easier digits are positioned automatically with respect to decimal point, and MHz, kHz, overrange and gating conditions are shown as illuminated legends on the front panel. The one megohm input impedance and low input capacitance of the Heathkit IB-1101 minimize the possibility of circuit loading.

The all solid-state circuitry and cold cathode readout tubes mean instant operation whenever the counter is turned on. Count storage circuitry provides a non-blinking or count-up readout, changing only if the count varies. The time-base crystal is custom designed for rigid stability, with accuracy better than ± 3 ppm from 17° to 32° C.

The Heathkit IB-1101 is housed in a lightweight, compact aluminum case with zinc-diecast front panel, tinted viewing window, BNC input connectors and tilt/stand handle.

Kit IB-1101, 8 lbs., mailable 269.95

IB-1101 SPECIFICATIONS — Frequency range: 1 Hz to over 100 MHz. Accuracy: ± 1 digit \pm time base stability. Sensitivity: 50 mV rms, to 50 MHz. 100 mV rms, 50 MHz to 100 MHz. Gate time: 1 ms or 1 sec., with auto reset. Input impedance: 1 megohm, shunted by less than 15 pF. Maximum input voltage: 140 rms at 400Hz decreasing to 3 P rms @ 100 MHz. Maximum dc input 200 V. External standard input: 1 MHz, 2.5 V rms to 6.5 V rms, sine or square wave, approx. 2.5 k ohms, 70 pF. Time base (after 30 min. warmup): 1 MHz. Time base stability (after 30 min. warmup): Better than ± 3 PPM between 17° C and 32° C. Better than 1 PPM/month after 30 days operation. Better than ± 20 PPM between 0° C and 40° C. Front panel indications: 5 10-numeral cold-cathode tubes. 4 neon lamps for overrange, gate, MHz and kHz. Rear panel: Input sensitivity control, time base osc. adjust, BNC external standard input (1 MHz), TP level control, TP output terminal, removable 3-wire line cord. Front panel: Power off/on switch, range MHz/kHz switch, BNC input connector. Power requirements: 120/240 VAC, 50/60 Hz, 15 W. Dimensions: 3 $\frac{3}{8}$ " H x 8 $\frac{3}{4}$ " W x 9" D.

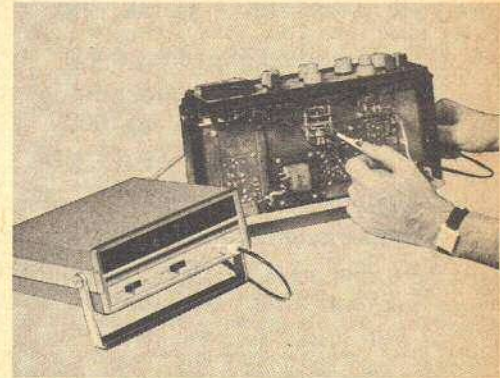


You can build your IB-1101 in approximately 10 hours. The 26 digital IC packages, and readout tubes plug into individual sockets. All other components, including shielded JFET, 10 silicon transistors, nine diodes and two zener diodes mount neatly on one double-sided fiberglass board. Only two initial adjustments are necessary after completion. The input sensitivity control has a built-in variable-level signal source for the first, and a standard AM radio can be used as the time-base oscillator adjustment standard.

An economy counter that you can build in two evenings



199⁹⁵
no money down



A highly accurate, low cost counter for dozens of applications—engineering, R&D, radio & TV service. If you need accurate frequency measurement, you need the Heathkit IB-101. You get accurate counting from 1 Hz to over 15 MHz with 5-digit cold-cathode readout tubes. The computer-type integrated circuitry eliminates blinking readout—provides a rock-stable divider chain that never needs adjustment. Overrange indicator and Hz/kHz switch give the IB-101's 5-digit readout the capability of an 8-digit counter. Set the range switch to kHz and read out to the nearest kHz. Push the switch to the Hz position and read down to the last Hz. Overrange & Hz/kHz indicators light up to give correct range and error-free measurement. You can make an 8-digit measurement to over 15 MHz in seconds.

A dual-gate, diode-protected MOSFET provides proper triggering over a wide range of input levels...without adjustment. Input Z is 1 megohm shunted by less than 20 pF to minimize loading. A special low drift, temperature compensated 1 MHz crystal oscillator provides a highly stable time base.

The all solid-state circuitry utilizes 26 ICs, 7 transistors, a MOSFET & 6 diodes. All ICs and display tubes mount in sockets. Compare features, performance & price...the best value in counters is the Heath IB-101. Order yours today.

Kit IB-101, 7 lbs., mailable199.95

IB-101 SPECIFICATIONS: Frequency range: 1 Hz to greater than 15 MHz. Accuracy: ± 1 count \pm time base stability. Gate times: 1 millisecond or 1 second with automatic reset. **INPUT CHARACTERISTICS:** Sensitivity: 1 Hz to 1 MHz, less than 100 mV rms. 1 MHz to 15 MHz, less than 250 mV rms. After 30 minutes warmup. Trigger level: Automatic. Impedance: 1 Megohm shunted by less than 20 pF. Maximum input: 200 V rms, DC - 1 kHz. Derate at 48 V per frequency decade. **TIME BASE:** Frequency: 1 MHz crystal controlled. Aging rate: Less than 1 PPM/month after 30 days. Temperature: Less than ± 2 parts in 10^7 /degree C. 20 to 35 degrees C after 30 minutes warmup. $\pm .002\%$ from 0 to 40 degrees C. **GENERAL:** Readout: 5 digits plus overrange. Ambient temperature range: Storage, -55 to 80 degrees C; Operating, 0 to 40 degrees. Power requirements: 105-125 or 210-250 VAC, 50/60 Hz, 8 watts. Cabinet dimensions: 8 1/4" W x 3 3/8" H x 9" D not including handle.

Extend your counter's range to 175 MHz, get improved sensitivity too



99⁹⁵
no money down



You can assemble a Heathkit IB-102 scaler in one or two evenings and extend the range of virtually any counter to 175 MHz. In most cases you'll get improved sensitivity across all ranges too. At 100 MHz, for example, 50 mV maximum is all that's needed to trigger. It's ideal for anyone doing HF & VHF work, two-way radio repair, hams and CB, audio equipment, RF design and R & D.

The IB-102 will divide input frequencies from 2 MHz to 175 MHz with the scaled output fed to any compatible frequency counter with a 1 megohm input. Front panel switch-selection of 10:1 or 100:1 scaling ratios...resolution down to 10 Hz, with a counter having a 1 second time base. For use with frequencies within the range of the counter being used, a 1:1 switch position provides straight-thru counting without scaling.

Once the division ratio is selected, just adjust the sensitivity control for a peak meter reading in the green portion of the scale, indicating an input level sufficient to obtain proper results. The Test Switch

gives a quick, easy method of checking input level...just press it— if the frequency reading changes, the input level is too low or the sensitivity control is not adjusted properly.

Other features include all solid-state transistor/IC design, filtered & regulated power supplies, convenient carrying handle/tilt stand. Add 175 MHz measurement capability to your bench now...order your new IB-102 scaler today.

Kit IB-102, 8 lbs., mailable99.95

IB-102 SPECIFICATIONS — Frequency Range: 2 MHz to 175 MHz. Resolution: Counter with 1 millisecond time base - divide by 10=10 kHz; divide by 100=100 kHz. Counter with 1 second time base - divide by 10=10 Hz; divide by 100=100 Hz. Meter: Green area indicates adequate signal level. **INPUT —** Sensitivity: 50 mV, 2 MHz to 100 MHz, 125 mV, 100 MHz to 175 MHz. Impedance: Divide by 1, same as frequency counter. Divide by 10 and 100, 50 ohms. Amplitude (maximum): 3 volts RMS. **OUTPUT —** Amplitude (minimum): 1 volt across 1 megohm and 20 pF load. Rise Time: 20 nanosecs. Fall Time: 10 nanosecs; Offset from Ground: Adjustable from zero to ± 500 millivolts. **GENERAL —** Power Requirements: 110-130 or 220-260 VAC, 50/60 Hz, 5 watts. Ambient Temperature Range: Storage, -55 degrees C to 80 degrees C. Operation, 10 degrees C to 40 degrees C. Dimensions: 8 1/4" W x 3 3/8" H x 9" D (not including handle).

No money down on any kit - up to 2 years to pay - see order blank for details.

A digital multimeter kit that meets lab specs

- Solid-state digital circuitry
- 3½ digits for 100 uV resolution on 200 mV range, 1V on 1000V.
- 10 voltage ranges — 5 AC, 5 DC
- 10 current ranges — 5 AC, 5 DC
- 6 resistance ranges to 20 Megohm
- Furnished, assembled DC calibrator permits 0.2% accuracy DCV (can be lab calibrated to 0.1%)



229⁹⁵

NO MONEY DOWN

Today do-it-yourself equipment is a better deal than ever for the dollar-wise technician or hobbyist. The Heathkit IM-102 digital multimeter is a perfect example. This kit has accurate digital circuitry and readout that's obviously superior to analog-type instruments, even better than some wired DMMs available, yet it's priced substantially below anything like it on the market. But that's only part of the story. All this highly sophisticated circuitry is easier to assemble than ever. Printed boards, ICs and our more than 25 years' experience in producing the world's most lucid assembly manuals make Heathkit building the low cost, easy way to better instruments.

The IM-102 accurately measures AC and DC voltages and currents, and resistance with no need to change probes or switch the meter for changes in DC polarity. The unit automatically displays a positive or negative DC voltage and current indicating the correct amplitude and polarity.

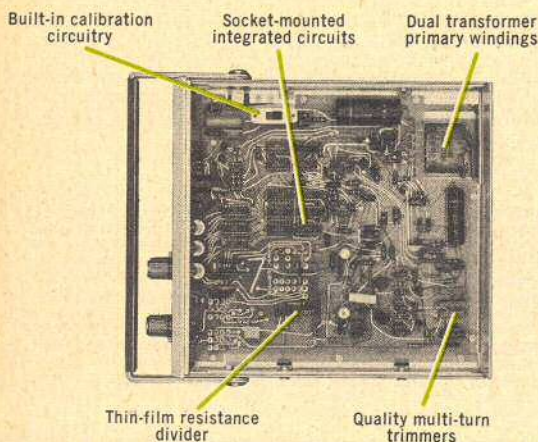
Five overlapping ranges measure voltage from 100 uV to 1000 V on DC (either polarity); 5 ranges cover 100 uV to 500 V on AC; 10 ranges measure 100 nanoamperes to 2 amperes on AC or DC, and 6 ranges of resistance measurement from .1 ohm to 20 megohms. Input impedance is exceptionally high — approximately 1000 megohms on 2 V range (10 megs on higher ranges), with overload protection built-in on all ranges. Decimal point is automatically placed with range selection and overrange is indicated with a front panel light.

High quality precision components, 3½ digits and ease of calibration contribute to the IM-102's lab-grade accuracy. Analog to digital conversion is accomplished by a patented, dependable Dual Slope Integrator, that does not depend upon a stable clock frequency for accuracy.

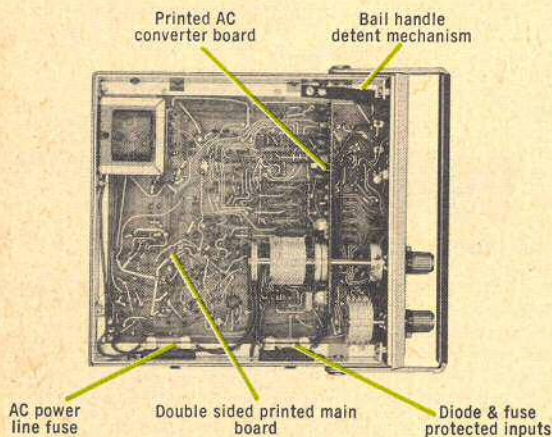
A Heath-designed and assembled precision DC calibrator is furnished with each IM-102. An internal circuit and a unique transfer method provides accurate AC voltage calibration.

Kit IM-102, 9 lbs., mailable 229.95

IM-102 SPECIFICATIONS — DC VOLTMETER — 5 ranges: 200 mV, 2V, 20V, 200V, 1000V. Input Impedance: Approx. 100 megohm on 200 mV, approx. 1000 megohm on 2V, 10 megohm on all other ranges. **Accuracy:** ±0.2% ±1 digit with furnished DC calibrator, ±0.1% ±1 digit with lab calibration. **Overload protection:** 350V on 200 mV and 2V, 1000V on other ranges. **Overrange capability:** 20% minimum (subject to overload protection limits). **Resolution:** 100 uV. **Full scale step response:** 2 sec. to rated accuracy. **Input bias current:** 10nA maximum at reference conditions. **Temperature influence:** ±0.005%/°C., ±1 digit/°C. **Normal mode rejection:** 35dB minimum @ 60 Hz. **Common mode rejection:** 80dB minimum with 1k unbalance @ 60 Hz. **OHMMETER — 6 ranges: 200 ohm with 1mA test current, 2k with 100uA, 20k with 10uA, 200k with 10uA, 2M with 1uA, 20M with 100nA. Accuracy:** With DC calibrator, ±0.5% ±1 digit on 200, 2k, 20k, 200k ranges; ±1.5% ±1 digit on 2M and 20M ranges. With lab calibration, ±0.5% ±1 digit on 200 ohm range; ±0.25% ±1 digit on 2k, 20k, 200k; ±1% ±1 digit on 2M and 20M. **Overload protection:** 250 V RMS. **Resolution:** 0.1 ohm (200 ohm range). **Full scale step response:** 2 sec. on ohm and k ohm ranges, 10 sec. at 10 megohms to rated accuracy. **Temperature influence:** ±0.05% @ 0°C., ±1 digit @ 0°C. **Overrange capability:** 20% minimum. **AC VOLTMETER (Average responding, RMS calibrated) — 5 ranges: 200mV, 2V, 20V, 200V, 1000V. Input impedance:** 1 megohm @ 150 pF. **Overload protection:** 250 V RMS on 200mV and 2V, 500 V on higher ranges. **Accuracy:** With DC calibrator, ±0.75% ±1 digit for 40Hz-10kHz, ±1% ±1 digit for 10kHz-20kHz on 200 mV and 2V ranges; ±0.75% ±1 digit for 40Hz-5kHz, ±1.5% ±1 digit for 5kHz-10kHz on 20V and 200V ranges; ±1.5% ±1 digit for 40Hz-7.5kHz on 1000V range. **DC AMMETER — 5 ranges: 200uA, 2mA, 20mA, 200mA, 2A. Voltage drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±0.5% ±1 digit for 2A, ±0.3% ±1 digit on all other ranges. With lab calibration, ±0.25% ±1 digit for 200uA; ±0.2% ±1 digit for 2mA and 20mA; ±0.3% ±1 digit for 200mA; ±0.5% ±1 digit for 2A. **Resolution:** 100 nanoamperes (200uA range). **Overload protection:** 3 A, any range, by fuse and clamp diodes. **AC AMMETER (40Hz-10kHz) — 5 ranges: 200uA, 2mA, 20mA, 200mA, 2A. Voltage drop:** 0.2 V (nominal). **Accuracy:** With DC calibrator, ±1.5% ±1 digit on 2A, ±1% on all other ranges. With lab calibration, ±0.75% ±1 digit on 200uA; ±0.7% ±1 digit on 2mA and 20mA; ±0.8% ±1 digit on 200 mA; ±1% ±1 digit on 2A. **Resolution:** 100 nanoamperes. **Overload protection:** 3A, any range, by fuse and clamp diodes. **GENERAL — Display:** Maximum count, 1999. **Overrange indication,** automatic beyond 1999. **Polarity indication,** automatic "+" or "-". **Reading rate,** 5 per sec., nonblink (200 millisecond integration time). **Numeric display** by side-viewing neon glow tubes with integral decimal points. **Power requirement:** 120 or 240 VAC, 50Hz/60Hz, 8 W nominal. **Operating temperature:** 10°C-40°C. **Reference:** 25°C. ±1°C. **Size:** 3" H x 7" W x 7.9" D.



The all solid-state design of the IM-102 features cold cathode readout tubes and a memory circuit for stable non-blinking operation. Kit includes standard banana jack connectors complete with test leads.

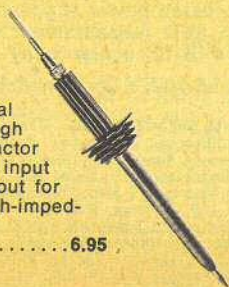


The IM-102 has a detachable three-wire line cord (no batteries needed), dual primary transformer, isolated floating ground and completely enclosed lightweight aluminum cabinet with die-cast front panel and tinted viewing window.

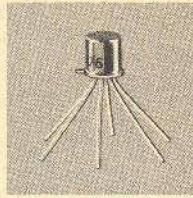
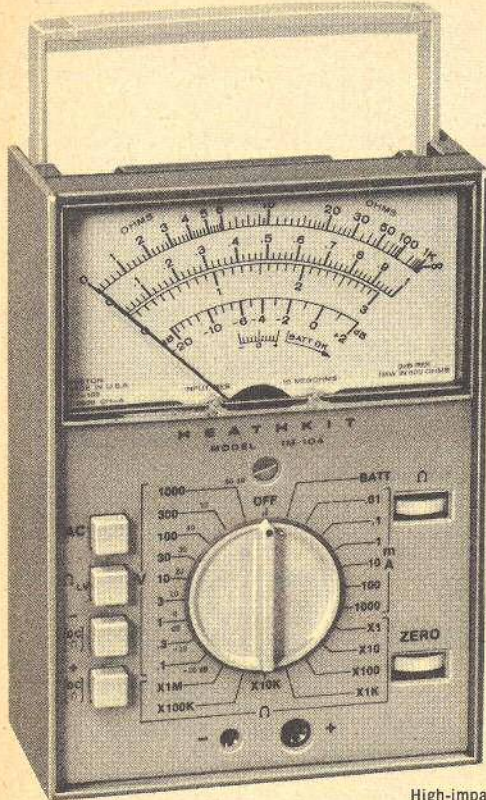
New high voltage probe for your IM-102 Multimeter

Ideal for use with the new IM-102 Digital Multimeter when measuring extremely high (up to 30,000 V) DC. Has multiplication factor of 100 on DC ranges of any 10 megohm input meter, provides useful 1000 megohm input for measuring voltages as low as 1 V in high-impedance circuits. Has 1% resistor.

Kit ID-1041, 1 lb., mailable 6.95



Our new FET VOM—do-it-yourself “professional” portable



Field Effect Transistor circuitry provides 10 megohm input impedance and instant operation.



79⁹⁵
NO MONEY DOWN

High-impact Lexan case with self-storing handle. A 95° wide-angle viewing area provides high resolution. Pushbuttons select AC, ohms LV, -DC and +DC ohms. Fuse is in-line with input connector for extra protection and convenience. Red and black test leads included with kit.

This is the tool you've been waiting for. A portable lab-grade FET VOM combining accuracy, versatility, convenience and ruggedness — in an easy-to-build dollar-saving kit! Our new IM-104 has low-drift 1% precision metal film and wirewound resistors for exceptional stability. Dual FET meter amplifier circuitry for 10 megohm input impedance and instant operation. And there are 53 ranges on four scales. Nine DCV ACV ranges from 0.1V to 1000V. Six current ranges cover 0.01mA to 1000mA. DC & AC. Seven resistance ranges from 1 ohm to 100 megohms, conventional or low voltage modes. Decibal ranges from -40 dB to +62 dB. DC null scale with better than 1 mV resolution. The 4½" ruggedized, taut-band meter is diode protected, built to take plenty of abuse. Built-in circuitry shows battery condition at the flip of the range selector. Two evenings puts this great portable VOM on your bench.

Kit IM-104, 4 lbs., mailable **79.95**

IM-104 SPECIFICATIONS — DC VOLTMETER — 9 ranges: 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Input resistance:** 10 megohm. **Accuracy:** ±2% of full scale (meter in horizontal position). **AC rejection:** Accuracy not affected by impressed 60 Hz sine wave with rms value 2x greater than full-scale value. **Null indicator:** On 0.1, 1, 10, 100, 1000V, meter zero level may be adjusted to center of null referenced scale. Null variations of approx. 1% of full-scale can be resolved. **AC VOLTMETER — 9 ranges:** 0-0.1, 0.3, 1, 3, 10, 30, 100, 300, 1000V. **Range factor:** 1 to 3.162 (10 dB) per step. **Input resistance:** 10 megohm. **Input capacity:** 100 pF typical. **Accuracy:** ±3% of full scale (meter in horizontal position; 60 Hz sine wave). **Response:** Average value of ½ sine wave. Scale calibrated to indicate rms. **Frequency response:** 20 Hz to 20 kHz ±3%, 20 Hz to 50 kHz ±5% on 0.1 to 30V. 20 Hz to 10kHz ±3%, 20 Hz to 20 kHz ±5% on 100 and 300V. 20 Hz to 1.0 kHz ±3%, 20 Hz to 2.5 kHz ±5% on 1000V. **DC MILLIAMMETER — 6 ranges:** 0-0.01, 1, 10, 100, 1000mA. **Voltage drop (approx. full scale):** 0.100V on 0.01 to 10, 0.150V on 100, 0.350V on 1000. **Insertion resistance:** Voltage drop divided by full-scale current. **Accuracy:** ±2% on 0.01 to 100, ±3% on 1000. (Meter in horizontal position.) **AC MILLIAMMETER — 6 ranges:** 0-0.01, 0.1, 1, 10, 100, 1000 mA. **Voltage drop (approx. at full scale):** 0.100V on 0.01 to 10, 0.150V on 100, 0.350 on 1000V. **Insertion resistance:** Voltage drop divided by full scale. **Accuracy:** ±3% on 0.01 to 100, ±4% on 1000. (Meter in horizontal position; 60 Hz sine waves) **Response:** Average value of ½ of sine wave (DC current must be negligible). Scale calibrated to include rms. **Frequency response:** 20Hz to 5kHz ±3% on 0.01, 20 Hz to 20kHz ±3% on 0.1, 20Hz to 50kHz ±3% on 1 to 1000. **OHMMETER — 7 ranges:** Rx1 (10 ohm center scale), Rx10, Rx100, Rx1K, Rx10K, Rx100K, Rx1M. **Accuracy:** ±3° of arc on x1, ±2° on x10 to x1M. **Test voltage (nominal):** 1.55V on +DC/ohm and -DC/ohm, 0.085V on ohm LV. **DB RANGE — 9 ranges (0dB=1mW into 600 ohm):** -40 to -18, -30 to -8, -20 to -12, -10 to +12, 0 to +22, +10 to +32, +20 to +42, +30 to +52, +40 to +62. **Accuracy:** ±3 dB @ -20 dB to ±0.3 dB @ +2B. **Voltage dividers:** 1% precision metal-film resistors. **Meter:** 4½", 100 uA, 95°, ruggedized, taut-band movement. **Meter protection:** will sustain momentary overload of 220VAC or DC on any range, diode and 2A fuse protected on ohms x1 and 0.01 to 1000mA, FET protected on 0.1V to 1000V and ohms x10K to ohms x1M. Internal circuitry protected against improper battery installation. Diode protected meter. **Amplifier circuit:** Dual FET source followers driving operational amp. **Front panel switches:** 24-position, continuous rotation RANGE switch (including battery check position BATT and OFF). 4-position pushbutton switch for AC, ohm LV, -DC/ohm, +DC/ohm. **Meter temperature coefficient:** Maximum of ±0.2% or ±0.2° of arc per °C over range of 15 to 35° C. **Operating temperature:** 0 to 50° C. **Storage temperature (less batteries):** -40 to +80° C. **Batteries:** 1 1.5V D-cell (NEDA #13), 4 1.5V AA-cell (NEDA #15). **Dimensions:** 6.95" H x 4.95" W x 2.25" D.

