

RETRACE BLANKING AMPLIFIER-Z AXIS INPUT

Get acquainted with your

audio amplifiers, speakers, microphones, pickups and other audio devices. The final test is in the listening pleasure that each provides but it is interesting and beneficial to be able to test them electrically when the need arises. The instruments on this page will be of particular help to you when working with such audio circuits.

INTERMODULATION ANALYZER KIT



Heathbit.

MODEL IM-1 \$3950 Ship. Wgt. 17 lbs.

Strictly an audio test in-strument Model IM-1 will indicate clearly the degree of interaction between two signals at any point in an audio system. It is pri-marily associated with am-

plifiers, but works equally well with microphones, records, tapes, pickups, speakers and all types of recording devices. The Heathkit Intermodulation Analyzer includes the low (60

The Heathkit Intermodulation Analyzer includes the low (60 CPS) and high (3 KC and 7 KC) test signals which can be set to any voltage ratio. They are applied to the audio device under test and then the fundamental frequencies are filtered out leaving only the signal caused by their interaction. This signal (intermodulation distortion) is then measured by the panel mounted VTVM with full scale ranges of 30%, 10% and 3%. The AC VTVM can also be used separately with full scale ranges of 30 volts, 10 volts and 3 volts. Model IM-1 is complete in itself and needs no help from other instruments. It truly represents the "high quality—low price" theme of Heathkits.

of Heathkits.

6 lbs

What could be more convenient than to be able to read output power levels directly without using external load resistors? The Heathkit Audio Wattmeter does just that over wide ranges of power, frequency and impedance. Built-in non-inductive load resistors provide impedances of 4, 8, 16 and 500 ohms. By using 4 germanium diodes in the meter bridge, the VTVM type meter is made extremely linear with a flat response from 10 CPS to 250 KC. The full scale power ranges are 0-5 MW, 0-50 MW, 0-500 MW, 0-5 W and 0-50 W. Model AW-1 will operate continuously at 25 W and has a duty cycle of 3 minutes at 50 W. Total db range in 5 switch positions is -15 db to +48 db using the standard 5 switch positions is -15 db to +48 db using the standard 1 MW-600 ohms.

Other features are a transformer operated power supply, precision multiplier resistors, 12AU7 voltage-current ampli-fier for the meter, calibration control and well vertilated cabinet. Use the Heathkit Audio Wattmeter in your hobby or service shop and run those power curves with complete confidence.



Heathkit AC VACUUM TUBE VOLTMETER KIT MODEL AV-2 \$2950 Ship. Wgt. 5 /bs.

Extreme sensitivity has been emphasized in the design of the Heathkit AC VTVM. The full scale RMS ranges are .01, .03, .1, .3, 1, 3, 10, 30, 100 and 300 volts. Primarily intended for audio

With its input impedance of 1 megohm at 1 KC, Model AV-2 will accurately measure as low as 1 millivolt at high impedance which is very rare even in much more expensive devices. Total db range

is very rare even in much more expensive devices. Total db range is -52 db to +52 db. An excellent kit for measuring the output of phono cartridges and the gain of amplifier stages. Use it also to check power supply ripple, as a sensitive null detector and for compiling frequency response data. A germanium diode meter bridge provides good linearity throughout the range of the 200 m broampere Simpson meter. Model AV-2 features convenient one knob operation, pre-cision divider resistors and a well filtered AC power supply. The Heathkit AC VTVM is nodernly styled to match the Audio Wattmeter and Model V-6 VTVM. If you are interested in audio, you will require this accurate and economical item.

AUDIO OSCILLATOR KIT

MODEL AO-1 \$2450 11 lbs.

Here is your signal source for the investigation of all kinds of audio cir-cuits. It will produce both sine and square

waves at any frequency from 20 CPS to 20 KC in three ranges. Thermistor controlled linearity results in a variation of no more than ± 1 db in the 10 volt (no load), variable output level. There will be l_{955} than .6% distortion from 100 CPS throughout the audible

range. The square wave rise time of 2 microseconds makes Model AO-1 ideal for testing audio amplifiers by the square wave method. Another desirable condition is its low impedance (600) ohms) output. Precision 1% resistors are used in the range roultiplier circuit to provide the most accurate calibration.

When used with an oscilloscope, the Heathkit Audio Oscillator makes an excellent reference for frequency measurements. Use it also in the service shop in conjunction wit a signal tracer and to test loud-speakers. Many other uses will present themselves to make Model AO-1 well worth its nominal price.