Build the popular IM-105 general purpose VOM

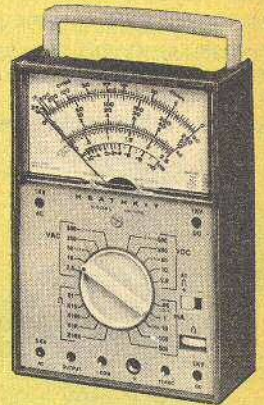
It's an easy one-evening kit — build-up two modular circuit boards and you have it — and you'll be delighted with the results. This highly versatile IM-105 VOM gives you a low-friction, taut-band meter with diode & fuse protected movement that can suffer years of rough treatment and bounce back for more. 95° wide viewing area provides high resolution. Fuse in-line with the input connector is removable from front panel for extra convenience. Other professional features include calibrating controls, DC polarity reversal switch, ohms zero adjustment by front thumbwheel, self-storing handle. For one of the most versatile meters you can buy, order your new IM-105 now.

Kit IM-105, 4 lbs., mailable **47.95**

IM-105 SPECIFICATIONS — DC VOLTAGE RANGES — 0.25, 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy: ±3% of full scale. **Input resistance:** 20,000 ohms/V. **AC VOLTAGE RANGES — 2.5, 10, 50, 250, 500, 1000 & 5000 V full scale. Accuracy:** ±4% of full scale. **Input resistance:** 5000 ohms/V. **Input capacity:** Less than 20 pF. **Frequency response:** 2.5, 10 & 50 V ranges: ±5%, 10 Hz to 100 kHz; 250, 500 V ranges: ±5%, 10 Hz to 50 kHz. **DC CURRENT RANGES — 0.05, 1.0, 10, 100, 500mA & 10 A full scale. Accuracy:** ±3% of full scale. **Voltage drop:** Approximately 0.25 V at full scale. **RESISTANCE RANGES — x1 (20 center scale), x10, x100, x1k, x10k. Accuracy:** ±3 degrees of arc. **Source voltage:** x1 through x1k ranges: 1.5V. x10k range: 15 V. **DECIBEL RANGES:** (0 dB=1 mW in 600 ohms): -10 to +50 dB. **GENERAL — Voltage dividers:** ±1% metal film resistors on most ranges. **Meter:** 4½", 50 uA, ruggedized, taut-band movement. **Meter protection:** Combined fuse and diode overload protection. **Meter temperature coefficient:** 15 to 35° C, ±0.1% (or 0.1 degree of arc) per degree C. **Operating temperature range:** 0-55° C. **Batteries (not supplied):** One 1.5 V "D" cell (NEDA #14); one 15 V (NEDA #208). **Dimensions:** 7" H x 5" W x 2¼" D. **Test Leads:** Supplied.



47⁹⁵
NO MONEY DOWN

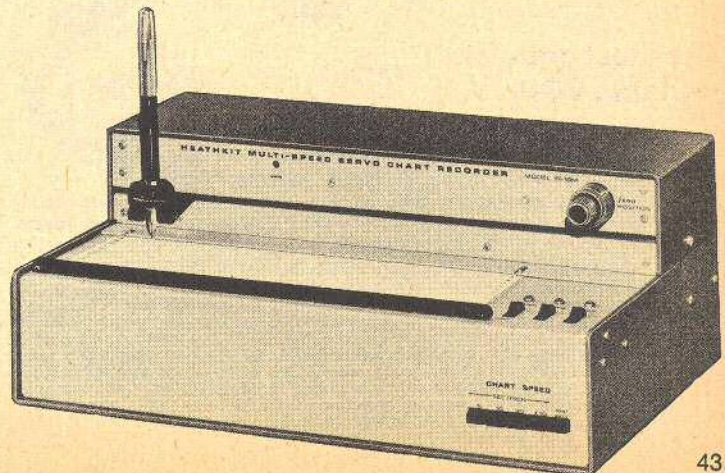


12-speed chart recorder kit...149.95

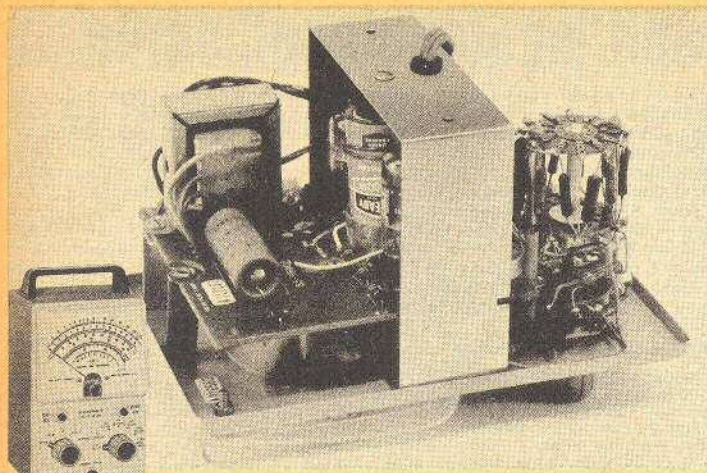
Build it yourself and save. Measures and records any phenomena that varies with time that can be converted to proper DCV level. Has 12 different speeds, from 5 sec/in. to 200 min/in. Chart drive uses incoming line frequency as a standard — digital logic provides accuracy easily equal to expensive gear-train assemblies. Two input ranges permit accurate voltage measurements of 1 mV and 10 mV full scale. Includes light-operated modulator, temperature-stabilized reference voltage, coarse and fine zero position controls, universal pen holder.

Kit IR-18M, 14 lbs., mailable **149.95**
IRA-18-1, 3 rolls chart paper (140 ft./roll), 2 lbs., mailable **9.95**

IR-18M SPECIFICATIONS — Chart paper: Grid width, 10". Length, 140 ft. roll. Markings, 0-100 right to left. **Chart speed:** 12 speeds, pushbutton selected. 5, 10, 20, 50, 100, 200 sec/inch and 5, 10, 20, 50, 100, 200 min/inch. **Chart span:** Two fixed ranges; 1 mV and 10 mV full scale. **Pen:** Standard cartridge-type fountain pen. **Balancing time:** Approximately 0.1 sec/inch, 1 second full scale (10"). **Input circuit:** Self-balancing potentiometer. **Input resistance:** Essentially infinite at null. **Line frequency rejection:** (input shorted.) 130 dB in common mode. **Floating input:** +100 VDC maximum with respect to ground. **Overall error:** Less than 1% of full scale. **Maximum recommended source resistance:** 100 k ohms. **Reference source:** Zener regulated supply. **Power requirements:** 120/240 VAC, 60 Hz, 14 W or 120/240 VAC, 50 Hz, 16 W. **Fuse:** ¼ amp slow-blow (120 VAC). **Dimensions:** 6" H x 15" W x 9½" D.



No money down on any kit — up to 2 years to pay — see order blank for details.



**Thousands sold prove its value
— Heathkit IM-18 29⁹⁵**

Build your Heathkit VTVM in a couple of evenings and save \$26 off the wired price. For years the IM-18 has been a recognized value, offering a convenient size, practical meter ranges, single test probe. It offers seven AC, seven DC, and seven Ohms ranges; precision 4 1/2" 200 uA meter; 1% precision divider network resistors; ± 1 dB 25 Hz to 1 MHz frequency response; rms & p-p AC voltage measurements & exceptional stability; 120/240 VAC wiring options. Includes probe shown.

Kit IM-18, 5 lbs., mailable 29.95
Assembled IMW-18, 6 lbs., mailable 55.95

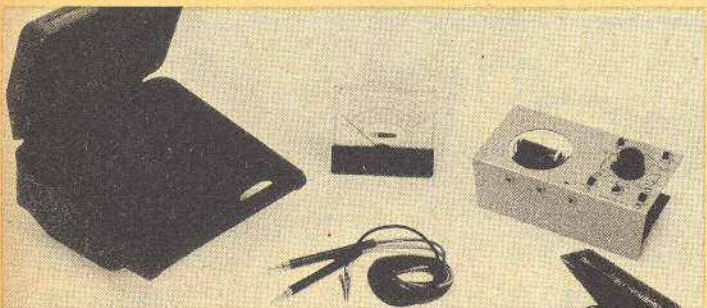
IM-18 SPECIFICATIONS — Meter scales: DC & AC (rms): 0-1.5, 5, 15, 50, 150, 500, 1500 V full scale. AC peak-to-peak: 4.0, 14, 40, 140, 400, 1400, 4000. Resistance: 10 ohm center scale x1, x10, x100, x1000, x10k, x100k, x1 meg. Measures .1 ohm to 1000 megohms. Meter: 4 1/2" 200 uA movement. Input resistance DC: 11 megohms (1 megohm in probe) on all 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). Tubes: 12AU7, 6AL5. Battery requirements: 1.5 V, size "C" flashlight cell (not supplied). Power requirements: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 7 3/8" H x 4 3/4" W x 4 3/4" D.

Kit PK-3, 11 Meg input etched circuit RF probe for measurements over 100 MHz, 1000 VDC max. at tip, 90 V rms max, 1 lb., mailable 5.00

Assembled PKW-3, same as above, wired, 1 lb., mailable 7.00

Kit 336, 30 KV DC probe with multiplier of 100 on DC ranges of 11 Meg input, 1100 Meg input for hi-Z circuits, 2% resistor, 1 lb., mailable 6.50

Assembled 336W, same as above, wired, 1 lb., mailable 7.95



Our most popular portable VOM 22⁵⁰

The perfect buy for homeowners, hams, servicemen, hobbyists, modelers — everyone. All solid-state with FET input. Features include portable battery operation, zero & ohms adjust controls, accessory probe jack, DC polarity reversing switch, three built-in test leads, fast, easy 3-5 hour assembly. Check around before you buy — the IM-17 would be a real bargain at twice the price. Not recommended for use in RF fields.

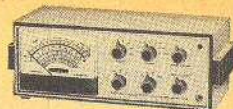
Kit IM-17, 5 lbs., mailable 22.50

IM-17 SPECIFICATIONS — DC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 11 meg. on all ranges. Accuracy: ±3% of full scale. AC VOLTMETER — Four ranges: 0-1, 10, 100, 1000 V full scale. Input resistance: 1 meg. on all ranges. Accuracy: ±5% of full scale. Frequency response: ±1 dB, 10 Hz to 1 MHz. OHMMETER — Four ranges: Rx1, x100, x10k, x1 meg. POWER SUPPLIES — Ohms circuit: 1.5 V "C" Cell. Amplifier circuit: 8.4 V mercury cell (NEDA #1611), batteries not supplied. GENERAL — Meter: 4 1/2", 200 uA, 100° movement. Dimensions: 5 3/8" H x 9 3/8" W x 9" D.

Solid-state volt-ohm meter.

Wide range of scales; battery or line operation; easy assembly. All measurement functions (AC volts, DC — or DC+ volts) are selected by one switch. A single test probe eliminates tangled leads. Printed circuit board and cable assembly allow easy, neat construction. Not recommended for use in RF fields.

52⁵⁰



Kit IM-16, 10 lbs., mailable 52.50

IM-16 SPECIFICATIONS — DC VOLTMETER — 8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 11 megohms on all ranges. Accuracy: ±3% of full scale. AC VOLTMETER — 8 Ranges: 0.5, 1.5, 5, 15, 50, 150, 500, 1500 V. Input resistance: 1 megohm. Accuracy: ±5% of full scale. OHMMETER — 7 Ranges: x1 (10 ohm center scale), x10, x100, x1k, x10k, x100k, x1 megohm. INPUT — Probe with shielded cable: AC-ohms/DC switch in probe. (Single plug for probe & common connections.) POWER SUPPLIES — Amplifier circuit: Power line, 120/240 VAC 50/60 Hz. Battery, 9 V NEDA 1602 or equivalent. Ohms circuit: Battery, 1.5 V (one "C" cell). Meter: 6", 100 uA (100° movement). Dimensions: 5 7/8" H x 16 3/8" W x 7 3/4" D.

Line voltage monitor. Gives constant check of AC line voltage. 2% accuracy when calibrated from source of known accuracy. 90-140 VAC range. Not recommended for use in RF fields.

16⁹⁵



Kit IM-103, 3 lbs., mailable 16.95

IM-103 SPECIFICATIONS — Voltage range: 90 VAC (rms) — 140 VAC (rms). Voltage accuracy (sine wave): ±2% when calibrated at 95 VAC, and 135 VAC, ±5% when calibrated with a known line voltage. Power requirements: 90-140 VAC, 50-60 Hz, 4.2 W. Dimensions: 5 1/8" H x 6 1/4" W x 3" D.



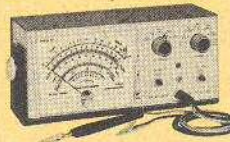
41⁹⁵

Laboratory AC VTVM. Extended accuracy in measuring low-level AC voltages. Calibrated scale for audio measurements; vu-type ballistic meter damping. Ideal for audio design & development, lab analysis, general servicing.

Kit IM-38, 5 lbs., mailable 41.95

Assembled IMW-38, 6 lbs., mailable 59.95

IM-38 SPECIFICATIONS — Frequency response: ±1 dB 10 Hz to 500 kHz. ±2 dB 10 Hz to 1 MHz, all ranges. Ranges: Ten ranges from 0.01 to 300 V rms full scale. Decibels: Total-range -52 to +58 dB, meter scale -12 to +2 dB (0 dB=1 mW in 600 ohms), ten switch selected ranges from -40 dB to +50 dB in 10 dB steps. Input impedance: 10 megohms shunted by 12 pF on ranges 10 to 300 V, scale. Power requirements: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 7 3/8" H 10 megohms shunted by 22 pF on ranges .01 to 3 V. Accuracy: Within 5% of full scale. Power requirements: 120/240 VAC, 50/60 Hz, 10 W. Dimensions: 7 3/8" H x 4 1/4" W x 4 3/8" D.



39⁹⁵

Service bench VTVM. Same excellent performance as IM-18 with extra convenience features: separate 1.5 & 5 VAC scales; 6-in meter; front panel calibration controls; convenient gimbal mounting.

Kit IM-28, 7 lbs., mailable 39.95

Assembled IMW-28, 7 lbs., mailable 59.95

IM-28 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 (.353 of peak-to-peak). Frequency Response (5 V range): ±1 dB 25 Hz to 1 MHz (600 ohm source, referred to 60 Hz). Circuit: Half-wave voltage doubler, using twin diode. Accuracy: ±5% of full scale. Input Resistance & Capacitance: 1 megohm shunted by 40 μF measured at input terminals (200 μF at probe tip). OHMMETER — Ranges: Scale with 10 ohm center X1, X10, X100, X1000, X10k, X100k, X1 meg. Measures .1 ohm 1000 megohms with internal battery. Meter: 6", 200 μA movement, polystyrene case. Probe: Combined AC-OHMS-DC switching probe, single jack input for probe and ground connections. Dividers: 1% precision type. Battery: 1 1/2 V, "C" cell. Power requirements: 120/240 VAC, 50-60 Hz, 10 W. Dimensions: 5" H x 12 1/8" W x 4 3/4" D.



85⁰⁰

Deluxe solid-state Hi-Z volt-ohm meter. Ideal for solid state circuit analysis. Not recommended for use in RF fields.

Kit IM-25, 11 lbs., mailable 85.00

Assembled IMW-25, 11 lbs., mailable 120.00

IM-25 SPECIFICATIONS — DC VOLTMETER — 9 Ranges: 0.15, .5, 1.5, 5, 15, 50, 150, 500, 1500 V full scale. Input resistance: 11 megohms on all ranges. Accuracy: ±4% of full scale. AC VOLTMETER — 9 Ranges: 0-15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.10 ohm (1500 15, 50, 150, 500, 1500 V full scale. Input resistance: 10 megohm shunted by 175 pF (measured at probe tip). Accuracy: ±5% of full scale. Frequency response: ±2 dB, 10 Hz to 100 kHz. AC MILLIAMMETER — 11 Ranges: 0-0.015, .05, .15, .5, 1.5, 5, 15, 50, 150, 500, 1500 mA full scale. Input resistance: 0.1 ohm (1500 mA) to 10 k ohm (.015 mA). Accuracy: ±5% of full scale. OHMMETER — 7 Ranges: 10 ohm center scale x1, x10, x100, x1k, x10k, x100k, x1 meg. Terminal voltage 70 mV (not sufficient to cause diode junction conduction). Probe: Combined AC-OHMS-DC switching probe. Meter: 6", 200 uA 100° movement. Power supplies: Battery operation; "C" cells. Line operation; Transformer operated 1/2 wave circuit, operable on either 120/240 VAC, 50/60 Hz. Dimensions: 5 1/2" H x 13 1/2" W x 6 1/4" D.

Make your own lab scope with full dual-trace modes DC-15 MHz, triggered sweep

399⁹⁵
No money down



**expands your analysis capability
without stretching your budget**

Look to Heath for the most sophisticated kit-form oscilloscope you can buy. After all, our first Heathkit product was an incredibly successful scope. And as technology has grown since that time, so has our kit designing expertise. Today, with the Heathkit IO-105 kit and less than seven evenings of your time you have an uncompromising solid-state instrument for at least \$100 less than you would pay for a comparable wired unit.

X-Y capability

Here's complete dual trace and X-Y capability, allowing comparison of input/output for such parameters as loss, gain, phase shift and distortion. You can display two separate input signals in Channel 1 or Channel 2 modes of operation. Direct comparison of both signals is possible in alternate and chopped modes. In the alternate mode, both signals are alternately displayed on successive sweeps — at faster sweep speeds they are retained on the screen for time relationship comparison. In the chop mode, both signals are sampled at 50 kHz and appear as a function of the same time base. In X-Y, both channels are displayed as a function of each other — channel 1 controlling the vertical (Y) axis and channel 2 controlling the horizontal (X) axis.

Both input channels are precision balanced for 5° or less phase shift to 50 kHz. Switch selected AC or DC coupling lets you trigger the time base at a given point on the signal or at a preselected DC level. Flipping a switch gives you automatic triggering at the crossover (0) point. You can also switch-select positive or negative slope triggering. Internal, External and Line trigger inputs are provided.

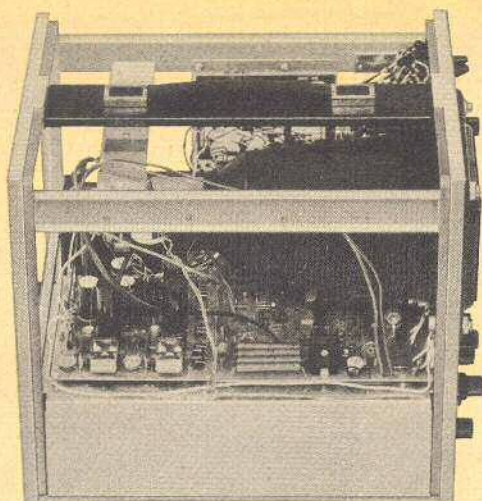
The convenient 18-position time base switch in a 1, 2, 5 sequence provides sweep rates from 100 ms/cm to 0.2 us/cm. The separate vernier control with a calibrated position gives you continuous control between settings, while a x5 magnifier switch allows detailed trace viewing. The DC-15 MHz bandwidth capability and 24 ns rise time make possible analysis of high frequency signals and transient waveforms. Full bandwidth is featured from 20 V/cm in 1, 2, 5 sequence. For special applications, a rear panel Sweep Gate output delivers a 3.5 V pulse in sync with the sweep. A TTL-compatible external blanking input is also provided.

our most flexible scope

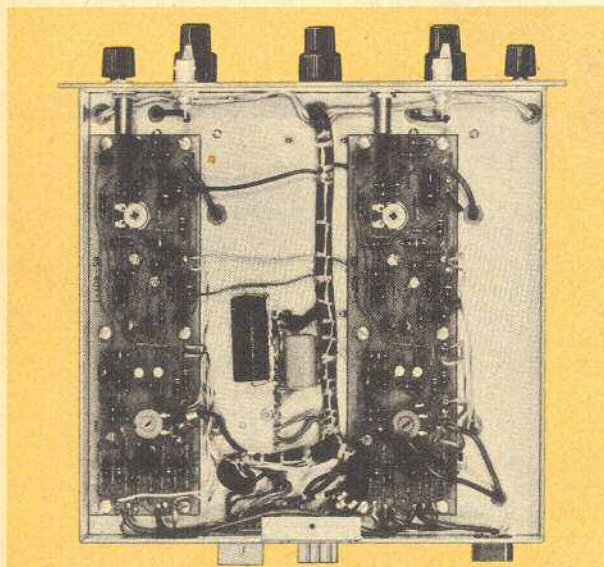
Other features include a CRT bezel incorporating standard camera mount dimensions, flush-mounted handle for easy stacking, easily-removable side panels for quick accessibility, compact 15-in. depth for bench installation instead of cart. If you want to expand your analysis capability — while holding the budget line — order your new Heathkit IO-105 now.

Kit IO-105, 40 lbs., mailable 399.95

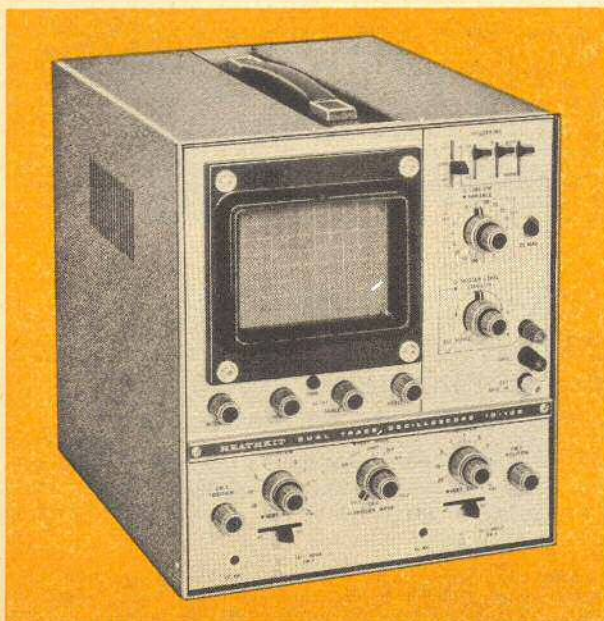
IO-105 SPECIFICATIONS — VERTICAL — Accuracy: ±3%. **Input impedance:** 1 megohm shunted by 35 pF. **Maximum input voltage:** 600 VDC. **Sensitivity:** AC or DC, 0.05 V/cm. **Frequency response:** DC to 15 MHz, 3 dB with 4 cm deflection. **Vertical windows:** 2 minimum. **Rise time:** 24 ns. **Overshoot:** Less than 10%. **Attenuator:** 9 positions in a 1, 2, 5 sequence. 0.05 V/cm to 20 V/cm, ±3%. **Variable gain (uncalibrated)** thru entire range. **Vertical display in sweep mode:** Channel 1, Channel 2, Channel 1 & 2 alternately; or Channel 1 & Channel 2 chopped (50 kHz). **HORIZONTAL — Time base:** Triggered with 18 calibrated rates, 0.2 us/cm to 100 ms/cm in a 1, 2, 5 sequence, ±3%. **Continuously variable (uncalibrated)** within the same range. **Sweep magnifier:** x5 (time base accuracy is ±5% when the magnifier is being used). **External horizontal input:** 750 mV/cm (uncalibrated & not adjustable). 100 K ohm minimum input impedance, DC to 100 kHz. **X-Y MODE — Sensitivity:** 0.05 V/cm to 20 V/cm, ±3%. **Frequency response:** -3 dB @ 100 kHz (Channel 2). **Phase shift between channels:** ±5° or less from DC to 50 kHz within graticule limits. **TRIGGERING — Delay:** Approx. 600 ns. **Auto:** Zero crossing ±½ cm of zero crossing. **Norm:** Within viewing area. **Source:** Channel 1, Channel 2, or Channels 1 & 2. **Polarity:** + or - slope. **Coupling:** AC or DC. **Sensitivity:** Internal, ½ cm; external, 100 mV minimum, 7 V max. **GENERAL — Blanking in:** TTL compatible (Logic 0-blank). **Gate out:** 3.5 V minimum. **Input connections:** Vertical, BNC; horizontal, binding post; external trigger, binding post on ¾" center with ground. **CRT accelerating potential:** 2200 VDC regulated. **CRT type:** 8x10 cm, rectangular, flat-face, D14-107GA. **Retrace suppression:** DC coupled unblanking of the CRT. **Graticule:** 8 cm x 10 cm grid, edge lighted. **Power requirements:** 105-125 or 210-250 VAC, 50/60 Hz, 60 W. **Warm-up time:** CRT heating time, approx. 30 seconds; for full calibration, approx. 15 min. **Overall dimensions:** 12½" H x 10½" W x 15" D. **Note:** Specification measured at 25° C with 120 VAC line voltage.



The easy-access side panels open up the circuitry all around to make checks and adjustments simple. This feature makes the IO-105 great for classroom demonstration use, too.



Vertical gain and mode controls and circuitry are mounted in drawer type sub-chassis for easy access should service be required.



No money down on any kit — up to 2 years to pay — see order blank for details.

Heathkit multipurpose 5-inch, 10 MHz triggered scope... professional features for less

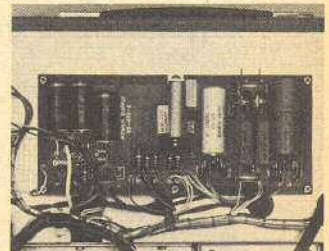
the Heathkit IO-103 scope is another value "first" ... with versatility and top-quality features that all go together in as little as five evenings

229⁹⁵

NO MONEY DOWN



Easy-access cabinet features removable side panels — great for classroom demonstration.



Open-layout design and five printed circuit boards make assembly and maintenance easy.

Here's maximum flexibility in a general purpose oscilloscope — at a price in keeping with Heath's policy of offering you the most instrument for your dollar. Providing a big 6x10 cm screen with lighted graticule for easy, accurate measurement, the Heathkit IO-103 is the ideal tool for the service shop performing audio and television maintenance. Yet it has the precision and sensitivity needed for general lab work. It's an ideal accessory for the ham shack, too.

SEVEN-STEP CALIBRATED ADJUSTABLE SWEEP

The IO-103 offers you a wide bandwidth and complete calibration. Response on the vertical channel is DC-10 MHz ± 3 dB, with less than 50 ns rise time. The calibrated attenuator switch has nine positions, with variable control. And sweep is adjustable in seven calibrated steps, from 100 ms/cm to 100 ns/cm, with variable control between. Horizontal expansion gives x2 magnification $\pm 5\%$ for a 50 ns/cm sweep rate.

INDIVIDUALLY CONTROLLED TRIGGERING OPTIONS

And there's triggered sweep, too — unheard of on a scope at this low price. You select either normal or automatic modes. In the normal mode, setting the point at which the sweep starts on the waveform can be adjusted by a separate control. Other individually controlled triggering options include "plus-or-minus" for selecting waveform slope; AC-DC which removes any DC component in the signal, or permits direct coupling for triggering by DC level changes or very low frequency AC signals. Exclusive Heath circuitry provides increased repetition rate on the upper sweep ranges when in the automatic trigger mode. This gives you a much brighter base line for easier viewing, plus better waveform definition.

QUALITY-FEATURE EXTRAS

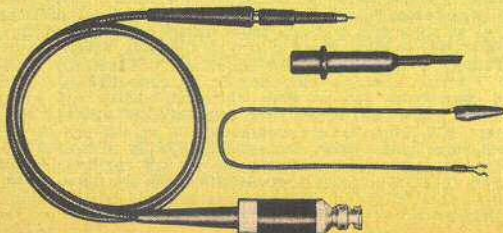
Other deluxe features of the IO-103 include switch-controlled AC-DC coupling; provisions for external triggering signals and horizontal deflection signal; front-mounted connectors for vertical inputs and 1 V peak-to-peak signal for checking calibration. The transformer operated, silicon rectifier power supply can be wired to operate

from 110-130, or 220-260 VAC lines. Both amplifiers and sweep circuit power supplies are Zener regulated for greater display stability. The primary circuit is fused for overload protection.

Quality engineering — easy assembly — simple operation — self servicing capability — make the budget-priced Heathkit IO-103 one of the greatest scope values on the market today. Order one for the shack, shop, lab or classroom.

Kit IO-103, 37 lbs., mailable 229.95

IO-103 SPECIFICATIONS — VERTICAL CHANNEL — Input impedance: 1 megohm shunted by 30 pF. Sensitivity: 50 mV/centimeter. Frequency response: DC to 10 MHz ± 3 dB @ 3 cm deflection. DC to 8 MHz ± 3 dB @ 6 cm deflection. Rise time: Less than 50 ns. Attenuator: 9-position, 0.05 to 20 V/cm (1, 2, 5 sequence). **HORIZONTAL CHANNEL —** Input impedance: 100 k ohms. Sensitivity: 0.25 V/cm (uncalibrated). Frequency response: DC to 500 kHz ± 3 dB. **TIME BASE —** Sweep: 7 steps, 100 ms to 100 ns/cm. Horizontal expansion: x2 $\pm 5\%$. **Trigger Options (switch selected):** Auto/Normal; +/- (plus or minus); AC/DC; INT/EXT. Sensitivity: Internal, 1 cm display. External, 0.5 v peak-to-peak. **GENERAL —** CRT: 5DEP1F, green, medium persistence phosphor. Graticule: 6x10 cm, edge lighted. **Power supplies:** All solid-state rectifiers, all amplifier supplies regulated. **Power requirements:** 120/240 VAC, 50/60 Hz, 35 W. **Overall dimensions:** 12 $\frac{3}{4}$ " H x 9 $\frac{1}{4}$ " W x 16 $\frac{1}{4}$ " L. Dimensions include all protruding surfaces such as knobs, handle, feet, etc.



High frequency compensated probe the perfect companion for Heathkit solid-state scopes

Ideal for use with the new Heathkit IO-103 or the IO-105 Dual Trace Scope. Essential for examining high frequency waveforms, and for use in circuits where a low impedance probe would cause loading or distortion problems.

Assembled PKW-101, 1 lb., mailable 19.95

PKW-101 SPECIFICATIONS — Input impedance: 10 megohm shunted by 11.5 pF. Compensation: Allows matching to any 1 megohm scope input shunted by 15-47 pF. Bandwidth: DC to 30 MHz. Attenuation: x10. Voltage rating: 500 Volts, AC & DC. Scope connector: BNC. Probe: Spring-loaded outer hook connector and fine-pointed inner tip combination. Length: 3 $\frac{1}{2}$ feet.



Heathkit 5-inch Solid-State Scope...quality and economy all in one

a versatile scope to match most needs... and it assembles in little more than two evenings

If you're looking for a truly outstanding general purpose scope at a sensible price, you need look no farther than the IO-102. A wide band response of DC-5 MHz, fast 80 ns rise time, and a high 30 mV/cm input sensitivity make the Heathkit IO-102 a truly high performance, low cost scope for a wide variety of applications. And for added convenience there's switch selected AC or DC coupling; frequency-compensated three-position attenuator to accommodate varying input levels; switch selected grounding for zero reference line; FET high impedance input circuit to minimize loading.

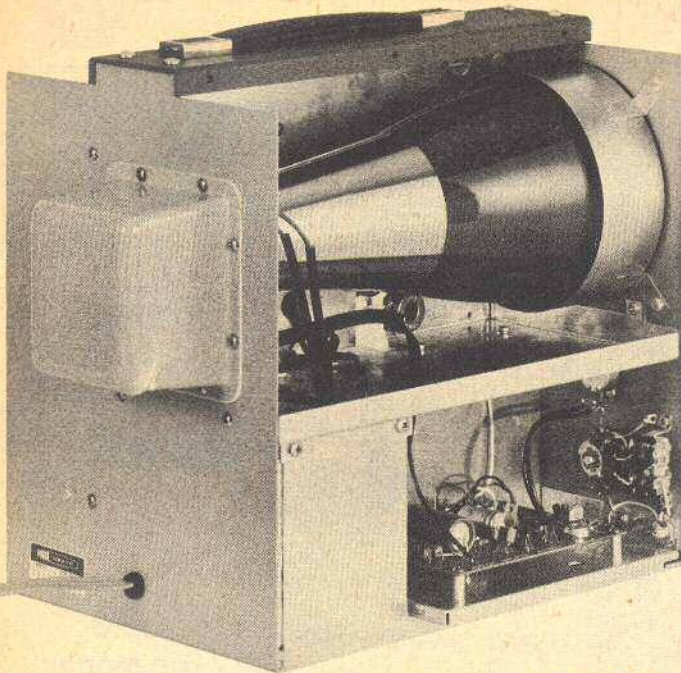
FIVE SWEEP RANGES

Has recurrent automatic sync-type sweep generator offering five sweep ranges for 10 Hz to 500 kHz. Separate frequency vernier control permits selection of desired sweep rate to give stationary trace. External horizontal input allows sweep signal to be applied by external generator. Front-panel internal-external switch and external sync connector permit applying an external sync signal. One volt peak-to-peak output provides signal for determination of an unknown voltage.

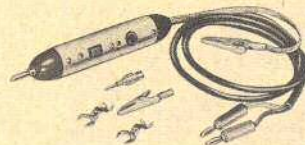
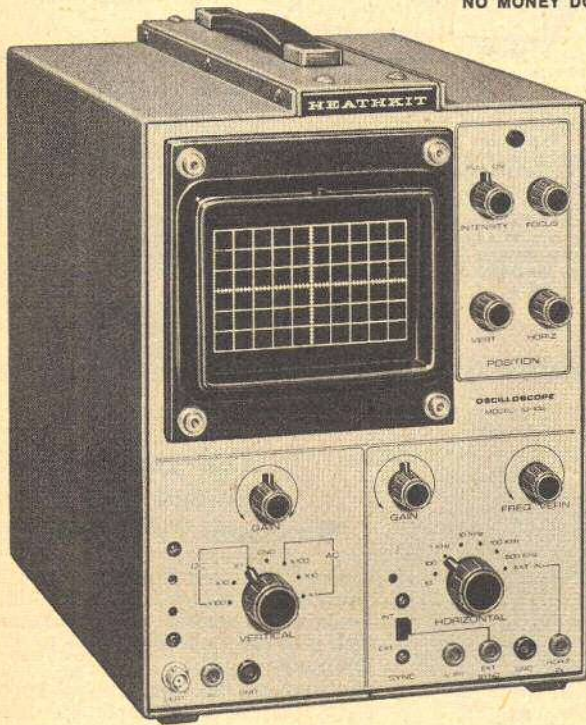
Type 5DEP1 CRT has 6x10 cm ruled graticule and removable bezel for standard camera mount. Both horizontal and vertical amplifiers and sweep circuit have zener-regulated power supplies. The transformer-operated supply can be wired for 120 or 240 VAC. Styled in beige and brown cabinet with easy-access side panels. An outstanding general purpose scope value, the IO-102 gains even further versatility when used in combination with the IO-101 electronic switch to obtain full two-channel capability.

Kit IO-102, 31 lbs., available 119.95
Assembled IOW-102, 29 lbs., available 179.95

IO-102 SPECIFICATIONS - VERTICAL CHANNEL - Sensitivity: 30 mV/cm, uncalibrated. Frequency Response: DC - 5 MHz, ± 3 dB. Rise Time: 80 ns. Input Impedance: 1 megohm shunted by 35 pF. Attenuator: 3-position, frequency compensated; x1, x10, x100. **HORIZONTAL CHANNEL -** Sensitivity: 0.1 V/cm. Frequency Response: 1 MHz ± 3 dB. Input Impedance: 1 megohm shunted by 50 pF. Sweep Generator Type: Recurrent, automatic sync. Range: 10 Hz - 500 kHz in five switch-selected steps, continuously variable between steps. **GENERAL -** Cathode Ray Tube: Type, 5DEP1, green medium persistence phosphor. Viewing area, 6x10 cm. Power Supplies: All solid-state rectifiers. All amplifier supplies regulated. Power requirements: 110-130 or 220/260 VAC, 50/60 Hz, 35 W. Overall Dimensions: 12 3/4" H x 9 1/4" W x 16 1/4" D, including knobs, handle, feet, etc.



119⁹⁵
NO MONEY DOWN



Low capacitance scope probe kit. Ideal for use with IO-102. Provides direct or x10 attenuated operation; trimmer capacitor gives proper match to scope. Wiring options for 3.3 or 1 megohm.
Kit PK-1, 1 lb., available 4.95



Scope demodulator probe. For distortion checks & observation of RF & IF signal modulation. Functions as an AM detector. 30V rms, 500 VDC max. Ideal for IO-102.
Kit 337-C, 1 lb., available 5.00
Assembled 337-WC, 1 lb., available .. 6.50

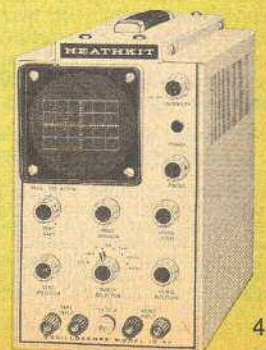
Heathkit low cost 3-inch scope... 82.50

budget-priced versatility for in the shop or in the field

An outstanding dollar value, the IO-17 features wide bandwidth response, good sensitivity and stability for a broad range of general purpose applications. A favorite among TV service men for work in the shop and in the field. Schools find its blend of high performance and low cost ideal in tight equipment budget situations. And hobbyists of all kinds appreciate the IO-17's outstanding performance-per-dollar value — order yours today.

Kit IO-17, 16 lbs., available 82.50

IO-17 SPECIFICATIONS - VERTICAL CHANNEL - Input Impedance: 1 megohm shunted by 25 pF; x50 attenuator position, 1 megohm shunted by 15 pF. Sensitivity: 30 mV P-P/div. (uncalibrated). Frequency response: 5 Hz - 5 MHz ± 3 dB. **HORIZONTAL CHANNEL -** Input Impedance: 10 megohm shunted by 15 pF. Sensitivity: 300 mV P-P/div. Frequency response: 2 Hz - 300 kHz ± 3 dB. **HORIZONTAL SWEEP GENERATOR -** Sweep generator: Recurrent type. Frequency: 20 Hz - 200 kHz in four overlapping ranges. Retrace: Blanked by a pulse from blanking amplifier. Synchronization: Automatic type. Size: 9 1/2" H x 5 1/2" W x 14 1/2" D.



No money down on any kit - up to 2 years to pay - see order blank for details.



Color-TV servicing tool combines color bar and pattern generators

Heathkit vectorscope/color generator puts you in the alignment business, handles virtually all chroma signal adjustments

A good tech knows his instruments inside and out — and we make it easy with the Heathkit IO-101. You build it on your own bench and the manual is full of circuit descriptions, schematics and theory of operation data. You mount the solid-state circuitry on two boards, wire-up the controls and our exclusive 3-in. flat-face CRT. Ten ICs, comprising 15 J-K flip-flops and eight gates, and the crystal-controlled clock in the divider chain eliminate extensive final adjustment while increasing overall accuracy and stability. The vector pattern indicates the ten color bars generated, amplified and demodulated by the color receiver circuitry — accurately represents the chroma signal fed to the CRT guns. Shows at a glance missing or weak colors — proper adjustment of burst phase transformer, reactance coil, oscillator coil and bandpass transformer. Color demodulation angle can also be checked.

A grid cathode switch on the rear panel enables all vector patterns to be displayed regardless of how the CRT is driven. There are front panel controls for tuning channels 2 through 6; selecting plus or minus going video signals, sync output, and 4.5 MHz crystal-controlled sound carrier. Other features include shielded leads for fast connection of RF signal to antenna terminals or video signals to video circuits; gun shorting switches; lead-piercing grid jacks, and two 500 watt grounded AC receptacles for test gear or TV.

Kit IO-101, 12 lbs., mailable **124.95**

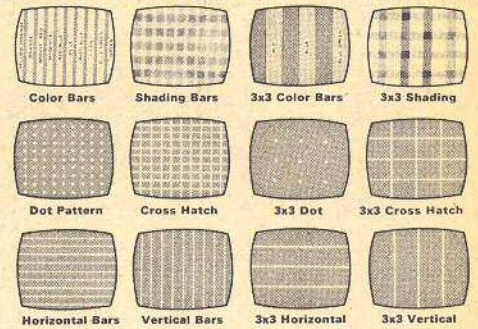
IO-101 SPECIFICATIONS — PATTERNS — Purity: Produces a snow-free raster for purity adjustments. **Dots*:** 9x9 produces a display of 110 small dots. 3x3 produces a display of nine dots for convergence adjustments. **Crosshatch*:** 9x9 produces a display of 11 vertical and 10 horizontal lines. 3x3 produces a display of three vertical and three horizontal lines for convergence and linearity adjustments. **Horizontal Lines*:** 9x9 produces a display of 10 horizontal lines. 3x3 produces a display of three horizontal lines for vertical linearity and pin-cushion adjustments. **Vertical Lines*:** 9x9 produces 11 vertical lines. 3x3 produces a display of 3 vertical lines for horizontal linearity and convergence adjustments. **Color Bars*:** 9x9 produces a display of ten standard color bars. 3x3 produces a display of three standard color bars. A visual fingerprint (voltage pattern) of all ten color bars in the form of a petal pattern is displayed for color circuit servicing. **Gray Scale:** Provides a wide bar crosshatch pattern with six shades of brightness for color gun level adjustments. **OUTPUT SIGNALS — Video:** Greater than ±1 volt peak-to-peak composite signal for composite signal injection beyond the video detector. **RF:** Variable to approximately 25,000 uV output, channels 2 through 6, for composite signal injection into the TV receiver antenna input terminals. **Sync:** Greater than 3.5 volts peak-to-peak signal for servicing sync circuits without video, or sets having separate video and sync demodulator phase adjustments. **GENERAL — Power Requirements:** 105-125 or 210-250 VAC, 50/60 Hz, 20 Watts. **Cabinet Dimensions:** 9 1/4" H x 6 3/4" W x 14 1/2" D.

*The number of dots, lines, and bars indicated for a 9x9 display is the number displayed if the receiver under test has no overscan.



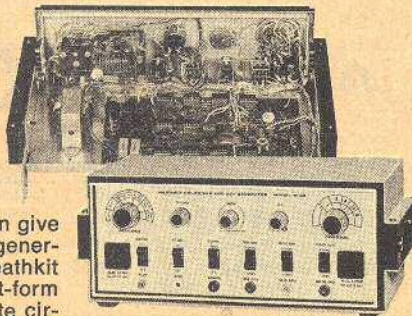
124⁹⁵
no money down

Standard 9 x 9 Display OR Exclusive Heath "3 x 3" Display



Your IO-101 Vectorscope produces 12 patterns plus a clear raster for purity adjustments. All patterns available at the turn of a knob, either in the familiar 9x9 display or the exclusive Heath 3x3 display.

Heathkit color bar/pattern generator



A few hours of your time can give you the color bar and dot generator capabilities of the Heathkit Vectorscope — at a nice kit-form price. The reliable solid-state circuitry with 10 ICs assembles quickly and easily on two roomy boards. Has 12 patterns plus raster: dots, cross hatch, vertical and horizontal bars and shading bars in either the familiar 9x9 display or the exclusive Heath 3x3. The crystal-controlled master oscillator and IC logic circuitry provide a minimum-adjustment, rock-stable divider chain.

Kit IG-28, 8 lbs., mailable **79.95**
Assembled IGW-28, 10 lbs., mailable **114.95**

IG-28 SPECIFICATIONS — Output signals: Video — Greater than ±1 V peak-to-peak composite signal for composite signal injection behind the video detector. **RF** — Variable to 50,000 uV output, channels 2 through 6, for composite signal injection into the receiver antenna input terminals. **Sync** — Greater than 3.5 V peak-to-peak signal for servicing sync circuits without video, or sets having separate video and sync demodulators. **Control Grids (3)** — Individual red, blue, and green control grid signals for viewing chroma signal demodulator phase adjustments. **Power supply:** Transformer operated, full-wave zener diode regulated. **Input** — 120/240 VAC, 50/60 Hz. **Output** — 3.6 VDC, 500 mA, zener diode regulated. **Dimensions — overall:** 5 1/2" H x 13 1/2" W x 8" D.

Our vector monitor guides you through 9 critical TV adjustments



Our exclusive 3-in. flat-face tube and associated circuitry from the Heathkit Vectorscope mounted in a separate cabinet. You can build the whole thing in a few hours.

Designed for use with the IG-28 Color Bar & Dot Generator or similar unit, the IO-1128 displays "rainbow" (offset carrier) color bar patterns. Helps you perform fine tuning, static and dynamic convergence, purity, 3.58 oscillator, reactance coil, phase detector transformer, demodulator angle check, and chroma bandpass adjustments. Indicates all color bars generated, amplified and demodulated by the color TV — represents exactly the color signals being fed to CRT guns. Shows missing or weak colors at a glance.

Other features include controls for intensity, vertical and horizontal position, focus and astigmatism. 120/240 VAC, 50/60 Hz, low flux leakage power transformer to eliminate disruption of TV under test.