MODEL AW-1 Ship. Wgt

Heathbit

AUDIO WATTMETER KIT



HEATHKITS FOR THE AUDIO DESIGN ENTHUSIAST



OUTSTANDING FEATURES:

- 5 position input switch
- 4 position turnover switch
- 4 position Roll-off switch
- 3 twin triode tube circuit

LIGHT

WEIGHT

Sin 1

a other

SHOCK MOUNTING

NEW

WILLIAMSON

TYPE

Cathode follower output

TUBE. SHIELDS

FUNCTIONAL

DESIGN

Heathleit MODEL WA-P2 PREAMPLIFIER KIT

ADVANTAGES:

In answer to your many requests the Heath Company is proud to offer the new Preamplifier Model WA-P2

1203233333

the new Preampliner Model WA-P2 at no price increase. Designed for any of the Williamson Type Ampli-fiers and interchangeable with pre-vious Model WA-P1. The improve-ments are many: 2 low and 3 high level inputs individually controlled, complete compensation, monitored recorder output, high voltage gain and lower hum and noise levels.

DESIGN:

The three tube circuit consists of a 12AX7 phono and mike preamplifier with proper equalization, $\frac{1}{2}$ -12AU7 input cathode follower, 12AX7 volt-age and tone control amplifier and $\frac{1}{2}$ -12AU7 cathode follower output. The recorder output is independent of volume and tone controls making it marking it to meet the size of the record and the size of the size possible to monitor the signal through a power amplifier. Proper equaliza-tion for LP, NARTB, AES and early 78 recording characteristics. Selected roll-off of 16, 12, and 8 db with one flat position. All tubes and critical leads are efficiently shielded and tube chassis is shock mounted from the cabinet.

COMPONENTS:

All parts are of the highest quality. Moulded plastic condensers are used throughout. Low noise deposited carbon resistors are furnished for critical input circuits. The kit is complete with smooth acting controls and switches and first line tubes. Full instructions will result in a very pleasant and worthwhile project.

LOW PRICED Single UNIT

AMPLIFIER KIT MODEL W-4M 75 Shipping

Wat. 28 lbs.

Shipping

Wgt. 35 lbs.

Another new Heathkit fills a need reported by a great many customers. The famous

MODEL W-4

\$5950

Heathkit Williamson Type Amplifier is now available as a single unit. Model W-4M is the power supply and power amplifier com-bined in one efficient chassis layout. Model W-4 includes W-4M plus the new Heathkit Preamplifier Model WA-P2.

Quality has not been sacrificed in the slightest degree by com-bining both the power supply and amplifier in one chassis. By the elimination of connecting cables, sockets, plugs and a reduction of sheet metal fabrication operations a substantial saving in price is realized. The Williamson type circuit and heavy duty power supply remain unchanged.

This compact design with one large chassis will be of particular terest to those having the necessary available space. Wiring rocedures have been simplified for your convenience. For circuit description please refer to the accompanying ad for the Heathkit Williamson Type Amplifier Models W-2 and W-3.

WILLIAMSON TYPE

COMBINATIONS:

W-2 Amplifier Kit (Includes Main Amplifier with) Peerless Output Transformer, Power Supply and WA-P2 Preamplifier.) Shipping \$6950 weight 38 lbs. Shipped express only.

W-2M Amplifier Kit (Includes Main Amplifier with Peerless Output Transformer and Power Supply.) Shipping weight 30 \$4975 lbs. Shipped express only.

W-3 Amplifier Kit (Includes Main Amplifier) with Aerosound Output Transformer, Power Supply and WA-P2 Precomplifier.) Shipping weight 38 lbs. Shipped express only.

W-3M Amplifier Kit (Includes Main Amplifier with Aerosound Output Transformer and Power Supply.) Shiping weight 30 \$4975 Ins. Shipped expressionly.

The ultimate in audio reproduction, the Heathkit Williamson Type Amplifier offers extreme flexibility for custom installations. Three separate chassis with interconnecting cables meet all requirements for your high fidelity system. Frequency response ± 1 db 10 CFS to 100 K.C, negligible hum and

noise levels and plenty of reserve power for complete listening pleas-ure. The circuit consists of a 6SN7 cascade amplifier and phase splitter, 6SN7 push-pull driver, (2) 5881 push-pull power output tubes and 5V4 G rectifier. Both the Peerless and the Acrosound output transformers have additional primary taps for the popular extended power circuit wiring. This method as well as the conven-

tional triode wiring is fully covered in the construction manual. The full requirements for true kigh fidelity are met with any one of the available combinations. Investigate this offer further. You can't go wrong.