Kit IO-1128, 10 lbs., mailable **49.95**

IO-1128 SPECIFICATIONS — Switches: Power on-off, red gun, blue gun, green gun on front panel. **Chroma switch** on rear panel. **Controls:** Intensity, horizontal position, vertical position, focus (screwdriver adjust), astigmatism (screwdriver adjust). **Graticule with radial pattern:** For use with all colorbar generators which produce vertical color bars (offset carrier). **Cathode ray tube:** 3RP1A, flat-faced CRT (green trace on white background). **Power requirements:** 120/240 VAC, 50/60 Hz, 10 W. **Dimensions:** 6 1/2" H x 5 3/4" W x 12 1/4" D.

Heathkit post-marker/sweep generator

an unsurpassed value leader that includes video sweep modulation, two bias supplies and comprehensive data on color and b&w TV, FM IF alignment.

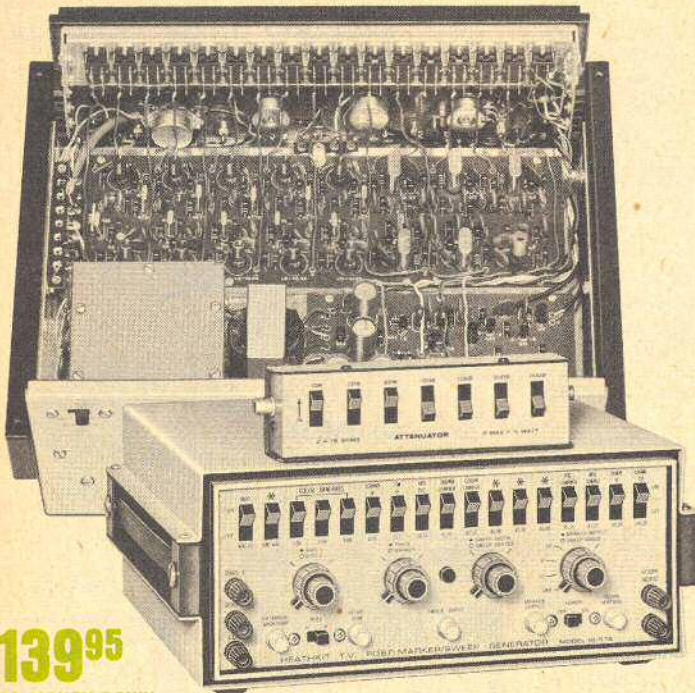
Bench build this great solid-state instrument and count up the value-added features as you go. With its low initial cost, all-out performance and built-in self-service features it's a cut above the rest. Plus, the Heathkit IG-57A manual is a comprehensive course in alignment of color and b&w TV and FM IF! It's no wonder the Heathkit IG-57A post marker/sweep generator is the choice of major color TV manufacturers, and thousands of technicians and servicemen. They feel it's the fastest, most economical instrument on the market. Buy and build yours and you'll echo their acclaim.

Now you can complete any alignment job quickly and successfully with a scope, a VTVM and the IG-57A. That's all you need to align virtually any B&W or color receiver on the market. You can check the overall receiver frequency response from the antenna terminals through the tuner, IF strip, video detector, to the color bandpass amplifier outputs. New circuitry provides sweep-modulated picture carriers — not only at 45.75 MHz for the tuner mixer input, but also 67.25 MHz for the antenna terminal input. The exclusive Heathkit external attenuator enables you to set bandwidth accurately in seconds and eliminates guessing at important 6 dB amplitudes.

There are 15 crystal-controlled markers — four for color bandpass, one for FM IF, eight for TV IF frequencies from 39.75 to 47.25 MHz — plus markers for channels 4 & 10 picture and sound carriers. Now you accurately locate picture and sound carriers, 6 dB points and trap locations.

Three Sweep Oscillators in stable Colpitts circuits produce five ranges using harmonics for color bandpass, FM IF, Video IF bandpass, VHF channels 4 & 10. Just the right size for the job. The IG-57A measures only 13 1/2" W x 5 1/2" H x 12" D — doesn't waste valuable bench space. The front panel controls are easy to read, easy to use. There are no gadgets, gimmicks or graphs to distract you. Put this new total capability Marker/Generator on your bench now and discover what thousands of servicemen already know — that excellent alignment facilities don't have to be expensive. Order your Heathkit IG-57A today. It utilizes quick-disconnect BNC connectors and comes complete with four coaxial cables, four test leads and a demodulation probe.

Kit IG-57A, 15 lbs., mailable 139.95
Assembled IGW-57A, 15 lbs., mailable 199.00



139⁹⁵
NO MONEY DOWN

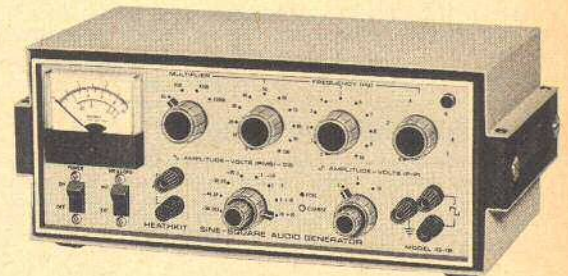
IG-57A SPECIFICATIONS — Marker frequencies: 100 kHz. Marker frequencies, crystal-controlled: 3.08, 3.58, 4.08, and 4.50 MHz $\pm 0.1\%$, 10.7, 39.75, 41.25, 42.17, 42.50, 42.75, 45.00, 45.75, 47.25, 67.25 and 193.25 MHz $\pm .005\%$. Modulation frequency: 400 Hz. Input impedance: External Marker/Sweep, and Attenuator — 75 ohms. Trace in — 220 k ohms. Output impedance: Marker Output, Sweep Output, and Attenuator — 75 ohms. Scope Vert. — 1 k ohms. Bias voltage: Two individually adjustable supplies; Positive or negative polarity. Type of marker: Birdie. Controls: Bias controls; Marker/Trace — dual concentric; Sweep Width/Sweep Center — dual concentric; Marker Out — concentric with Sweep Range switch; and Phase. Switches: Rocker type — separate switch for each of the above listed frequencies; Blanking, On/Off; Trace Reverse; Modulation On/Off. Sweep frequency ranges and output voltage: LO Band — 2.5 to 5.5 MHz ± 1 dB at 0.5 volts RMS (min.) fundamentals, and 10.7 MHz on harmonics. IF Band — 38 to 49 MHz ± 1 dB, at 0.5 volts RMS (min.) fundamentals. RF band — 64 to 72 MHz ± 1 dB at 0.5 volts RMS (min.) fundamentals and 192 to 198 MHz on harmonics. Attenuator: Total of 70 dB of attenuation in seven steps — 1 dB, 3 dB, 6 dB, 10 dB, 10 dB, 20 dB and 20 dB. Power requirements: 120 V, 60 Hz AC at 4.5 watts.

Wire up your Heathkit solid-state sine-square wave generator

1 Hz to 100 kHz sine wave output at 5% accuracy, less than 0.1% distortion from 10 Hz to 20 kHz. Square wave output from 5 Hz to 100 kHz, less than 50 ns rise time. Both outputs floating and available simultaneously. Switch-selected internal/external load. 120/240 VAC, 50/60 Hz. 5 1/2" H x 13 1/4" W x 7" D.

Kit IG-18, 12 lbs., mailable 69.95
Assembled IGW-18, 10 lbs., mailable 99.50

IG-18 PARTIAL SPECIFICATIONS — GENERAL: Frequency selection: 0-100 switch (steps of 10), 0-10 switch (steps of 1), 0-1 control (vernier) & multiplier switch (x1, 10, 100, 1000). SINE WAVE OUTPUT: Output voltage: 8 ranges, 0.003 to 10 volts RMS (full scale) with 10 K ohm or higher external load. 6 ranges, 0.003 to 1 volt (full scale) with 600 ohm internal or external load. dB ranges: -62 dB to +22 dB, -12 dB to +2 dB on meter and -50 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 kHz. Output indication: Two voltage and one dB scale on meter. Output impedance: 10 volt range: 0-1000 ohm; 3 volt range: 800-1000 ohm; 1 volt range and lower: 600 ohm. Meter accuracy: $\pm 5\%$ of full scale with proper load termination. SQUARE WAVE OUTPUT: Output voltage (peak-to-peak): .1, 1, 10 volt into 200 ohm load or higher. Output impedance: .1V and 1 V ranges: 52 ohm; 10 V range: up to 220 ohm.

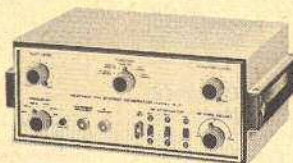


FM stereo generator at kit-form cost

Provides audio and composite stereo signals for multiplex adjustments and an RF carrier modulated by these signals for tuner and receiver adjustments.

Kit IG-37, 12 lbs., mailable ... 79.95

IG-37 SPECIFICATIONS — RF signal frequency: 100 MHz adjustable by approx. ± 2 MHz. Pilot modulating frequency: 19 kHz ± 2 Hz. FM modulation: Left channel (stereo), right channel (stereo), Phase Test (left plus right channel in phase), Monophonic FM. Deviation: Adjustable to 75 kHz. Sweep rate: (used for RF and IF alignment) 60 Hz. Sweep width: (used for RF and IF alignment). Adjustable to 750 kHz. RF attenuator range: 60 dB in 20 dB steps. Crystal-controlled markers: 10.7, 90.95, 96.30, 101.65 & 107 MHz. Composite signal output: Left channel (stereo); Right channel (stereo). Phase test (left plus right channels in phase). Audio output: 400, 1000 & 5000 Hz; 19 kHz (± 2 Hz); 38 kHz & SCA (65 or 67 kHz). Distortion: (At 400, 1000, & 5000 Hz) Less than 5%. Power requirements: 120/240 VAC, 50/60 Hz, 35 W. Dimensions: 5 1/2" H x 13 1/2" W x 9" D.



All-around RF generator at do-it-yourself savings

Extended 100 kHz to 220 MHz range with 2% accuracy. Unmodulated and 400 Hz modulated output. 400 Hz output for audio checks.

Kit IG-102, 7 lbs., mailable 32.95

IG-102 SPECIFICATIONS — Frequency range: Band A, 100 kHz to 320 kHz; Band B, 310 kHz to 1.1 MHz; Band C, 1 MHz to 3.2 MHz; Band D, 3.1 MHz to 11 MHz; Band E, 10 MHz to 32 MHz; Band F, 32 MHz to 110 MHz. Calibrated harmonics: 100 MHz to 220 MHz. Output: Impedance: 50 ohms; Voltage, 100,000 uV. Modulation: Internal, 400 Hz, 30% depth; External, approx. 3 V across 50 k ohms for 30%. Audio output: Approx. 10 V open circuit. Power requirements: 120/240 VAC, 50/60 Hz, 15 watts. Dimensions: 9 1/2" H x 6 1/2" W x 5" D.

Heathkit top quality service gear...

A) Mutual-conductance tube tester

Indicates Gm to 24,000 micromhos, with versatile switching to accommodate virtually all tube types. Has ultra-sensitive grid current test, direct-reading ohmeter leakage test, built-in calibration circuit, built-in roll-type data chart, built-in adapter for compactron, nuvistor, novar and 10-pin miniature tubes. Requires 120 VAC, 60 Hz, 10-60 W. Leatherette covered carrying case measures 13½" H x 17¾" W x 8" D.

Kit TT-1A, 33 lbs., mailable199.50

Updated Roll Chart Subscription Service for all Heathkit Tube Checkers, includes new roll chart plus two supplements per year for only \$5.

Write: Heath Tube Data Service, P.O. Box 377, Hewlett, Long Island, New York 11557.

B) Heathkit Low Cost Tube Checker

An excellent general purpose instrument for testing most tube types, including compactrons, nuvistors, novars and 10-pin miniatures. Has "Bad-?-Good" meter scale, built-in tube data chart, color coded wiring harness to simplify assembly. Requires AC VTVM for alignment, 120 VAC 50/60 Hz power. 8½" H x 13" W x 5½" D.

Kit IT-17, 12 lbs., mailable72.50

C) Heathkit Lab Transistor Checker

Checks transistors up to 15 amps and diodes up to 1.5 amps. Tests shorts, DC gain (Beta 0-200 & 200-400), leakage (Icbo, Iceo), Diode forward and reverse current. Seven 1.5 V "D" batteries (not included) provide power. 5½" H x 10¾" W x 10¼" D.

Kit IM-36, 9 lbs., mailable67.50

D) Heathkit Capacitor Checker

Gives complete analysis of all capacitor types on direct-reading scales. Has low bridge voltage for safe testing of miniature electrolytics, 16 leakage testing voltages. Measures capacitance from 10 pF to 1,000 uF, resistance from 5 ohms to 50 megohms. Comparator circuit measures L, C or R with external standard. Also has calibrated power factor control, "eye" tube null & leakage indicator. Requires VTVM for alignment. Transformer can be wired for 120/240 VAC. 9½" H x 6½" W x 5"D.

Kit IT-28, 7 lbs., mailable39.95

E) Heathkit In-Circuit Transistor Tester ... the easy-to-use portable with the nice price

Checks transistors in or out of circuit. Measures transistor DC Beta out of circuit, range 2-100, 20-1000. Measures leakage out of circuit, range 0-5000 µA. Tests diodes in or out for opens and shorts and identifies unknown leads. Matches and identifies NPN and PNP transistors. Can't harm circuits. Not for use with high power or switching transistors. 4½", 200 µA meter. Battery powered circuit.

Kit IT-18, 4 lbs., mailable25.95

IT-18 SPECIFICATIONS — D. C. Beta: x1 range — 2 to 100, x10 range — 20 to 1000. Out-of-circuit accuracy: ±5%. In-circuit accuracy: Indicates good or bad (accuracy depends upon circuit being tested); I_{ceo} (out-of-circuit only) — 0-5000 uA; I_{cbo} (out-of-circuit only) 0-5000 uA diodes; forward or reverse current — 0-5000 uA. Power: One standard "D" cell (not supplied). Dimensions: 4½" H x 8½" W x 7¾" D (including handle).

F) Transistor/diode checker

Checks high & low power transistors, both NPN & PNP, for shorts, leakage, opens, and current gain. Checks forward and reverse current on diodes. Also serves as continuity checker. Uses two 1.5 V C cells (not supplied). 3½" W x 3¾" D.

Kit IT-27, 2 lbs., mailable6.95

G) Heathkit Impedance Bridge

Four separate bridge circuits measure resistance, capacitance, low & high Q inductance. Built-in generator and amplifier; battery-type vacuum tube circuitry for fast warmup. ½% resistors & silver-mica capacitors for higher accuracy. 120/240 VAC, 50/60 Hz operation. Requires headphones or scope for alignment. 8" H x 17" W x 6" D.

Kit IB-28, 11 lbs., mailable89.95

H) Harmonic distortion meter

Measures harmonic distortion as low as 1% full-scale reading from 20-20,000 Hz. Measures noise down to -60 dBm. Meter calibrated in volts rms, % distortion and dB. Requires audio generator for alignment. 120/240 VAC, 50/60 Hz, 30 W. 8½" H x 13" W x 7" D.

Kit IM-58, 13 lbs., mailable67.50

I) Audio intermodulation analyzer

Combines AC VTVM, wattmeter and IM analyzer in one. Has built-in high and low signal sources for IM tests, load resistors for 4, 8, 16 & 600 ohms. 120/240 VAC, 50/60 Hz, 20 W. Measures 8½" H x 13" W x 7" D.

Kit IM-48, 9 lbs., mailable69.95

J) Heathkit Visual-Aural Signal Tracer

Ideal for checking transistor & tube-type AM receivers and audio gear since it applies no voltage to circuit. Traces RF, IF and audio signals, locates noisy or intermittent components. Has audio/RF probe with switch, doubles as test amp or speaker. Can be wired for 120/240 VAC 50/60 Hz 25 W. 7½" H x 4½" W x 4" D.

Kit IT-12, 6 lbs., mailable25.95

Complete specifications for all above available on request

A) TT-1A

199⁵⁰



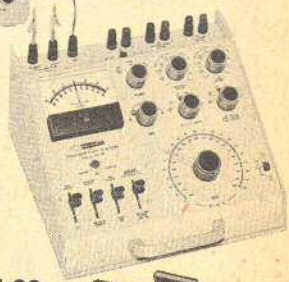
B) IT-17

72⁵⁰



C) IM-36

67⁵⁰



D) IT-28

39⁹⁵



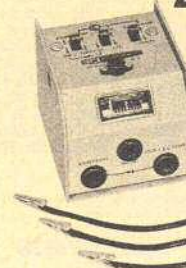
E) IT-18

25⁹⁵



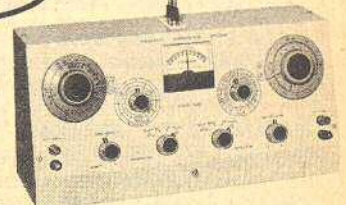
F) IT-27

6⁹⁵



G) IB-28

89⁹⁵



H) IM-58

67⁵⁰



I) IM-48

69⁹⁵

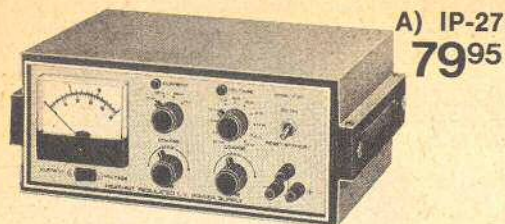


J) IT-12

25⁹⁵



...the value's built-in by you



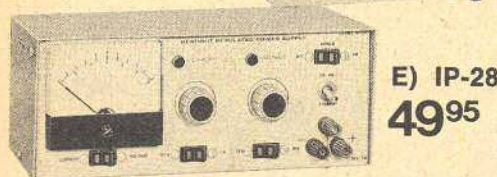
A) IP-27
79⁹⁵



B) IP-17
69⁹⁵



C) IP-18
21⁹⁵



D) IP-12
62⁹⁵



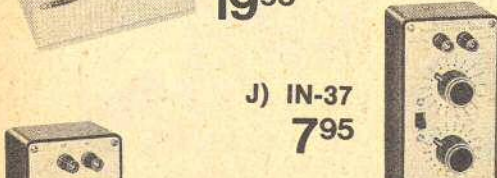
E) IP-28
49⁹⁵



F) IG-72
49⁹⁵



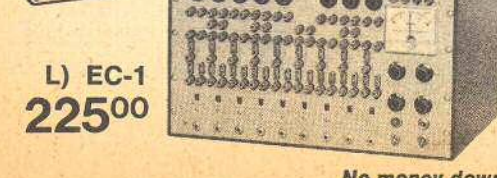
G) IG-42
69⁹⁵



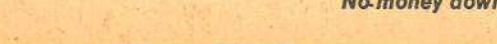
H) IN-17
29⁹⁵



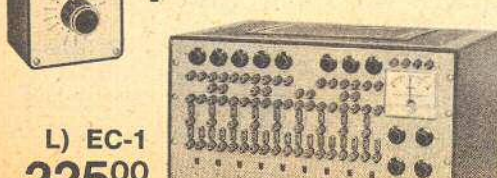
I) IN-27
19⁹⁵



J) IN-37
7⁹⁵



K) IN-47
7⁵⁰



L) EC-1
225⁰⁰

A) Solid-State 0.5-50 VDC Regulated Supply

A top-value favorite in shops, schools, labs everywhere. Connect several in series or parallel for even higher outputs.

Kit IP-27, 16 lbs., mailable 79.95
Assembled IPW-27, 15 lbs., mailable 125.00

IP-27 SPECIFICATIONS - Input: 120/240 VAC, 50/60 Hz; 135 W at full load (50 V, 1.5A). Output: 0.5-50 VDC; 1.5 amps max. DC. Load regulation: ± 15 mV, can be adjusted for no change. Line regulation: For a 10% change in line voltage, less than .05% change. Ripple & noise: Less than 250 μ V. Transient response: Less than 25 μ sec. Output impedance: Less than .075 ohms from DC to 10 kHz, less than .3 ohms 10 kHz & up. Overload protection: Current limiter & relay. Meter: $3\frac{1}{2}$ " 1 mA, 50 ohm. Current ranges: 50 mA, 150 mA, 500 mA, 1.5 A. Voltage ranges: 5V, 15V, 50V. Front panel controls: On/Off Coarse voltage switch, Fine voltage adjust, Current range switch, Current limit adjust, Meter rocker switch, Reset Standby toggle switch. Output terminals: (3), plus (+), minus (-), chassis ground. Dimensions: $5\frac{1}{8}$ " H x $13\frac{1}{4}$ " W x 9" D.

B) Variable 0-400 VDC Regulated Supply

Hundreds of uses for experimenters, servicemen, physics & chemistry labs, engineers.

Kit IP-17, 21 lbs., mailable 69.95
Assembled IPW-17, 21 lbs., mailable 110.00

IP-17 SPECIFICATIONS - Output: 0-400 V regulated DC at 0-100 mA continuous, 125 mA intermittent, 0 to -100 VDC at 1 mA variable bias voltage, 6.3 VAC at 4 amps., 12.6 V at 2 amps. (25 VA max. AC load), filament voltage. Regulation: Output variation less than 1% from no load to full load. Line regulation: For a 10% change in line voltage, less than 1% for a ± 10 V change at 117 VAC input. Ripple: Less than 10 millivolts RMS, ripple, jitter and noise. Output impedance: Less than 10 ohms, DC to 1 MHz. Meters: Voltmeter 0-400 V or 0-150 V; Milliammeter 0-150 mA. Power requirements: 120/240 VAC, 50/60 Hz, 150 W max. Dimensions: $5\frac{1}{8}$ " H x $13\frac{1}{4}$ " W x 11" D.

C) Solid-State 1-15 VDC Regulated Supply

Versatile solid-state applications.

Kit IP-18, 5 lbs., mailable 21.95

IP-18 SPECIFICATIONS - Voltage output: 1-15 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load. Line regulation: Less than 50 mV change in output voltage for a 10% change in line voltage. Ripple and noise: Less than 5 mV. Current output: 500 mA maximum continuous load. Current limiting: Adjustable from 10 mA to over 500 mA. Transient response: 25 microseconds. Output impedance: .5 ohm or less to 100 kHz. Power requirements: 120/240 VAC, 50/60 Hz, 15 W at full load. Dimensions: $4\frac{3}{8}$ " H x $5\frac{1}{2}$ " W x $5\frac{3}{4}$ " D. Programming: AC or DC, 5000 ohm input resistance.

D) 6 & 12 VDC Variable Battery Eliminator

Doubles as a battery charger.

Kit IP-12, 18 lbs., mailable 62.95

IP-12 SPECIFICATIONS - Continuously variable output: 6 V range: unfiltered, 10 amp continuous, 15 amp maximum; filtered, 5 amp continuous, less than .3% ripple. 12 V range: unfiltered, 5 amp continuous, 7.5 amp maximum; filtered, 5 amp continuous, less than .3% ripple. Power requirements: 120 VAC 50/60 Hz at 200 W. Dimensions: $8\frac{1}{2}$ " H x $13\frac{1}{4}$ " W x 7" D.

E) Solid-State 1-30 VDC Regulated Supply

Ideal low-voltage source for transistor work.

Kit IP-28, 9 lbs., mailable 49.95

IP-28 SPECIFICATIONS - Voltage output: 2 ranges: 1-10 and 1-30 VDC, continuously adjustable. Load regulation: Less than 50 mV variation from no load to full load (at front panel terminals) without remote sensing. Less than 20 mV variation from no load to full load at front or rear panel terminals when using remote sensing. Line regulation: Less than 25 mV variation in output voltage for 10% change in line voltage. Ripple & noise: Less than 5 mV. Current output: 1A maximum continuous load (0.75A max. continuous load below 5 V). Current limiting: 2 ranges; 10-100 mA & 10 mA-1A, continuously adjustable. Transient response: 25 μ s. Output impedance: 0.3 ohms or less to 100 kHz. Meter accuracy: 3% of full scale. Meter ranges: One switch determines voltage or current reading. 2 voltage ranges: 0-10 V, 0-30 V, 2 current ranges; 0-100 mA, 0-1A. External programming: AC or DC programming. 5000 ohm load on DC. Power requirements: 120/240 VAC, 50/60 Hz, 50 W, at full load. Dimensions: $6\frac{1}{2}$ " H x $10\frac{3}{4}$ " W x $4\frac{3}{8}$ " D. overall.

F) Low distortion audio generator

Produces near-perfect waveform with less than 0.1% distortion from 20-20,000 Hz. Switch selects frequencies from 10 Hz to 100 kHz, meter monitors output in volts and dB to within $\pm 5\%$ from 10 Hz to 100 kHz. 120/240 VAC, 50/60 Hz, 40 W. $6\frac{1}{2}$ " H x $9\frac{1}{2}$ " W x 5" D.

Kit IG-72, 8 lbs., mailable 49.95

Assembled IGW-72, 9 lbs., mailable 74.95

G) Heathkit Precision RF Generator

Adjustable to $\pm 3\%$ frequency calibration accuracy from 100 kHz to 30 MHz with RF output voltage adjustable from 100,000 μ V in five attenuated steps, with 10:1 variable attenuation. Rf output can be modulated from 0-50% with 5% accuracy. 120/240 VAC 50/60 Hz. $8\frac{1}{2}$ " H x $13\frac{1}{4}$ " W x 7" D.

Kit IG-42, 15 lbs., mailable 69.95

H) Decade resistance box

Kit IN-17, 4 lbs., mailable 29.95

SPECIFICATIONS - Range: 1 ohm to 999,999 ohms in 1 ohm steps. Resistors: Precision $\frac{1}{2}\%$ accuracy, 1 W. Minimum DC resistance: .25 ohms or less at terminals with all switches at zero. Dimensions: 5" H x $7\frac{1}{2}$ " W x $6\frac{3}{8}$ " D.

I) Decade capacitance box

Kit IN-27, 3 lbs., mailable 19.95

SPECIFICATIONS - Range: 100 μ F to 0.111 μ F increments of 100 μ F. Voltage rating: 350 VDC continuous; 500 VDC intermittent; 1000 VDC instantaneous test. Accuracy of incremental capacity: $\pm 1\%$. Stray capacitance: 10 to 15 μ F at terminals. Dimensions: 4" H x $7\frac{1}{8}$ " W x 5" D.

J) Resistor substitution box

Provides switch selection of any one of 36 EIA standard 10% 1-watt resistors, from 15 ohms to 10 megohms. Hi/Lo switch. Case is $5\frac{3}{8}$ " H x $3\frac{3}{8}$ " W x 3" D.

Kit IN-37, 2 lbs., mailable 7.95

K) Capacitor substitution box

Select any of 18 EIA standard capacitors from 100 μ F to .22 μ F. All rated at 600 V except three lowest and two highest values, 500 & 400 V respectively. $5\frac{3}{8}$ " H x $3\frac{3}{8}$ " W x 3" D.

Kit IN-47, 2 lbs., mailable 7.50

L) Heathkit Analog Computer

The Heathkit EC-1 Analog Computer vividly illustrates the electronic analogies to mathematical problems. Helps solve such complexities as fluid flow, damped harmonic motion, and flight of a projectile in a viscous medium. Has 9 DC operational amplifiers; built-in regulated power supply - three initial condition power supplies; five variable-coefficient potentiometers; built-in oscillator for re-cycling computer through problem. Switching allows amplifier balance without removing problem setup. Provides a fascinating experience for students. Simple assembly and operation. 120/240 VAC, 50/60 Hz, 100 w. $10\frac{1}{2}$ " H x 19" W x 15" D.

Kit EC-1, 57 lbs., mailable 225.00

No money down on any kit - up to 2 years to pay - see order blank for details.

An easily-assembled music-maker to bring the family together

1495⁰⁰

NO MONEY DOWN



**The superb Heathkit/Thomas Legato
exclusive Thomas Color-Glo keys
and comprehensive organ course supplied
will have the whole family playing complete,
professional sounding songs in minutes.**

Designed exclusively by famous Thomas Organ craftsmen, the Legato puts a universe of sound at your fingertips — at hundreds of dollars in savings over comparable organs. Now your whole family can enjoy building and playing this remarkably versatile musical instrument.

VERSATILE VOICING

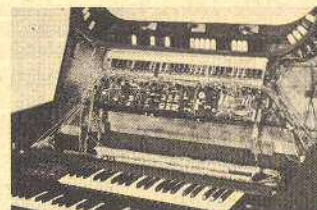
Offers 15 manual voices, four pedal voices — any or all at the flip of a tab. Solo has diapason, bass clarinet, trumpet, tibia on 16-ft. stops; English horn, oboe, violin, and tibia on 8-ft. stops; tibia on 4 and 2 ft. Accompaniment has diapason, saxophone, French horn, oboe horn and cello on 8 ft. Pedal offers diapason 16 ft.; major flute, bass clarinet and string bass on 8 ft. You'll quickly learn a variety of voicing combinations — Spanish guitar, zither, bagpipes, calliope, etc. Musical moods from classical to hard rock, show tunes to religious music.

2-SPEED LESLIE SPEAKER SYSTEM

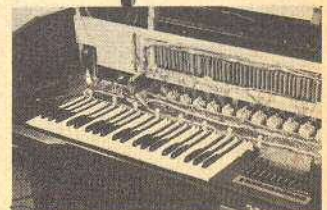
The separate solid-state amplifiers — one for the Leslie system, one for the main system deliver 200 watts of peak power. "Stereo" sound is possible with the two-speed Leslie plus the two 12-in. main speakers. You add voicing variety playing some voices through the Leslie, others through the main system. And the Leslie lets you create the liquid tremolo of the theater organ.

Other features include two 44-note overhanging keyboards; accompaniment manual range 8 ft. — F1 to C5; solo manual 16, 8, 4, and 2 ft. — F1 to C7; 25-note heel & toe pedalboard, range 16 and 8 ft. — C0 to C3; selective repeat percussion, selective attack percussion, keyboard & pedal sustain, variable vibrato, reverb. Stereo headphone jacks, luxurious walnut finish cabinet and bench. Kit includes 29.95-value Thomas Organ Course. Measures 47 $\frac{1}{8}$ " H x 47 $\frac{1}{8}$ " W x 25" D.

Kit TO-101, (less Bandbox & Playmate)
282 lbs., Express/Frt. **1495.00**
TOA-101-3, Thomas Organ Course, 9 lbs., mailable **29.95**
TOA-101-4, 7", 33 $\frac{1}{3}$ rpm demonstration record **ppd. 50¢**



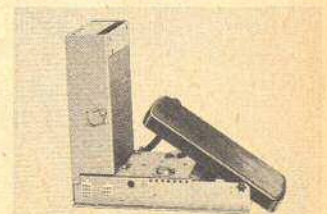
All parts are genuine Thomas components



Manual boards lift for easy access to circuitry



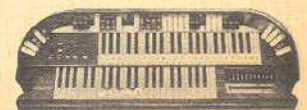
Demo record lets you hear TO-101 before you buy



Two all-transistor amps deliver total 200 watts power



Leslie Speaker creates exciting liquid tremolo



Exclusive Color-Glo Keys let you play instantly

Family-assembled Heathkit/Thomas Spinet gets music into your home ...on a budget



499⁹⁵

NO MONEY DOWN



a modest investment to give the whole family
a building-fun project
and a lifetime of musical enjoyment.

Here's the perfect project to get the whole family participating... and musically involved for years to come. There's the family-fun of building the Heathkit/Thomas Spinet together. Non-technical instructions and uncomplicated drawings are so easy to understand that the whole family can lend a hand in the assembly. And when mom, dad and the kids join in to assemble the organ, it goes together in remarkably short order.

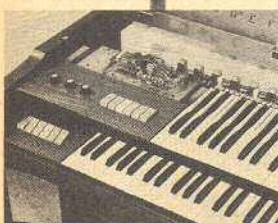
YOU'LL START PLAYING IMMEDIATELY

The exclusive Thomas Color-Glo Keys, and comprehensive organ course supplied with the kit, will have the family playing complete, professional sounding songs almost immediately.

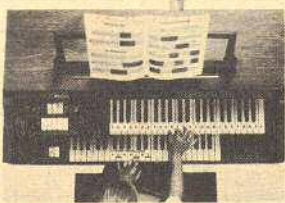
TEN RICH ORGAN VOICES

Enjoy the delightful voicing of trombone, flute, reed, oboe and cor-net on solo; saxophone, violin, horn, viola and diapason on lower manual; vibrato and repeat percussion. Has two 37-note keyboards, 13-note heel & toe pedalboard, 75-W peak power solid-state amplifier, 12-in. speaker system, oiled walnut cabinet & bench. Measures 41 1/4" H x 39 3/4" W x 21 1/2" D.

Kit GD-325D (less Bandbox & Playmate),
172 lbs., Express/Frt. **499.95**
GDA-325-1, 7", 33 1/3 rpm demonstration record **ppd. 50¢**



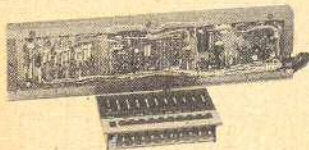
Top quality expert
circuit design



Exclusive Thomas Color-Glo Keys
for professional songs instantly



Hear the Heathkit/Thomas Spinet
first on demo record



Bandbox for full orchestra percussion

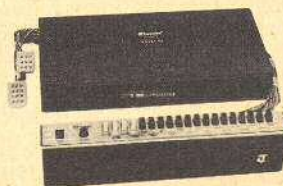
Add the full orchestra sound of Bandbox percussion to any Heathkit/Thomas organ. Gives bass drum, 2 bongos, castanets, brush

and crash cymbals, blocks, claves, snare drum and drum roll effects.

Kit TOA-101-1, Bandbox, 9 lbs., mailable **169.95**

Drawer and slides required to add Bandbox to GD-232, GD-325 & GD-983 models.

Order TOA-101-5, 4 lbs., mailable **49.95**



Playmate for toe-tapping rhythms

Playmate kit adds 15 different rhythms to organ & Bandbox — three different waltzes, fox trot 2/4, boogie 6/8, swing, bossa nova,

rock, watusi, samba, beguine, cha cha, rumba, tango, bolero.

Kit TOA-101-2, Playmate, 9 lbs., mailable **199.50**

Top quality Heathkit Stereo Components

A) AR-17 14-watt FM-Stereo Receiver

28-transistor, 7-diode circuit delivers 14 watts music power. Response of 25 to 35,000 Hz ± 1 dB at full power with less than 1% distortion. Selector for magnetic phono, tuner, aux., stereo or phono. Assembled FM front end. 3" H x 12" W x 10 $\frac{3}{8}$ " D.

Kit AR-17, less cabinet, 9 lbs., mailable 72.95
 AE-35 beige metal cabinet, 4 lbs., mailable 3.95
 AE-25 walnut veneer cabinet, 5 lbs., mailable 9.95

B) AR-27 7-watt FM-Mono Receiver

13-transistor, 7 diode circuit offers 7 watts music power, 5 watts continuous power, with response of 25-60,000 Hz ± 1 dB with less than 1% distortion in audible range. Drives 4 to 16 ohm efficient speakers. Select magnetic phono, tuner, aux. Assembled FM front end. Two evening assembly. 3" H x 12" W x 10 $\frac{3}{8}$ " D.

Kit AR-27, less cabinet, 8 lbs., mailable 44.95
 AE-35 beige metal cabinet, 4 lbs., mailable 3.95
 AE-25 walnut veneer cabinet, 5 lbs., mailable 9.95

C) AA-32 20-watt Stereo Amplifier

Delivers full 10 watts IHF music power per channel on any high efficiency 4-16 ohm speaker. Low distortion & wide 30-30,000 Hz ± 1 dB response. Four stereo inputs. Tandem bass & treble controls. Separate right & left channel volume controls.

Kit AA-32, 16 lbs., mailable 49.95

AA-32 SPECIFICATIONS — Output per channel: 8 watts (16 watts total) IHF Music Power Output. Frequency response: ± 1 dB from 30 Hz to 30,000 Hz at rated output. Harmonic distortion: (at rated output) 2% @ 30 Hz; 0.7% @ 1000 Hz, 2% @ 15,000 Hz. Intermodulation distortion: (at rated output) Less than 3% using 60 and 6000 Hz mixed 4:1. Power requirements: 120/240 VAC, 50-60 Hz. Dimensions: 4 $\frac{3}{4}$ " H x 13 $\frac{1}{2}$ " W x 9 $\frac{1}{4}$ " D.

D) AA-18 4-watt Mono Amplifier

Drives any 4-16 ohm high-efficiency speaker with power to spare. Excellent frequency response and low distortion. Inputs for ceramic phono cartridges, mono AM or FM tuners or tape recorders. Front panel headphone jack.

Kit AA-18, 4 lbs., mailable 19.95

AA-18 SPECIFICATIONS — Dynamic power output: 4 watts.* Continuous power output: 3.25 watts.* Harmonic distortion: Less than 1.5% from 40 Hz to 60 kHz at 4 watts output. Less than 0.7% from 20 Hz to 60 kHz at 1 watt output. Intermodulation distortion: Less than 4% with 4 watts output using 60 Hz and 6 kHz mixed 4:1. Power requirements: 120/240 VAC, 50/60 Hz, 5 watts maximum. Cabinet size: 2 $\frac{5}{8}$ " H x 7 $\frac{1}{4}$ " W x 5 $\frac{1}{4}$ " D.
 *Rated IHF (Institute of High Fidelity) Standards.

E) AD-19A Component Credenza

AR-14, circuitry housed in elegant cabinetry (27" H x 49 $\frac{1}{2}$ " W x 20 $\frac{1}{2}$ " D), delivers 15 watts music power per channel. Factory-assembled FM stereo tuner, adjustable phase control. Four-speed turntable, two 10 in. high compliance woofers, two 3 $\frac{1}{2}$ in. ring-damped tweeters for 60-16,000 Hz. See page 57 for complete AR-14 circuitry specs.

Kit AD-19A, 158 lbs., Express/Frt. 299.95

F) One-Piece Mediterranean Credenza

Crafted in hickory veneers, solid oak trim, finished in oiled pecan. Measures 26 $\frac{7}{8}$ " H x 66" W x 19 $\frac{1}{4}$ " D. Adjustable shelves for stereo receiver, cartridge or cassette deck, tuner & amp. Ducted-port, reflex spkr. enclosures.

AE-101, credenza, 167 lbs., Express/Frt. 195.00
 AEA-101-1, changer drawer, 16 lbs., mailable 31.50
 AEA-101-2, cartridge, cassette drawer, 7 lbs., mailable 19.95

G) Three-Piece Mediterranean Group

Dramatic pecan finish on quality solid woods and veneers. Bi-fold doors. Statuary bronze handles. Adjustable shelves. Cabinet, 28 $\frac{3}{4}$ " H x 40" W x 19 $\frac{1}{4}$ " D. Speaker cabinets each 28 $\frac{3}{4}$ " H x 17 $\frac{3}{8}$ " W x 18 $\frac{3}{4}$ " D.

AE-57, equipment cabinet, 109 lbs., Express/Frt. 175.00
 AEA-57-1, speaker cabinet, 64 lbs., Express/Frt. (each) 95.00

H) Three-Piece Early American Group

Salem-Maple on solids and veneers. Louvered doors, lift-top changer compartment, statuary bronze handles. Cabinet measures 28 $\frac{7}{8}$ " H x 40" W x 19" D. Spkr. cabinets, 28 $\frac{7}{8}$ " H x 18" W x 19" D.

AE-47, equipment cabinet, 104 lbs., Express/Frt. 165.00
 AEA-47-2, speaker cabinet, 67 lbs., Express/Frt. (each) 80.00

I) Three-Piece Contemporary Group

Walnut finish on solids and veneers. Bi-fold doors, lift-top changer compartment, statuary bronze handles. Cabinet measures 23 $\frac{3}{8}$ " H x 40" W x 19" D. Spkr. cabinets, 28 $\frac{3}{8}$ " H x 18" W x 19" D.

AE-37, equipment cabinet, 108 lbs., Express/Frt. 150.00
 AEA-37-1, speaker cabinet, 70 lbs., Express/Frt. (each) 74.00



AR-17 14-watt FM-Stereo Receiver

72⁹⁵

A

AR-27 7-watt FM-Mono Receiver

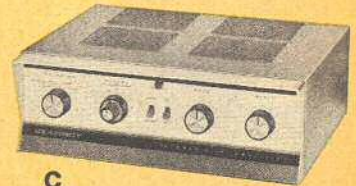
44⁹⁵



B

AA-32 20-watt Stereo Amplifier

49⁹⁵



C



AA-18 4-watt Mono Amplifier

19⁹⁵

D



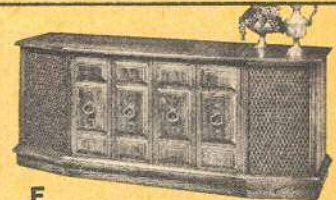
AD-19A Component Credenza

299⁹⁵

E

One-Piece Mediterranean Credenza

195⁰⁰



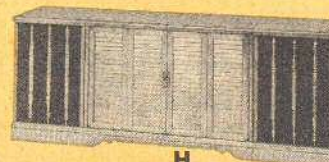
F



Three-Piece Mediterranean Group

365⁰⁰

G



Three-Piece Early American Group

325⁰⁰

H

Three-Piece Contemporary Group

298⁰⁰



I

Heathkit Music Makers



A
Kit GD-111 **99⁹⁵**



B
Kit GD-109 **79⁹⁵**



C
Kit GD-107 **59⁹⁵**



Kit TA-17
(amp only)
179⁹⁵



Kit TA-16 **124⁹⁵**



Kit TD-17
9⁹⁵



Kit TA-28 **17⁹⁵**



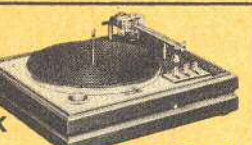
Kit GR-17 **44⁹⁵**



Kit GR-24 **29⁹⁵**



J
Kit GR-151B **19⁹⁵**



Kit ADP-100 **189⁵⁰**



Kit ADP-89 **139⁵⁰**



Kit ADP-79 **99⁵⁰**



Kit ADP-49 **175⁰⁰**



Kit ADP-1218 **139⁵⁰**



Kit P **SAVE UP TO 44⁹⁵**



Kit AD-140 **89⁹⁵**



Kit AD-130 **64⁹⁵**



Kit AD-120 **44⁹⁵**



Kit GD-187 **19⁹⁵**

A) 18-watt Portable Stereo Phono/AM Radio Combo

Flip down, four speed, pre-assembled changer, 4½" high-compliance speakers.
Kit GD-111, 46 lbs., mailable 99.95

B) Component-Quality Portable Stereo Phono

Solid-state, 18-watt amp, 4-speed pre-assembled turntable, assembles in 5-7 hours.
Kit GD-109, 47 lbs., mailable 79.95

C) Budget-Priced Portable Stereo Phono

4-speed auto or manual play turntable, 4x6-in. speakers, includes 45 rpm adapter.
Kit GD-107, 38 lbs., mailable 59.95

D) 120-Watt Amp/Speaker Combo

"Fuzz" box, brightness switch, variable tremolo, bass & treble boost, foot-switch inputs.
Kit TA-17, amplifier only, 53 lbs., Exp./Frt. 179.95
Kit TA-17-1, one speaker system, 116 lbs., Exp./Frt. 129.95

E) 25-Watt Guitar Amp

2 dual-input channels, variable reverb & tremolo, 2 foot switches, line reversing switch.
Kit TA-16, 55 lbs., Express/Frt. 124.95

F) Electronic Metronome

Adjusts from 40 to 210 beats/minute. One evening assembly.
Kit TD-17, 2 lbs., mailable 9.95

G) Distortion Booster

Plug in between guitar & amp to add unique effect to your sound.
Kit TA-28, 4 lbs., mailable 17.95

H) AM/FM Solid-State Portable Radio

2 tuned AM transformers, amplified AGC, 34" collapsible antenna, simulated leather case.
Kit GR-17, 6 lbs., mailable 44.95
GRA-43-1, converter/charger, 1 lb., mailable 6.95

I) AM Solid-State Portable Radio

6-transistor circuit, fast & fun assembly, black simulated leather case.
Kit GR-24, 5 lbs., mailable 29.95

J) Economy AM Solid-State Portable Radio

A "natural" for first-time kit-builders. 4x6" speaker, tan simulated leather case.
Kit GR-151B, 5 lbs., mailable 19.95

K) Garrard Zero 100 Turntable

Pivoting cartridge, 33¼ & 45 rpm, variable speed adjustment.
ADP-100, turntable only, 18 lbs., mailable 189.50
ADA-100-2, 45 rpm spindle (Garrard LRS-100) 2 lbs., mailable 3.80

L) Garrard SL95B Turntable

3-speed auto or manual play, gimbal-pivoted tone arm, adjustable anti-skating, viscous cueing.
ADP-89, turntable only, 14 lbs., mailable 139.50
ADA-57-2, 45 rpm spindle (Garrard LRS25), 1 lb., mailable 3.80

M) Garrard SL72B Turntable

Synchro-Lab motor, 3-speed auto or manual play, stylus pressure gauge, anti-skate control.
ADP-79, turntable only, 13 lbs., mailable 99.50
ADA-57-2, 45 rpm spindle (Garrard LRS25), 1 lb., mailable 3.80

Accessories for your Garrard turntable

ADA-100-1, solid walnut base (Garrard WB-2), 6 lbs., mailable 19.95
ADA-47-3, Power-Matic base (Garrard W2P), 3 lbs., mailable 15.95
ADA-47-1, coordinated base, simulated leather/ebony (Garrard B2), 3 lbs., mailable 6.50
ADA-47-4, dust cover (Garrard D2), 4 lbs., mailable 6.50

N) Dual 1219 Turntable

4-speed auto or manual play, gimbal tonearm, anti-skate adjustments, cue control.
ADP-49, turntable only, 23 lbs., mailable 175.00
ADA-49-1, walnut base (Dual WB-19), 5 lbs., mailable 14.95
ADA-49-4, dust cover (Dual DC-9), 3 lbs., mailable 12.95
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable 5.95

O) Dual 1218 Turntable

3-speed auto or manual play, separate anti-skate controls, tracking angle selector, cue control.
ADP-1218, turntable only, 18 lbs., mailable 139.50
ADA-39-1, walnut base (Dual WB-12), 5 lbs., mailable 10.95
ADA-39-4, dust cover (Dual DC-2), 3 lbs., mailable 10.95
ADA-39-2, 45 rpm spindle (Dual AS-12), 1 lb., mailable 5.95

P) Save up to 44.95 on cartridges ordered with Garrard & Dual turntables

Shure V-15 Type II just \$30 when ordered with Garrard Zero 100 or Dual 1219 only.
Model AD-1502, 1 lb., mailable 67.50
Shure M91E, only \$5 with Garrard or Dual turntable order.
Model AD-68F, 1 lb., mailable 49.95
Shure M93E, only 1¢ with Garrard or Dual turntable order.
Model AD-58R, 1 lb., mailable 39.95
Empire 999SE/X, only \$5 with Garrard or Dual turntable order.
Model AD-121, 1 lb., mailable 49.95
Empire 999E/X, only 1¢ with Garrard or Dual turntable order.
Model AD-126, 1 lb., mailable 39.95

Q) Heath/BSR McDonald AD-140

4-speed auto, semi-auto or manual play, synchronous motor, cue & pause control. Shure M93E cartridge, dust cover and base, assembled.
Assembled AD-140, 14 lbs., mailable 89.95

R) Heath/BSR McDonald AD-130

4-speed auto, semi-auto or manual; synchronous motor, cue & pause controls. Shure M75 cartridge, dust cover and base, assembled.
Assembled AD-130, 14 lbs., mailable 64.95

S) Heath/BSR McDonald AD-120

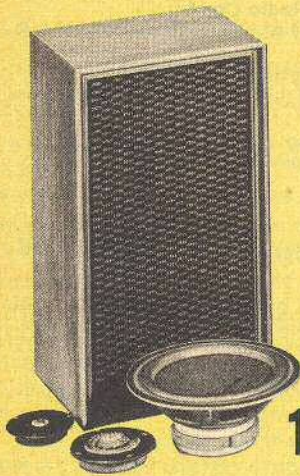
4-speed auto, semi-auto or manual, induction motor, cue & pause controls. Shure M75 cartridge, dust cover and base, assembled.
Assembled AD-120, 14 lbs., mailable 44.95

T) Heath GD-187 Changer

4-speed auto or manual, ceramic cartridge with diamond/sapphire stylus, base, 45 rpm adapter, assembled.
Assembled GD-187, 12 lbs., mailable 19.95

No money down on any kit - up to 2 years to pay - see order blank for details.