THE WORLD'S LARGEST SELLING HI-FI AMPLIFIER

Heathkit

AMPLIFIER KIT

MODEL

WA-P2

HEATHKIT Dual RECORD PLAYER KIT

- A new high in quality reproduction.
- Wide Range push-pull audio system.
 - New ceramic cartridge with supphire stylus.
- Dual speakers; matched and synchronized.
- Modern, acoustically correct cabinet.
- Webster-Chicago 3-speed automatic changer.

Representing an entirely new concept of record reproduction, Model RP-2 Heathkit Record Player allows you to hear all of the music on your records rather than the limited version produced by the average phonograph. It is a technical fact that most phono amplifiers fall far short of the degree of quality that gives full enjoyment to your record selections. There are logical reasons for these limitations, but the problems are solved rather than side-stepped in the design of Model RP-2. It is best tested by comparison.

The Webster-Chicago record changer automatically plays all record sizes inter-

mixed and shuts itself off after the last record is played. A simple speed control switch provides for the playing of 33¹/₃ RPM, 78 RPM and 45 RPM records. A 45 RPM spindle adaptor or individual record inserts is required for the 45's. This item is not furnished as part of the RP-2 kit.

A newly developed ceramic cartridge is especially designed for the double tipped, turn-under type sapphire stylus. This combination results in an extremely broad frequency range, long life and freedom from the effects of wide variations in temperature and humidity.

An elaborately designed amplifier features a four-tube circuit with compensated volume control, negative feedback to broaden the frequency range and reduce distortion, pushpull output and tone control.

Ultra-modern styling is featured in the design of the proxylin impregnated fabric covered cabinet. It is handsomely finished in a two-tone color scheme of saddle brown and beige. The inside dimensions have been carefully determined for proper acoustical qualities. Two 6" PM speakers, located one on each side, effectively increase their overall efficiency and radiate properly for a wonderful "surrounding effect." You build only the amplifier and require absolutely no test equipment. Designed for the complete electronic novice, this kit can be constructed in a few hours and will reward you with years of complete enjoyment. Size $21" \times 13\%" \times 10\%s"$ high.

Heathkit 6 WATT

MODEL RP-2

Ship. Wgt. 40 lbs.

> MODEL A-7B Ship. Wgt. 10 Ibs.

An outstanding value. This economically priced 6 watt amplifier is capable of performance

expected only in much more expensive units. Only 2 or 3 watts will ever be used in normal home applications and Model A-7B will be more than adequate except for special purposes requiring higher power levels.

Two switch selected inputs are available for the crystal and ceramic phongraph pickups, tuner, TV audio, tape recorder and carbon type microphone. Model A-7B features separate bass and treble tone controls, push-pull balanced output stages, output impedances of 4, 8, and 15 ohms and extremely wide frequency range extending to 20 KC. It is not a souped up AC-DC job. Full wave rectification in a transformer operated power supply and good filtering result in a very low hum level. Negative feedback is used to assure a minimum of distortion. Very simple to build, Model A-7B offers a good opportunity to get started on your home audio system.

MODEL A-7C provides a preamplifier stage and proper compensation for the variable reluctance cartridge and low level microphone. Price \$17,50 HIGH HIGH Fidelity AMPLIFIER KIT

MODEL A-9D

Ship. Wgt. 23 lbs.

In keeping with the progressive policy of the Heath Company, another improvement

has been made in the Heathkit High Fidelity 20 Watt Amplifier. Additional reserve power has been added by using a new and heavier power transformer. A new output transformer, designed and manufactured specifically for the Heath Company, now provides output impedances of 4, 8, 16 and 500 ohms. The harmonic distortion level will not exceed 1% at the rated output.

Outstanding features of the Heathkit 20 Watt Amplifier include a frequency response of ± 1 db from 20 CPS to 20 KC, separate (boost and cut) bass and treble tone controls, 4 selected input jacks and a special hum balancing control. Flexibility is emphasized in the input circuits and proper equalization for all input devices is incorporated.

Tube lineup as follows: 12AX7 magnetic pre-amplifier and first audio amplifier; 12AU7 two stage amplifier with tone controls; 12AU7 voltage amplifier and phase splitter; (2) 6I push-pull power output. Negative feedback is used around the second 12AU7 and output stages.

Model A-9B is excellent for custom installation and is designed for outstanding service at a very reasonable cost.