Assemble Heathkit Speaker Systems and Save

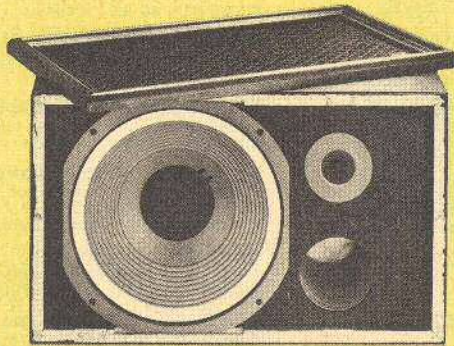


189⁹⁵

Heathkit/AR-3a System

The famous Acoustic Research AR-3a in kit form with three drivers in a sealed acoustic suspension assembled enclosure for low distortion wide response. One evening does it. **Kit AS-103, 66 lbs., Express/Frt. . . . 189.95**

AS-103 SPECIFICATIONS — Power requirements: 25 W rms recommended minimum per channel. Impedance: 4 ohms nominal (2.75 ohms minimum at 1000 Hz). Frequency range: 20 Hz to 20,000 Hz. Crossover frequencies: 575 Hz and 5000 Hz. Speaker complement: One 12" acoustic suspension low-frequency driver (woofer); 3.3 lb. magnet. One 1½" hemispherical dome mid-frequency driver, 1.75 lb. magnet. One ¾" hemispherical dome high-frequency driver (tweeter); 10 oz. magnet. Enclosure: Acoustic suspension type. Finish: Oiled walnut. Dimensions: 25" H x 14" W x 11¾" D.



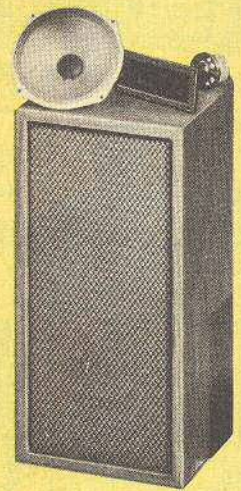
189⁹⁵

Heathkit/JBL 14" System

Giant 14" JBL woofer with inert, self-dampening cone suspension and 11½ lb. magnet, 2" JBL direct radiator tweeter. Floor speaker performance in a bookshelf size cabinet.

Kit AS-48, 68 lbs., mailable 189.95

AS-48 SPECIFICATIONS — Speakers: 14" woofer, 4" voice coil, 11½ lb. magnet assembly; 2" piston-type radiator tweeter, 1.25 lb. magnet assembly. Frequency range: 40-20,000 Hz. Crossover: LC-type, 2000 Hz. Power rating: 50 W program material. Impedance: 8 ohms. Control: Three-position high frequency level control. Cabinet: Damped reflex, tube-ported. Oak veneer and furniture grade hardwoods, pecan finish. Dimensions: 14" H x 23½" W x 12" D.



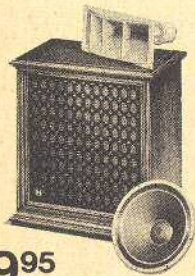
44⁹⁵

Famous Heathkit 2-Way System

More people have built this speaker system series than any other we've ever offered. It's highly efficient, has good performance and value, and you can build two in one evening.

Kit AS-37A, 37 lbs., mailable 44.95

AS-37A SPECIFICATIONS — Speakers: 8" woofer, 10 oz. ceramic magnet; compressor type exponential horn tweeter, 4.65 oz. Alnico magnet. Frequency range: 70-12 kHz. Impedance: 8 ohms. Power rating: 5-25 watts. Crossover frequency: 1600 Hz. Control: HF balance. Enclosure: ducted-port, bass-reflex. Wood covered with satin walnut polyester. Dimensions: 11½" h x 23" w x 11½" d.

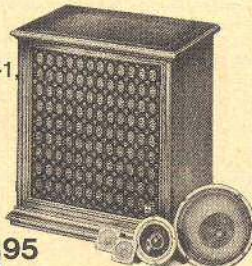


269⁹⁵

Heathkit/Altec-Lansing 2-way; 35-22,000 Hz; 5-50 watts; 8 ohms; bass reflex; 15" woofer, 10½ lb. mag.; horn-driver, 13 oz. mag.; pecan cab. 29½" h x 27¾" w x 19¾" d.

Kit AS-101, 128 lbs., Exp./Frt.

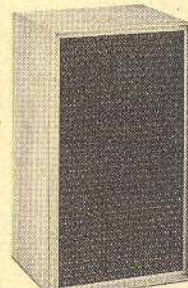
ASA-102-1, less cab, 37 lbs., 149.95



239⁹⁵

Heathkit/Bozak 2-way; 22-20,000 Hz; 20-50 watts; 8 ohms; infinite baffle; 12" woofer, 6" mid range, both 6½ lb. mags.; two 2½" tweeters; pecan cab. 29½" h x 27¾" w x 19¾" d.

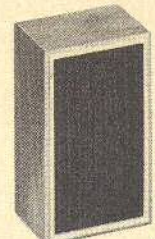
Kit AS-102, 119 lbs., Exp./Frt.



89⁹⁵

Heathkit 3-way Acoustic; 30-18,000 Hz; 10-100 watts; 8 ohms; infinite baffle; 10" woofer; 4½" mid range; 3½" tweeter; walnut veneer cabinet, 24" w x 13½" h x 11½" d.

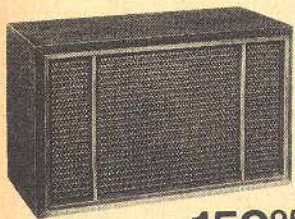
Kit AS-104, 59 lbs., Exp./Frt.



19⁹⁵

Heathkit low cost system; 70-16,000 Hz; 4-20 watts; 8 ohms; infinite baffle; high compliance cloth suspension 4½" speaker; walnut veneer cabinet, 12" w x 7" h x 6" d.

Kit AS-106, 10 lbs., mailable.



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Heathkit/JBL 2-way; 45-20,000 Hz; 10-40 watts; 8 ohms; damped reflex; 12" woofer, 6¾ lb. mag; 2" piston type direct radiator; walnut veneer cabinet 23½" w x 14" h x 11¾" d.

Kit AS-38, 49 lbs., mailable.



64⁹⁵

Unfinished

Heathkit 2-way acoustic; 30-18,000 Hz; 10-100 watts; 8 ohms; infinite baffle; 10" woofer; 3½" tweeter; cabinet 24" w x 13½" h x 11½" d.

Kit AS-105U, unfinished, 47 lbs. Exp./Frt.

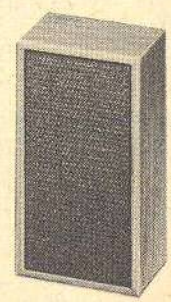
Kit AS-105W, walnut finish, 55 lbs., Exp./Frt. 69.95



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Heathkit 2-way acoustic midi; 60-18,000 Hz; 10-50 watts; 8 ohms; infinite baffle; 8" woofer; 3½" tweeter; walnut cab. with clear vinyl cover 19" w x 10" h x 8¼" d.

Kit AS-16, 22 lbs., mailable.



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Heathkit 2-way acoustic mini; 55-18,000 Hz; 10-50 watts; 8 ohms; infinite baffle; 6" woofer; 2½" tweeter; walnut cab. with clear vinyl cover 15¼" w x 8¼" h x 6½" d.

Kit AS-18, 14 lbs., mailable.

Build this most-for-your-money 30-watt FM Stereo Receiver

119⁹⁵

NO MONEY DOWN

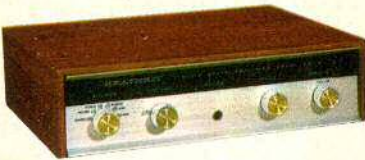


Quality parts and thoughtful design are evident as you easily assemble this extra value, fine performer.

Heathkit AR-14 FM/FM Stereo Receiver... designed in the tradition of Heath's more costly receivers, but without all the frills — enjoyed by thousands of value-conscious music lovers throughout the world. They have found that this down-to-earth receiver goes together in a matter of a few hours with no special effort, yet performs at a level beyond its modest price. Audio experts and testing groups have agreed it presents unusual value. You'll find its 30 watts drives efficient speakers, its FM tuner sensitive to distant and stereo signals, and its controls complete and convenient. For a satisfying kit building experience and the pleasure of knowing you've got an extra measure of value and performance for your money, choose the Heathkit AR-14.

- Kit AR-14, less cabinet, 18 lbs., mailable **119.95**
- AE-55, walnut veneer cab., 7 lbs., mailable **12.95**
- AE-65, beige metal cabinet, 6 lbs., mailable **3.95**

AR-14 SPECIFICATIONS — AMPLIFIER — Continuous power output: 10 W each channel — 20 W total. Music power output (IHF): 15 W per channel. Speaker output impedance: 4 through 16 ohm. Tape output impedance: 3.5 K ohm. Damping factor: 50. Hum and noise: Phono — 60 dB; Auxiliary: — 63 dB. Frequency response: 12 to 60,000 Hz ± 1 dB; 6 to 100,000 Hz ± 3 dB. Power response: 15 to 50,000 Hz ± 1 dB; 7 to 90,000 Hz ± 3 dB. Input sensitivity: Phono: 4.5 mV; Auxiliary: 300 mV. Input impedance: Phono: 47 K ohm; Auxiliary: 180 K ohm. Channel separation: 45 dB or better. Total harmonic distortion (at rated output): 0.5% or less @ 1000 Hz; 1% or less @ 20 & 20,000 Hz. Intermodulation distortion (at rated output): Less than 1% (60 & 60,000 Hz, 4:1). Phono equalization: RIAA. FM: Tuning range: 88-108 MHz. Antenna: Balanced input for external 300 ohm antenna. Intermediate frequency: 10.7 MHz. Sensitivity (IHF): 5 μ V. Hum & noise (IHF): — 50 dB. Audio frequency response (IHF): 0 to — 3 dB from 20 to 15,000 Hz. Harmonic distortion (IHF): 1% or less. Image ratio (IHF): — 45 dB. Capture ratio (IHF): 3 dB. AFC correction: 150 kHz per volt. AM suppression (IHF): — 35 dB. IF Rejection (IHF): — 80 dB. FM STEREO — Separation: 30 dB @ 1 kHz. GENERAL — Front panel: 6-position Source Switch; Mono-phono; Stereo Phono; Mono Auxiliary; Stereo Auxiliary; Mono FM; Stereo FM; Volume Control; Bass Control; Treble Control; Phone Jack. Rear panel: Fused AC Power Socket; switched and unswitched. Speaker Terminal Blocks: one left & one right. Left & right input sockets; phono & aux. Tape output sockets; left & right channel. Power requirement: 120/240 V, 50/60 Hz; 32 W idling; 65 W full output; (No load on AC power sockets). Dimensions: Overall: 3 $\frac{7}{8}$ " H x 15 $\frac{1}{4}$ " W x 12" D. Mounting position: Horizontal or Vertical, Cutout required 15" x 3 $\frac{1}{2}$ "; Depth required from front of mounting surface 11 $\frac{1}{2}$ ".

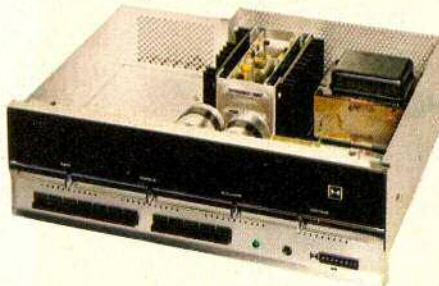


AA-14 30-Watt Stereo Amplifier
Same amplifier specs. as AR-14.
Kit AA-14, less cabinet, 11 lbs.,
mailable **67.95**
AE-25, walnut veneer cabinet, 5
lbs., mailable **9.95**
AE-35, beige metal cabinet, 4 lbs.,
mailable **3.95**



AJ-14 FM Stereo Tuner
Same tuner specs. as AJ-14.
Kit AJ-14, less cabinet, 6 lbs.,
mailable **57.95**
AE-25, walnut veneer cabinet, 5
lbs., mailable **9.95**
AE-35, beige metal cabinet, 4 lbs.,
mailable **3.95**

These easy-to-assemble, ultimately flexible separates are taken from the honored AR-29



The Heathkit AA-29 100-watt stereo amplifier features the same outstanding performance specs as the amp section of the AR-29 (pg. 60) in an "opened up" chassis layout that makes building even easier than usual. Plus you get an extra auxiliary input, extra tuner input, and the ultimate systems' hookup capability only a truly separate component can provide.

Its 70 watts of continuous power is more than enough to drive even the most inefficient speaker systems. A massive, fully-regulated and filtered power supply, four conservatively heat sunked output transistors and superior IM and harmonic distortion specifications add up to sound fidelity you never expected to hear outside the theater. A dissipation-limiting circuit protects the outputs from damage, even with a short circuit condition. Level controls for all inputs including tape monitor keep volume constant when switching sources.

- Kit AA-29, (less cabinet) 27 lbs., mailable **159.95**
- AE-19 cabinet, 9 lbs., mailable **19.95**



The Heathkit AJ-29 AM/FM stereo tuner matches the tuner section of the AR-29 (pg. 60) spec for spec. And it puts less circuitry on the same chassis for easy "wide-open" assembly and self-service. Pre-assembled, factory-aligned FM tuner boasts 1.8 μ V sensitivity. Computer-designed nine-pole L-C filter in the IF strip gives ideally shaped bandpass with greater than 70 dB selectivity, superior separation and eliminates IF alignment forever. "Blend" function attenuates any on-station FM hiss or high-frequency noise at the push of a button. "Mute" function attenuates between-station noise on FM without affecting sensitivity. Three FETs in the AM RF circuits provide superior sensitivity with large signal handling capability for truly remarkable AM reception. And the built-in AM rod antenna swivels to allow orientation for best reception.

- Kit AJ-29, (less cabinet) 19 lbs., mailable **179.95**
- AE-19 cabinet, 9 lbs., mailable **19.95**

No money down on any kit — up to 2 years to pay — see order blank for details.

Our finest separate components from the famous "15" receiver



189⁹⁵
NO MONEY DOWN

AA-15 150-watt stereo amplifier

For the discriminating kitbuilder, pure power to drive any speakers, input controls for phono, tape, tuner, tape monitor, and auxiliary, main and remote speaker switches, 2 headphone jacks, tone-flat switch, loudness switch, tape monitor switch, positive circuit protection.

Kit AA-15 (less cabinet) 37 lbs., mailable **189.95**
AE-18 walnut cabinet, 8 lbs., mailable **19.95**

AA-15 SPECIFICATIONS — Music power (each channel): 8 ohms, 75 W*; 4 ohms, 50 W; 16 ohms, 45 W. Continuous power: 8 ohms, 50 W*; 4 ohms, 45 W; 16 ohms, 35 W. Power bandwidth for 0.5% THD: 6 Hz to 30 kHz*. Frequency response (1 W): ±1 dB, 8 to 40 kHz. Harmonic distortion: 0.5% at 50 W. Damping factor: 45. Input sensitivity: Phono 2.2 mV, Tape, Aux., and Tape Mon., 200 mV. Hum & noise: Phono, -60 dB; Tape & Aux., -65 dB. Channel separation: Phono, 45 dB; Tape & Aux., 55 dB. Tape output impedance: 120 ohms. Input impedance: Phono 51 k ohms, Aux., Tape & Tape Mon. 100 k ohms. Tape output: 0.17 volt output with 0.2 volt input. GENERAL: AC outlet sockets: 3 on rear panel — 1 switched (350 W max.), 2 unswitched (350 W max.). Power requirements: 120/240 VAC, 50-60 Hz, 240 W @ full output. Dimensions: 4¾" H x 16¾" W x 12½" D.

*Rated IHF (Institute of High Fidelity Standards).



AJ-15 deluxe FM stereo tuner

A joy to build, this all solid-state design uses circuit board/wiring harness construction methods with ICs equivalent to 8 conventional IF stages, FET FM front end for superior sensitivity, 2 crystal filters for optimum bandpass shape, 2 meters, and super-sophisticated controls.

Kit AJ-15 (less cabinet) 18 lbs., mailable **199.95**
AE-18 walnut cabinet, 8 lbs., mailable **19.95**

AJ-15 SPECIFICATIONS — **TUNER SECTION** — Tuning Range: 88-108 MHz. Frequency response: ±1 dB, 20-15 kHz. Sensitivity: 1.8 uV*. Selectivity: 70 dB*. Image rejection: 90 dB*. IF rejection: 90 dB*. Capture ratio: 1.5 dB*. AM suppression: 50 dB*. Harmonic distortion: 0.5% or less*. Intermodulation: 0.5% or less*. Hum & Noise: 65 dB*. Spurious rejection: 100 dB*. **STEREOPHONIC SECTION** — Channel separation: 40 dB or greater at midfrequencies; 30 dB at 50 Hz; 25 dB at 10 kHz; 20 dB at 15 kHz. Frequency response: ±1 dB 20-15 kHz. Harmonic distortion: 1% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz suppression: 55 dB or greater. SCA suppression: 50 dB. **AUDIO SECTION** — Output voltage: Tape & fixed, 1.5 V rms nominal (with 100% modulation). Output impedance: Tape & fixed, Approx. 9000 ohms. Phone & variable: 100 ohms. GENERAL — AC outlet socket: Unswitched; 350 W max. Power requirements: 120/240 VAC, 50-60 Hz, 0.25 W. Dimensions: 4¾" H x 16¾" W x 12½" D.

*Rated IHF (Institute of High Fidelity Standards).

199⁹⁵
NO MONEY DOWN

Separate speakers and headsets

3-way high compliance. 12" unitary speaker with woofer, compression mid-range & horn-loaded compression tweeter. 80 W peak power. Mid & high frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Frequency response: 20-20,000 Hz. Cone resonance: 30 Hz. Magnet weights: 1 lb., 6.4 oz., 4.6 oz. Voice coil sizes: 1½" & 1".

Model AS-27, 15 lbs., mailable **79.50**
Pair (AS-27-2), 39 lbs., mailable **152.00**

2-way high compliance. 12" high-compliance woofer with re-entrant horn tweeter. High frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Power rating: 30 watts. Frequency response: 20-15,000 Hz. Cone resonance: 25 Hz. Magnet weights: 1¾ lbs., 4.65 oz. Voice coil sizes: 1½" & 1".

Model AS-183, 15 lbs., mailable **54.95**
Pair (AS-183-2), 39 lbs., mailable **105.00**

3-way high-compliance. 12" high-compliance woofer with mid-range cone; Heath-designed tweeter. 1¾-lb. ceramic magnet. High frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Power ratings: 25 watts. Frequency response: 35-15,000 Hz. Cone resonance: 40 Hz. Voice coil sizes: 1½" & 1".

Model AS-173, 14 lbs., mailable **44.95**
Pair (AS-173-2), 37 lbs., mailable **85.00**

12" 3-way coaxial. Handles up to 20 W. True coaxial design with woofer, midrange cone and horn tweeter. Electrical & mechanical crossovers. High frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Frequency response: 40-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 13 oz., 1 oz. Voice coil sizes: 1½" & 1".

Model AS-163, 12 lbs., mailable **34.95**
Pair (AS-163-2), 32 lbs., mailable **66.00**

12" 2-way coaxial. Separate woofer & tweeter with capacitive crossover for up to 15 W. High frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Frequency response: 50-15,000 Hz. Cone resonance: 60 Hz. Magnet weights: 10 oz., 1.47 oz. Voice coil sizes: 1" & ¾".

Model AS-153, 10 lbs., mailable **24.95**
Pair (AS-153-2), 28 lbs., mailable **46.00**

8" 2-way coaxial. 50-14,000 Hz response from separate woofer & tweeter. Handles up to 12 W. High frequency level control. 1-yr. guarantee. Impedance: 8 ohms. Cone resonance: 70 Hz. Magnet weights: 10 oz., 0.68 oz. Voice coil sizes: 1" & ¾".

Model AS-133, 6 lbs., mailable **19.95**
Pair (AS-133-2), 18 lbs., mailable **38.00**

8" dual cone. Only 3½" deep. 50-12,000 Hz response. Handles up to 12 watts. 1-yr. guarantee. Impedance: 8 ohms. Cone resonance: 70 Hz. Magnet weight: 10 oz. Voice coil size: 1".

Model AS-123, 5 lbs., mailable **11.95**
Pair (AS-123-2), 15 lbs., mailable **22.00**

Koss Pro-4AA Headset. Driver Element: Dynamic. Frequency response: 10-20,000 Hz. Impedance: 4 to 16 ohm sources. Distortion: Negligible at normal listening levels. Cord: Coiled, 10', 4-wire, 3-circuit plug. Color: Gray-bronze cups, black cushion & band.

Model ADP-1002, 4 lbs., mailable **59.00**

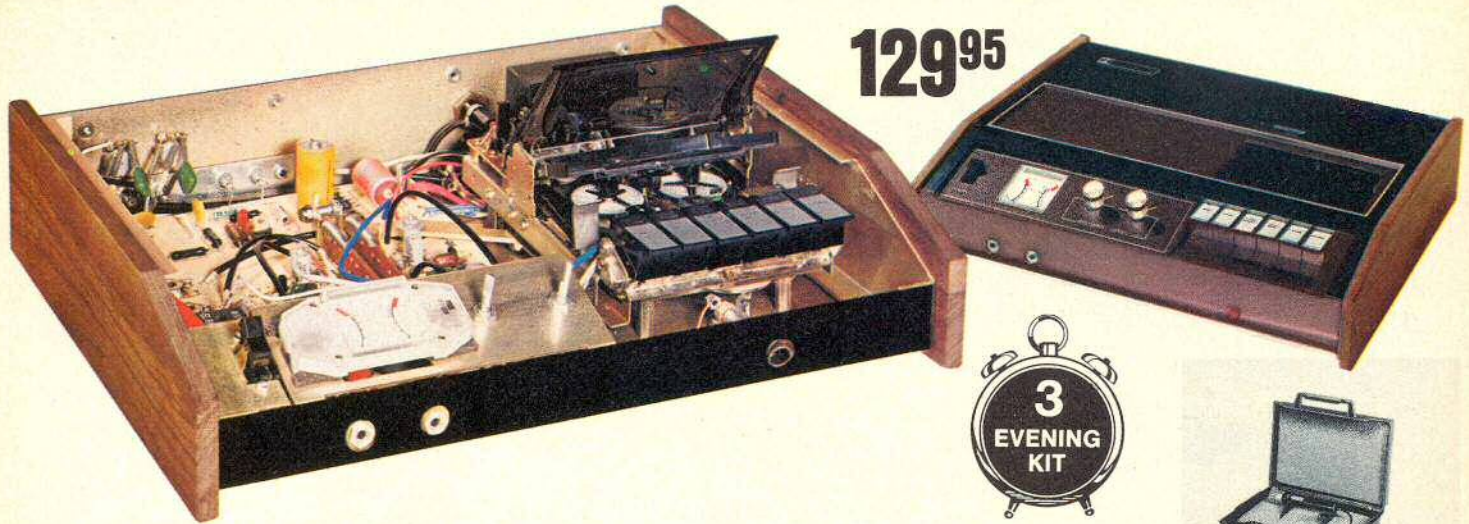
Koss KO-727B Headset. Driver element: Dynamic. Frequency response: 10-18,000 Hz. Impedance: 4-16 ohm sources. Distortion: Unmeasurable at 95 dB SPL. Cord: Coiled, 10', 4 conductor. Color: Charcoal with stainless steel headband.

Model ADP-1007, 3 lbs., mailable **34.95**

Headphone control unit. Takes two sets of headphones. Dual concentric level control. 20' cable.

Kit AC-17, 3 lbs., mailable **8.50**

Our wide-response cassette deck has "build-in" savings



129⁹⁵



the AD-110 has stereo record & playback, accommodates new wide spectrum cassettes

Assemble it easily in two to three evenings. Just solder most components to the one circuit board, install the preassembled transport, make point-to-point wiring connections and you're done. The AD-110 brings to your audio system all the convenience and fidelity today's 1 7/8 ips cassettes can offer—with full-function record & playback of both stereo and mono tape. And the wide response and low noise level easily matches many reel-to-reel machines operating at 3 3/4 ips.

The Heathkit cassette recorder features solid-state circuitry with adjustable bias to accommodate the new "wide spectrum" chromium dioxide cassettes; two-transistor regulated DC motor for stable tape speed with minimum "wow" and "flutter". An IC voltage regulator power supply and push-pull oscillator for erase and record bias contribute to the unit's low hum and noise factor. The built-in reference allows initial setup and subsequent adjustments using the front panel meter. Six pushbuttons control all tape transport functions: Record, Rewind, Play, Fast Forward, Stop-Eject, and Pause. Separate level

ADA-110-1; matched omni-directional dynamic microphones provide 60-12,000 Hz response, -77 dB output level, 500 ohm impedance. Attractive polypropylene storage case included.

controls and meters let you tape any "high level" input from less than 100 mV to 10V. Other features include electronic motor shut-off when tape has played through, counter, and record interlock. Transport mechanism is pre-assembled and aligned for easier assembly. Blank 60-minute cassette included with kit.

Kit AD-110, 12 lbs., mailable 129.95
 ADA-110-1, two matched stereo microphones, 6 lbs., mailable .. 19.95

AD-110 SPECIFICATIONS — Frequency response (record-play): ±3 dB from 30 Hz to 12 kHz typical. Inputs: Aux. 70 mV to 10 V. Mike 0.2-6 mV. Hum and noise: -45 dB. Bias and erase frequency: 110 kHz. Wow and flutter: Less than .25% WRMS record and playback. Motor: Solid-state regulated DC. Speed: 1 7/8 ips. Fast forward-rewind time: Less than 120 sec. for C-60 cassette. Tape: C-30, C-60, C-90 cassettes. Controls: Power switch, record level (left and right channel), record, rewind, stop-eject, play, fast forward, pause. Transistor complement: 13 transistors and 1 IC. Output: Greater than 1/2 volt from low impedance amplifier stage. Finish: Black with walnut end panels. Dimensions (overall): 3 1/8" H x 13 3/8" L x 11" D. Power: 120/240 VAC, 50-60 Hz, 7 watts.

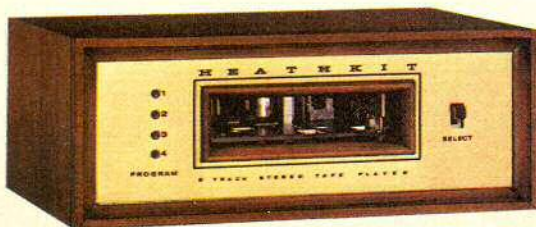


Our stereo compacts put console-like sound in two fun-to-build kits

First there's the high-style AD-27A, with its neat sliding-door dust cover that hides away the works when not in use. The circuitry is from the popular Heathkit AR-14 FM stereo receiver for incomparable FM reception, a crystal clear 30 watts of music power. The turntable is the Heathkit/BSR McDonald AD-130. Measures 7 7/8" H x 21 1/8" W x 14 1/8" D. Then there's the Heathkit AD-17A with Heathkit AA-14 stereo amplifier circuitry for 30 watts stereo music power, and the Heathkit/BSR McDonald AD-120 automatic turntable. It measures 7 1/2" H x 21 7/8" W x 14 3/8" D. Both great Heath compacts are furnished in beautiful walnut. Order either with a pair of 8-ohm speakers (see pg 56) and deduct 5% system discount.

Kit AD-27A, 50 lbs., Express/Frt. 179.95
 Kit AD-17A, 39 lbs., mailable 129.95
 ADA-17-1, plastic cover for AD-17A, 5 lbs., mailable 15.95

40-Minute Stereo Cartridge included with your new GD-28. Features 16 instrumentals by world famous Capitol Records recording artists. A \$7.95 value!



Heathkit 8-track cartridge player... 59.95

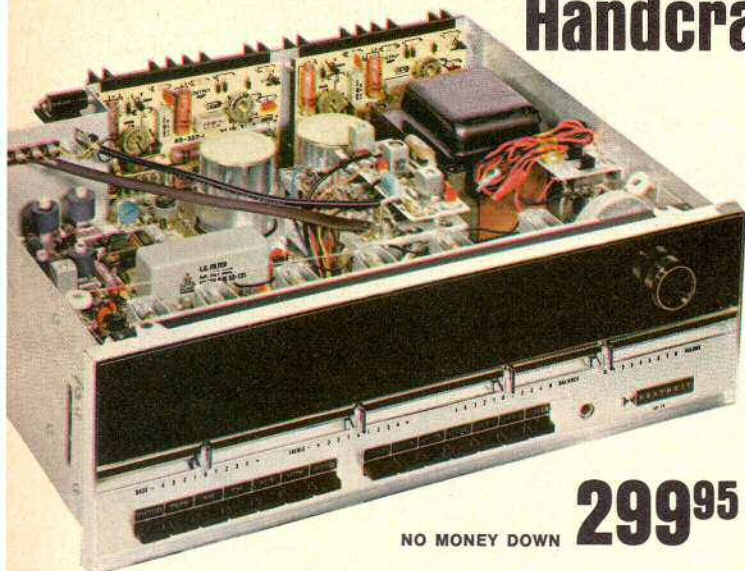
Build yourself a top quality stereo cartridge player in one or two evenings. The all solid-state circuitry mounts on one small board and the Motorola tape transport comes preassembled and aligned. Features manual or automatic channel selection with lighted indicators. Kit includes cabinet and all connecting cables.

Kit GD-28, 10 lbs., mailable 59.95

GD-28 SPECIFICATIONS — Cartridge: 8-track stereo. Tape speed: 3 3/4"/second. Output (each channel): 300 mV at Standard Reference Level. Harmonic distortion: Less than 3%. Separation: Greater than 30 dB at 1 kHz. Frequency response: ±6 dB, 50 Hz to 10 kHz. Wow & flutter: Less than 0.3%. Hum & noise: Better than -40 dB. Motor: 117 VAC synchronous. Power requirements: 120 VAC, 60 Hz, 45 W (momentary). Cabinet: Simulated walnut grained vinyl clad wood. Dimensions: 4 1/2" H x 10 3/8" W x 8 1/4" D.

No money down on any kit - up to 2 years to pay - see order blank for details.

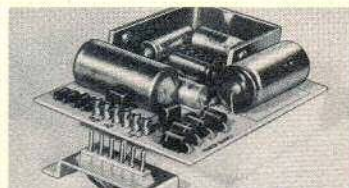
Handcraft this fine 100-watt receiver



NO MONEY DOWN **299⁹⁵**

the Heathkit AR-29 has all the big-sound power and FM sensitivity you've been saving for — at a modest kit price

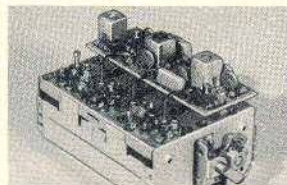
For more than two years the Heathkit AR-29 AM/FM stereo receiver has been the value standard in the medium-power class. Spec for spec few FM receivers can match it — and those that do usually cost far more than the AR-29. Unquestionably the hours you invest in this kit pay off with fine stereo performance. And there's no mystery in assembling the sophisticated solid-state circuitry. Most components mount on eight circuit boards, seven of which plug in. Three cable assemblies with color-coded wires connect to six-pin connectors. The remaining chassis wiring and soldering is as simple as following the check-by-step instructions. Components include 65 transistors, 42 diodes, four ICs, preassembled and aligned FET tuner, computer designed LC filter. And you get ball-bearing tuning, mute and blend control on FM, linear master controls, individually adjustable level controls. Check the specs for yourself and see how much better "do-it-yourself" stereo really is.



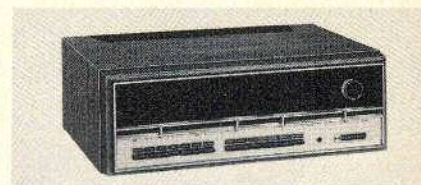
Plug-in fiberglass boards.



Built-in test circuitry.



Preassembled FM tuner.

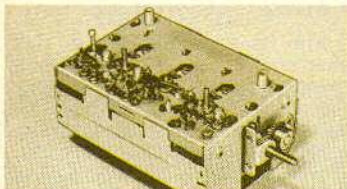


Black Magic panel lighting.

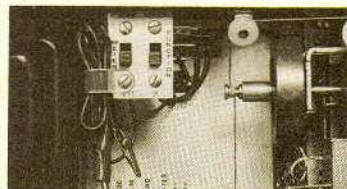
Kit AR-29 (less cabinet) 34 lbs., mailable **299.95**
 AE-19 oiled pecan cabinet, 9 lbs., mailable **19.95**

AR-29 SPECIFICATIONS — AMPLIFIER — Music Power (Each Channel): 8 ohms, 50 W*; 4 ohms, 65 W; 16 ohms, 30 W. **Continuous power:** 8 ohms, 35 W*; 4 ohms, 35 W; 16 ohms, 25 W. **Power Bandwidth For 0.25% T.H.D.:** 5 Hz to 30 kHz*. **Frequency Response (1 W):** -1dB, 7 Hz to 60 kHz. **Harmonic Distortion:** 0.25% from 20 Hz to 20 kHz at 35 W rms. 0.1% at 1000 Hz at 1 W. **Intermodulation Distortion:** 0.2% at 35 W, 60 and 6,000 Hz mixed 4:1. 0.1% at 1 W. **Damping Factor:** 50. **Input Sensitivity:** Phono: 2.2 mV (Overload 155 mV). Tape, Aux. and Tape Mon., 180 mV (Overload 10 V). **Hum and Noise:** Phono (10mV ref.), -65 dB. Tape & Aux. (0.25 V ref.), -75 dB. **Channel Separation:** Phono, 50 dB. Tape & Aux., 60 dB. **Output Impedance:** (each channel): 4 to 16 ohms. **Tape Output Impedance:** 50 ohms. **Input Impedance:** Phono, 49 k ohm (RIAA Equalized). Aux., Tape & Mon., 100 k ohm. **Tape Output:** 1 V with 0.2 V input. FM, 3.8 V with 100% modulation. **FM SECTION — (Monophonic) — Tuning Range:** 88 to 108 MHz. **Antenna:** Balanced for external 300 ohm antenna. Unbalanced 75 ohm. **Frequency Response:** ±1 dB 20 to 15,000 Hz. **Sensitivity:** 1.8 µV*. **Selectivity:** 70 dB*. **Image Rejection:** 90 dB*. **Capture Ratio:** 1.5 dB*. **AM Suppression:** 50 dB*. **Harmonic Distortion:** 0.5%*. **Intermodulation Distortion:** 0.4%*. **Hum & Noise:** -60 dB. **Spurious Rejection:** -90 dB. **FM SECTION — (Stereo) — Channel Separation:** 45 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic Distortion:** 0.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 55 dB. **SCA Suppression:** 55 dB. **AM SECTION — Tuning Range:** 535 to 1620 kHz. **AM Antenna:** Adjustable rod. Connections for external ant. grd. **Sensitivity:** External antenna, 20 µV at 1000 kHz for 20 dB S+N/N. **Selectivity:** 40 dB at 20 kHz. **Image Rejection:** 60 dB at 600 kHz*. 45 dB at 1400 kHz*. **IF Rejection:** 50 dB*. **Harmonic Distortion:** 2%*. **Hum & Noise:** -35 dB*. **GENERAL — AC Outlet Sockets:** One switched (350 W max.), one unswitched (350 W max.). **Power Requirements:** 120/240 VAC 50/60 Hz 240 watts at full output. **Dimensions:** Overall — 5 1/8" H x 16 3/4" W x 14 1/2" D.
 *Rated IHF (Institute of High Fidelity) Standards

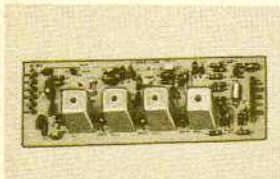
Heathkit AR-19 — a 60 watt receiver at low cost



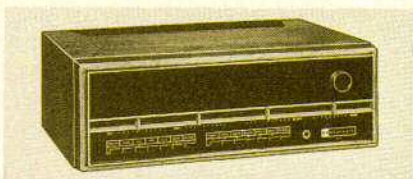
Preassembled FM tuner.



Built-in test circuitry.



Preassembled FM IF board.



Black Magic panel lighting.



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NO MONEY DOWN

Build yourself a better low-cost AM/FM stereo receiver. The Heathkit AR-19 has the modest price, but doesn't skimp on design and performance. The solid-state circuitry (57 transistors, 35 diodes, five ICs) assembles on eight plug-in circuit boards. Color-coded wiring harnesses also plug into connectors. The FM tuner is factory assembled and aligned. And built-in test circuitry lets you check your work as you go. Look at the better listening features: Pushbutton selection of source, tone flat, muting, blend, main and remote speakers. Ball-bearing flywheel tuning. Linear master controls. And individual input level adjustments for everything including tape monitor. Any way you look at it, the AR-19 is a sound investment in beautiful music.

Kit AR-19, less cabinet, 30 lbs., mailable **239.95**
 AE-19, oiled pecan cabinet, 9 lbs., mailable **19.95**

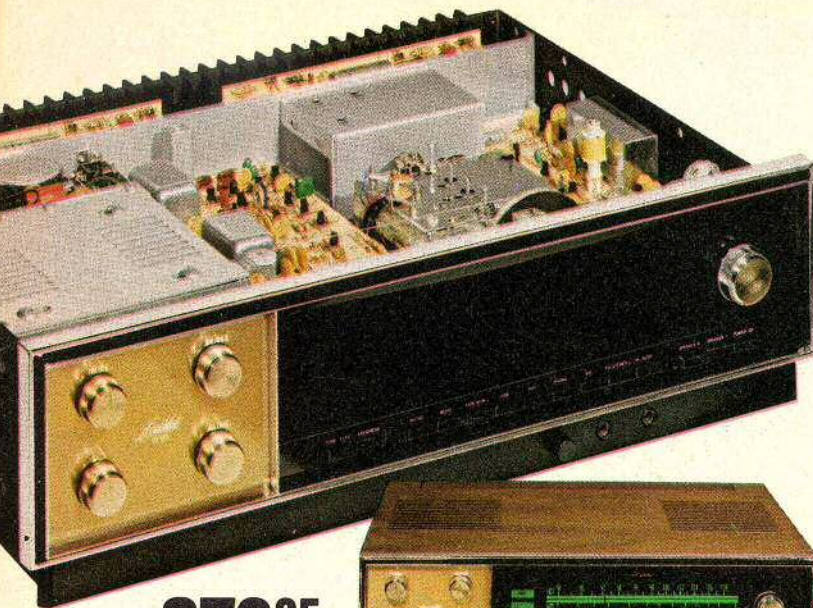
AR-19 SPECIFICATIONS — AMPLIFIER — Music Power (Each channel): 8 ohms, 30 W*; 4 ohms, 20 W; 16 ohms, 17 W. **Continuous power:** 8 ohms, 20 W*; 4 ohms, 20 W; 16 ohms, 15 W. **Power bandwidth for 0.25% T.H.D.:** 5 Hz to 30 kHz*. **Harmonic distortion:** 0.25% from 5 Hz to 20 kHz at 20 rms. **Intermodulation distortion:** 0.25% at 20 W, 60 and 6,000 Hz mixed, 4:1. **Channel separation:** Phono, 50 dB, Tape & Aux., 55 dB. **Output impedance (each channel):** 4 to 16 ohms. **FM SECTION (Monophonic) — Tuning range:** 88 to 108 MHz. **Antenna:** Balanced for external 300 ohm antenna. Unbalanced 75 ohm. **Frequency response:** ±1 dB, 20 to 15,000 Hz. **Sensitivity:** 2.0 µV*. **Capture ratio:** 2.5 dB*. **AM Suppression:** 50 dB*. **Spurious Rejection:** -90 dB*. **FM SECTION (Stereo) — Channel Separation:** 35 dB at mid-frequencies. **Frequency Response:** ±1 dB from 20 to 15,000 Hz. **Harmonic distortion:** 1.5% at 1000 Hz with 100% modulation. **19 kHz and 38 kHz Suppression:** 50 dB. **AM SECTION — Tuning Range:** 535 to 1620 kHz. **Antenna:** Adjustable rod. **Sensitivity:** Rod Antenna, 130 µV/m at 1000 kHz for 10 dB S+N/N. **Selectivity:** 25 dB at 10 kHz. **Image rejection:** 60 dB at 600 kHz*, 60 dB at 1400 kHz*. **GENERAL — AC Outlet Sockets:** One switched, one unswitched (350 W max. each). **Power requirements:** 120/240 VAC 50/60 Hz. **Dimensions:** Overall — 5 1/8" H x 16 3/4" W x 14 1/2" D.
 *Rated IHF (Institute of High Fidelity) Standards

Share in the triumph of the Heathkit AR-1500

Now Available Assembled, Ready to Use

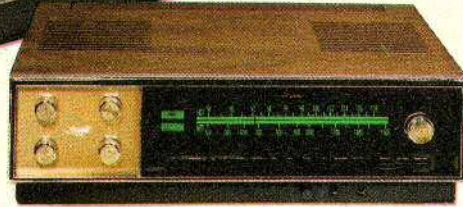
In answer to many requests, we are pleased to offer the magnificent AR-1500 stereo receiver in assembled form. Each is hand made. Each is supplied with its individual performance curves plotted and pertinent specifications measured, documented and signed by a Heath Quality Control Laboratory Technician. Each is performance guaranteed for one year. Production quantity is limited, please allow 60 to 90 days for delivery.

Model ARW-1500, receiver & walnut cabinet,
48 lbs., Exp./Frt. **649.95**



379⁹⁵

NO MONEY DOWN



if you can build any kit, you can build one of the most widely acclaimed AM/FM stereo receivers ever designed

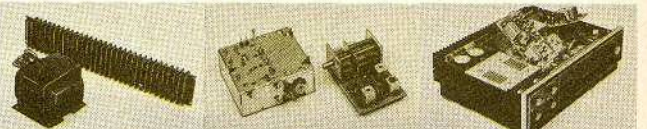
STEREO REVIEW'S Julian Hirsch said the Heathkit AR-1500 180-watt receiver was "the most powerful and sensitive receiver we have ever measured..." AUDIO MAGAZINE called it "a stereo receiver easily worth twice the cost (or perhaps even more)..." In the past we've sometimes referred to sophisticated kits like this as being "for experts only". But this proud descendant of the legendary Heathkit AR-15 can be built by anyone capable of building the most simple electronics kit. Mr. Hirsch put it this way:

"With their well-known thoroughness, Heath has left little to the builder's imagination, and has assumed no electronic training or knowledge on his part. The separate packaging of all parts for each circuit board subassembly is a major boon..."

"Virtually all the circuit boards plug into sockets, which are hinged so that boards can be swung out for testing or servicing without shutting off the receiver. An "extender" cable permits any part of the receiver to be operated in the clear — even the entire power-transistor and heat-sink assembly! The 245-page manual has extensive tests charts that show all voltage and resistance measurements in key circuits as they should appear on the receiver's built-in test meter..."

According to AUDIO MAGAZINE, "As always, construction instructions are lucid enough for the inexperienced kit-builder and there is enough technical and theoretical information to satisfy even the most knowledgeable audio/RF engineer."

Conservatively rated, the AR-1500 puts out 180 watts, 90 per channel, into 8 ohms, with less than 0.2% intermod distortion, less than 0.25% harmonic distortion. Two computer-designed five-pole LC filters and the improved 4-gang 6-tuned front end combine for an FM selectivity better than 90 dB, 1.8 uV sensitivity. And here are some things the specs won't show you. There are outputs for two separate speaker systems, two sets of headphones, bi-amplification, and oscilloscope monitoring of FM. Standard inputs — all with individual level con-



Massive power transformer, and output transistor with full-width heat sink.

AM tuner with 2 dual-gate MOSFETS & JFET mixer plus preassembled FM tuner.

Hinged circuit boards for FM IF, AM IF, Multiplex & Phono Preamp sections.

trois. Electronically monitored overload circuitry. There are even two dual-gate MOSFETS, one J-FET and a 12-pole LC filter in the AM section for super sound there! The AR-1500 is simply the best receiver we have ever offered. And at the low kit-form price, it's an incredible value for the audiophile who demands excellence. Build it, listen to it, and you'll believe it.

Kit AR-1500, less cabinet, 53 lbs., mailable 379.95
ARA-1500-1, walnut cabinet, 8 lbs., mailable 24.95

AR-1500 SPECIFICATIONS — TUNER — FM SECTION (Monophonic): Tuning Range: 88 to 108 MHz. Intermediate Frequency (IF): 10.7 MHz. Frequency Response: ±1 dB, 20 to 15,000 Hz. Antenna: Balanced input for external 300 ohm antenna, 75 ohm antenna input may be used between either FM antenna terminal and ground. Sensitivity: 1.8 uV.* **Volume Sensitivity:** Below measurable level. **Selectivity:** 90 dB.* **Image Rejection:** 100 dB.* **IF Rejection:** 100 dB.* **Capture Ratio:** 1.5 dB.* **AM Suppression:** 50 dB.* **Harmonic Distortion:** 0.5% or less.* **Intermodulation Distortion:** 0.1% or less.* **Hum and Noise:** 60 dB.* **Spurious Rejection:** 100 dB.* **FM SECTION (Sterephonic):** Channel Separation: 40 dB or greater at midfrequencies; 35 dB at 50 kHz; 25 dB at 10 kHz; 20 dB at 15 kHz. Frequency Response: ±1 dB from 20 to 15,000 Hz. Harmonic Distortion: 0.5% at 1000 Hz with 100% modulation. 19 kHz and 38 kHz Suppression: 55 dB or greater. SCA Suppression: 55 dB. **AM SECTION:** Tuning Range: 535 to 1620 kHz. Intermediate Frequency (IF): 455 kHz. Sensitivity: 50 uV with external input; 300 uV per meter with radiated input. Selectivity: 20 dB at 10 kHz; 60 dB at 20 kHz. AM Antenna: Built-in rod type; connections for external antenna and ground on rear chassis apron. **Image Rejection:** 70 dB at 600 kHz; 50 dB at 1400 kHz. **IF Rejection:** 70 dB at 1000 kHz. **Harmonic Distortion:** Less than 2%.* **Hum and Noise:** 40 dB.* **AMPLIFIER — Dynamic Power Output per Channel (Music Power Rating):** 90 watts (8 ohm load)*; 120 watts (4 ohm load); 50 watts (16 ohm load). **Continuous Power Output per Channel:** 60 watts (8 ohm load)*; 100 watts (4 ohm load); 40 watts (16 ohm load). **Power Bandwidth for Constant .25% Total Harmonic Distortion:** Less than 8 Hz to greater than 30 kHz.* **Frequency Response (1 watt level):** -1 dB, 7 Hz to 80 kHz; -3 dB, less than 5 Hz to 120 kHz. **Harmonic Distortion:** Less than 0.25% from 20 Hz to 20 kHz at 60 watts output; less than 0.1% at 1000 Hz with 1 watt output. **Intermodulation Distortion:** Less than 0.1% with 60 watts output, using 60 and 6,000 Hz mixed 4:1; less than 0.1% at 1 watt output. **Damping Factor:** Greater than 60. **Input Sensitivity:** Phono, 1.8 millivolts; Tape, 140 millivolts; Aux, 140 millivolts; Tape Mon, 140 millivolts. **Input Overload:** Phono, 145 millivolts; Tape, greater than 10 volts; Aux, greater than 10 volts; Tape Mon, greater than 10 volts. **Hum & Noise:** Phono (10 millivolt reference), -63 dB. Tape and Aux (0.25 volt reference), -75 dB. Volume control in minimum position, -90 dB referred to rated output. **Channel Separation:** Phono, 55 dB; Tape and Aux, 55 dB or greater. **Output Impedance (each channel):** 4 ohm through 16 ohms. **Tape Output Impedance:** Approximately 50 ohms. **Input Impedance:** Phono, 49 k ohm (RIAA** Equalized); Aux, Tape, and Tape Mon, 100 k ohms. **Tape Output:** Tape or Aux inputs, 1 volt output with 0.2 volt input. **GENERAL — Accessory AC Outlet Sockets:** Two. One switched and one unswitched (240 watts maximum). **Power Requirements:** 120 or 240 volts 50/60 Hz AC. 40 watts idling (zero output) and 356 watts at full output with no load on accessory outlets. **Dimensions:** Overall — 18½" W x 5¼" H x 13¾" D.

*Rated IHF (Institute of High Fidelity) Standards.

**Rated RIAA (Recorded Industry Association of America).

Heathkit Stereo-4 Decoder... 29.95

Add the Heathkit Stereo-4 decoder, extra stereo amplifier and speaker systems to your present rig and you're equipped for Stereo-4 matrixed 4-channel reproduction. As being broadcast by a number of FM stations and recorded on discs by several manufacturers, this method puts 4 channels into a conventional stereo multiplex signal or record. Unit installs between preamp and amplifier or via tape-monitor facilities. An extra set of tape input and output jacks is built into the decoder. Order with Heathkit amp and pair of speakers and apply 5% system discount.

Kit AD-2002, decoder, cables and demo record,
3 lbs., mailable **29.95**

ADA-2002-1, four-LP Stereo-4 record offer, Enoch Light plays hits of the 20's, 30's, and 40's, movie themes, "Permissive Polyphonics,"
4 lbs., mailable **19.95**

AD-2002 SPECIFICATIONS: Gain (control maximum): Unity. Maximum Input Signal: 2.5 V rms. Frequency Response: 10-100,000 Hz; +0, -5 dB. Signal to Noise Ratio, (referred to .25 V input): Greater than 70 dB, wideband. Total Harmonic Distortion, (at .25 V input): Less than .15%. Intermodulation Distortion, (at .25 V input): Less than .25%. Input Impedance: 50,000 ohms minimum. Output Impedance: 3,000 ohms. Controls: Master Gain/Power On-Off, Function Switch. Dimensions: 2½" H., 5¼" W., 7" D. overall. Power Requirements: 120 VAC, 50-60 Hz; 3 W.

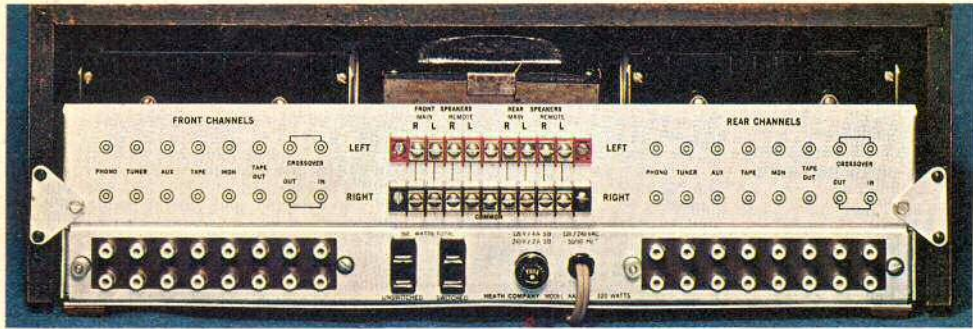


No money down on any kit — up to 2 years to pay — see order blank for details.

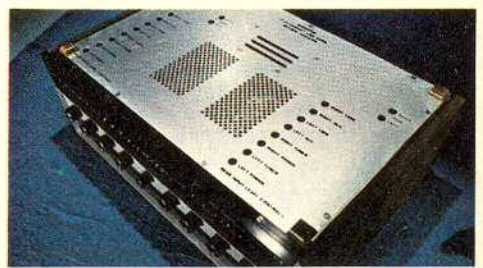


349⁹⁵
NO MONEY DOWN

Put together the 4-channel amplifier that puts you ahead of tomorrow's developments and gives you the best of today's



the chassis. And there are separate rear panel jacks to permit biamping, separate filters, equalizers, etc. Four 3-range VU meters monitor every channel.



The Heathkit AA-2004, with 260 watts to match your every mode — matrixed and discrete 4-channel, stereo or mono

This is a state-of-the-art component with performance specs to match some of the most costly integrated amplifiers on the market — enough raw power to drive two 4-channel systems. Yet every major circuit function is "modularized" for easy assembly by virtually anyone who can solder a connection.

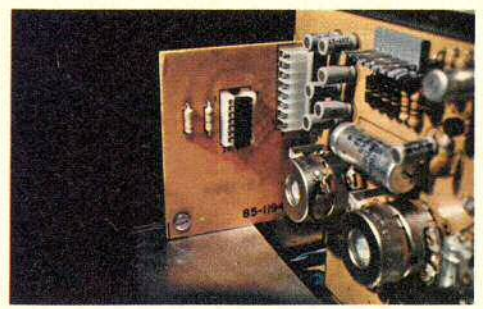
Secondarily, this design gives you an on-the-spot maintenance capability usually found only in the most sophisticated commercial electronics. You assemble 10 boards (five plug into chassis pins), hook-up three cable harnesses and a minimum of point-to-point conductors, test and align as you go following simplified step-by-step instructions. When you're finished you can step off the most versatile amplifier we've ever offered.

HANDLES BOTH MATRIXED AND DISCRETE 4-CHANNEL MATERIAL*

The AA-2004 employs four conservatively rated amplifiers producing 260 watts into 4 ohms (4x65), 200 watts into 8 ohms (4x50), 120 watts into 16 ohms (4x30). The special built-in 4-channel matrix circuitry lets you keep your existing turntable, tape equipment and tuner yet still get in on the 4-channel fun.

First it decodes the matrixed 4-channel recordings already being sold, and matrixed 4-channel FM being broadcast by a number of stations across the country. Second, the built-in decoder enhances your present stereo material and stereo FM by reproducing the out-

-of-phase ambiance common to 2-channel programming. This "hidden presense" is fed to the rear two speakers resulting in an extremely realistic 4-channel effect. As discrete 4-channel material becomes more prevalent, your AA-2004 will handle it beautifully at a flip of the mode switch.



MAXIMUM CONTROL FLEXIBILITY

The individual amplifier sections are controlled in pairs, giving you two complete and independent stereo systems, if you desire. Duplicate control clusters provide front and rear bass, treble, balance and volume, as well as phono, tape, tuner, aux., tape monitor, filter and loudness. A master mode switch selects mono, stereo, matrixed 4-channel or discrete 4-channel. Pushbuttons activate speaker pairs in any combination of up to eight speakers — or, two complete 4-channel systems. Twenty input level controls — enough for up to five 4-channel program sources — can be adjusted beneath

PERFORMANCE TO MATCH YOUR MOST EXOTIC SYSTEM

Compare the conservatively rated specs for yourself. Power bandwidth on all channels from less than 5 Hz to more than 45 kHz for 0.25% total harmonic distortion. IM distortion less than 0.2%. Damping factor greater than 100. Hum and noise — 65 dB for phono, —75 dB for tape and auxiliary. A 50-volt DC regulator supplies power to all preamp stages. A 10-amp bridge rectifier supplies power to the four power amps.

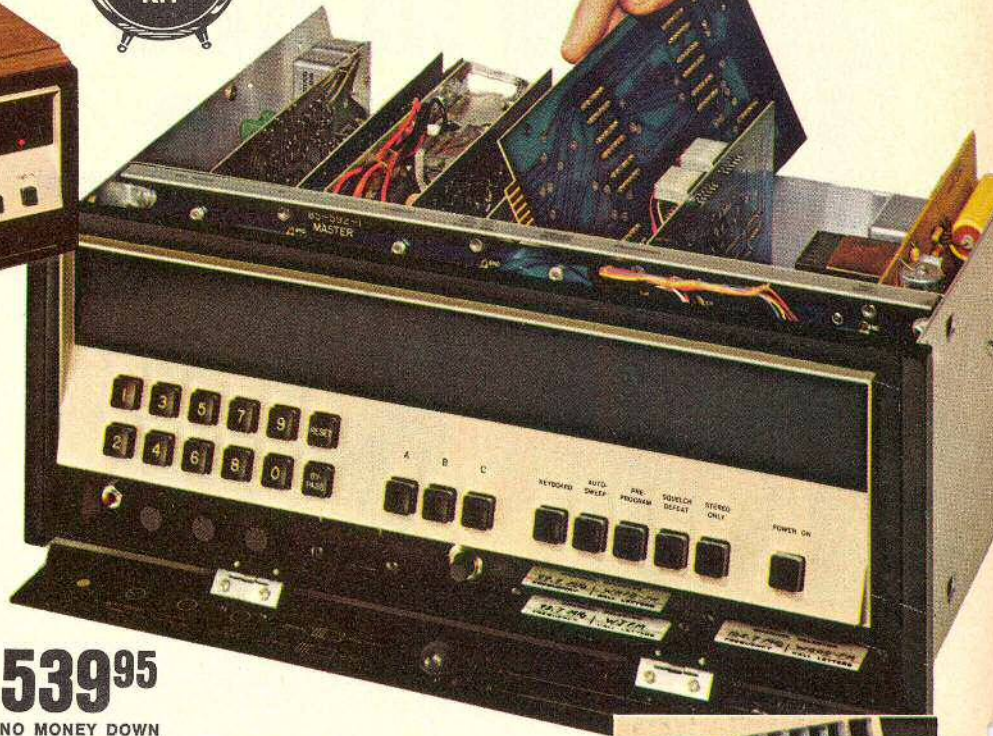
Kit AA-2004, 37 lbs., less cabinet, mailable ... **349.95**

AAA-2004-1, pecan cabinet, 7 lbs., mailable ... **24.95**

*Multiplex discs require suitable adapter.

AA-2004 SPECIFICATIONS — Dynamic power output per channel: 50 W (8 ohm load), 65 W (4 ohm), 30 W (16 ohm). Continuous power output per channel: 35 W (8 ohm load)*, 35 W (4 ohm), 25 W (16 ohm). Power bandwidth for constant 0.25% total harmonic distortion: Less than 5 Hz greater than 45 kHz.* Frequency response (1 W level): —1 dB, 7 Hz to 50 kHz, —3 dB, 4 Hz to 90 kHz. Harmonic distortion: Less than 0.25% from 20 Hz to 20 kHz @ 35 W output. Less than 0.1% @ 1000 Hz with 1 W output. Intermodulation distortion: Less than 0.2% with 35 W output, using 60 and 7,000 Hz mixed 4:1. Less than 0.1% @ 1 W output. Damping factor: Greater than 100. Input sensitivity: Phono: 2.2 mV. Tuner, Aux. Tape, Tape Mon: 180 mV. Input Overload: Phono: 155 mV. Tuner, Aux. Tape, Tape Mon: Greater than 10 V. Tape output: 1.4 V output with 0.2 V input. Hum and noise: Phono (10 mV reference): —65 dB. Tuner, Aux. Tape, Tape Mon (0.25 V reference): —75 dB. Volume control in minimum position: —90 dB referred to rated output. Channel separation: Phono: 50 dB. Tuner, Aux. Tape, Tape Mon: 55 dB or better. Recommended speaker impedance (each channel): 4 through 16 ohm. Tape output impedance: Approx. 50 ohm. Input impedance: Phono: 49 k ohm (RIAA equalized). Tuner, Aux. Tape and Tape Mon: 100 k ohm.

*Rated IHF (Institute of High Fidelity) Standards.



There has never been a tuner like the AJ-1510

"...The tuner which may well prove to be the 'classic' of the 1970's is Heath's new AJ-1510 Digital FM Stereo Tuner."

— Leonard Feldman, AUDIO MAGAZINE

"...When it comes to using the AJ-1510, we find ourselves almost at a loss for words. It is probably as near to the ideal FM tuner as we have ever encountered."

— Julian Hirsch, STEREO REVIEW

Mr. Feldman goes on to say:

"There is so much that's new and unique in this model that it would take a small volume to fully do it justice... The 'ultimate' tuner? Well, if it isn't it'll do until someone comes up with something better!... There is NO tuning knob and there is NO tuning dial or pointer, since all frequency indications are read from digital read-out tubes... At the left are ten keyboard buttons, numbered '1' through '0', as well as a re-set button (punched when you wish to 'punch up' a new station frequency) and a button labeled BY-PASS (used to initiate the 'auto-sweep' action which causes the tuner to sweep downward in frequency, automatically locking in on every available signal in your area)..."

"... three more buttons, labeled A, B and C... are used to select three predetermined favorite stations... and there are additional buttons for SQUELCH DEFEAT and STEREO ONLY reception..."

"... a tiny test switch button when depressed, lights up all the elements of the digital readout tubes to insure that they are operative. There is also a rotary control which determines the speed at which the AUTO-TUNE action takes place, a noise squelch adjustment control, and an AGC squelch control. A slide switch changes the meter function from signal strength indication to multi-path indication and a second, three-position slide switch selects automatic stereo, partial stereo blend (for reduced noise in weak-signal stereo reception situations with some sacrifice in overall stereo separation), and mono-mix. The right section behind the trap door contains three horizontal slots, labeled A, B and C. These slots correspond to the three PREPROGRAM selection buttons described earlier and, upon inserting three plastic cards no larger than a standard credit card, the buttons can be used to tune in your favorite stations which you easily program onto the cards yourself..."

"... The rear panel of the AJ-1510... contains antenna terminals for 300-ohm or 75-ohm transmission lines, a dual pair of output jacks as well as horizontal and vertical outputs jacks for connection to an oscilloscope for observing the nature and extent of any local multipath problems beyond what you can read on the dual purpose self-contained signal meter..."

539⁹⁵
NO MONEY DOWN

"... The heart of the non-mechanical tuning aspect of this unit lies in the voltage-tuned FM front-end, which is of the varactor-tuned type and contains no moving variable capacitor. Instead, a suitable d.c. voltage applied to the varactor diodes determines their effective capacitance. The keyboard, pre-programmed cards, or automatic sweep tuning methods all program a divider circuit. The divider circuit divides the tuner's local oscillator frequency and compares it to a crystal controlled reference frequency and the result of this comparison is the tuning voltage. Changing the divide ratio of the divider circuit changes the d.c. voltage applied to the tuner and a different station is tuned in. Simultaneously, a visual display of the station frequency is provided by the readout circuitry. Because of the crystal controlled reference frequency and the phase-locked loop circuitry, however, the accuracy of the frequency tuned in is no longer dependent upon the drift-free characteristics of the FM front-end but will be as accurate as the reference crystal frequency and, in the case of the AJ-1510, that means at least 0.005% accuracy!..."

"... Do not confuse this 'digital readout' tuner with some units which have recently appeared on the market and simply replace the tuning dial with numeric readout devices. The latter variety guarantee no more tuning accuracy than their 'dial pointer' counterparts. The Heath AJ-1510 is tuned exactly to 101.5 MHz when those readout tubes READ 101.5 — and not to 101.54 or 101.47!... There is no doubt that the elaborate 'computer' type circuitry incorporated in the Heath AJ-1510 must represent a fair percentage of its selling price, but even if you ignored it completely (or considered it as a welcome bonus), the tuner's performance as a tuner would justify its total price and then some..."

"... Here's a tuner that maintains at least 30 dB of separation from 50 Hz to 14 kHz and hits a mid-band separation figure of 46 dB! Both SCA and 19 and 38 kHz suppression were in excess of 60 dB, which means that SCA interference was absolutely inaudible. Capture ratio measured 1.35 dB as against 1.5 dB claimed... In short, every spec was easily met or exceeded and if you compare published specs with the best of the 'ready made's' you're not likely to come up with a set of readings anywhere... We enjoyed the crystal-clear, distortion-free reception we obtained in using the Heath AJ-1510... [it] has got to be the way all tuners of the future will be made. It's very nice to know that Heath has just brought that future into the present..."



Mr. Hirsch comments further:

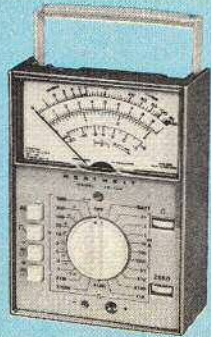
"... the Heath AJ-1510 digital Stereo FM tuner kit is new, with a fresh and imaginative design approach... and we know of nothing else on the market with comparable features... It is quite impossible, in the available space, to give an adequate description of this remarkable tuner. Anyone familiar with the inside of a typical FM tuner will not recognize this as belonging to the same family. It more closely resembles a small digital computer. There are no moving parts (the tuning is entirely electronic), and almost nothing resembling r.f. circuit components... The i.f. selectivity is provided by sealed multipole inductance-capacitance filters. Not only do they give outstanding alternate-channel selectivity (the kind most of us are concerned with), but it is also easy to separate adjacent-channel signals only 200 kHz apart..."

"... our measured performance data on the AJ-1510 met or exceeded Heath's published specifications... The IHF sensitivity was 1.6 microvolts... The 89-dB image-rejection figure was very good, and we confirmed Heath's alternate-channel selectivity rating of 95 dB... The FM frequency response was well within ±1 dB from 30 to 15,000 Hz. Stereo channel separation was exceptionally good — 40 dB at middle frequencies... suppression of 19 and 38 kHz components of stereo FM signals was the best we have yet encountered... tuning the AJ-1510, in any of its modes, is a unique experience. No matter how you go about it, the output is always a clean signal or nothing — not a hint of a thump, hiss, or squawk at any time..."

"... for anyone who wants a tuner that is most certainly representative of the present state of the art, and which is not likely to be surpassed in any important respect for the foreseeable future, his search can stop at the AJ-1510."

Kit AJ-1510, Tuner less cabinet, 23 lbs., mailable **539.95**
AJA-1510-1, Pecan cabinet, 6 lbs., mailable... **24.95**

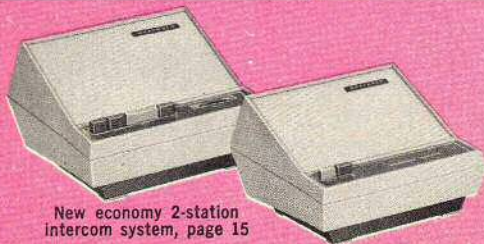
new in this issue...



New professional FET VOM, page 43



New stereo component system for cars, page 11



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