EXPERIENCE THE THRILL OF BUILDING IT YOURSELF

Heathkit

VACUUM TUBE

VOLTMETER KIT

- 11 megohm input resistance for negligible circuit loading.
- 1% precision resistors for maximum accuracy.

If there is an instrument indispensable to the

service shop, the Heathkit Model V-6 VTVM is

it. Many service problems are solved quickly with the VTVM alone and most service men would be

OUTSTANDING DESIGN features qualify

Model V-6 for applications beyond the capabilities

of many comparable instruments. With the new

1.5 v full scale range, very low AC and DC voltages can now be accurately measured. A center

scale zero adjust point allows for easy alignment of FM discriminators and similar circuits. A 7

position range switch affects all VTVM functions

including a wide db range. The function switch

features polarity reversal positions which makes

ACCURACY is achieved by the use of high quality 1% precision resistors in the voltage di-

vider and ohms multiplier circuits. It is further

it unnecessary to switch test leads.

lost without it.

- Extended upper and lower voltage ranges.
- 4½" 200 microampere Simpson meter.
- Center scale zero adjust position.
- Circuit designed for meter protection.

assured by individual voltage calibrate controls and carefully selected, aged tubes. The high impedance input VTVM eliminates the loading effect which seriously upsets critical circuits under test.

FULL SCALE VOLTAGE RANGES are 0-1.5, 0-5, 0-15, 0-50, 0-150, 0-500 and 0-1500 with a limit of 1000 v RMS for AC. The resistance range is from .1 ohms to 1000 megohms. Db can be read from -70 db to +65 db.

Model V-6 uses a transformer operated power supply with selenium rectifier and RC filter, a 6H6 twin diode AC rectifier and a 12AU7 twin triode meter bridge. The electrical position of the meter between the 12AU7 cathodes protects it in case of an accidental overload.

A thoroughly professional instrument, the Heathkit Model V-6 VTVM is very easily constructed and simple to use. Its possibilities are practically unlimited, as indicated by the fact that it is the world's largest selling kit instrument.



Jualite

MODEL V-6 \$2450 ship Wgt. 6 lbs.

Heathkit SIGNAL GENERATOR KIT



MODEL SG-8 Ship. Wgt. 8 lbs.

This basic service instrument is now perfected to a point where no calibration is required. The coils are factory wound and tested for each frequency range. No further adjustment is necessary. The accuracy will be well within the limits required for service work.

Frequency coverage extends from 160 KC to 110 MC on fundamentals in 5 ranges. Useful harmonics increase the range up to 220 MC. A modulation switch gives you a choice of outputs, either unmodulated RF or modulated by the internal 400 CPS sine wave oscillator. Provisions are made for using an external modulating source if desired. You can also use the 400 CPS signal for external uses such as audio testing. The circuit consists of a transformer operated power supply, 6C4 AF oscillator, 12AU7 RF oscillator and cathode follower out-

The circuit consists of a transformer operated power supply, 6C4 AF oscillator, 12AU7 RF oscillator and cathode follower output and both step and continuous attenuation control. The cathode follower also acts as a buffer to isolate the RF oscillator from the output circuit. An output voltage in excess of 100,000 microvolts is assured throughout the frequency range.

follower also acts as a buffer to isolate the RF oscillator from the output circuit. An output voltage in excess of 100,000 microvolts is assured throughout the frequency range. Even though Model SG-8 is essentially designed for radio service work, it is definitely useful in TV and laboratory applications. It is deal as an external TV marker and also as a signal source for hecking RF stages. Use it for stagger-tuned video IF alignment and for vertical linearity adjustments. You get more than your money's worth here.

NEW *Heathkit* MULTIMETER KIT...

Here is the kit designed for specialized applications as well as normal service work. Standard commercially available batteries are used for convenience of replacement. It requires no external power source which makes it completely portable. Model MM-1 is not affected by strong RF fields as encountered in and near transmitting equipment. Cood sensitivity (20,000 abms/

Good sensitivity (20,000 ohms/ volt DC and 5000 ohms/volt AC), 1% precision resistors and a 50 microampere Simpson meter fully qualifies the Heathkit Multimeter for close tolerance laboratory and service work. Full scale AC and DC voltage ranges are 1.5, 5, 50, 150, 500, 1500 and 5000. Direct current ranges are 150 microampress. 15, 150, and 500

150 microamperes; 15, 150 and 500 Shipping Weight 6 lbs. milliamperes; and 15 amperes. Resistances are measured from .2 ohms to 20 megohms in 3 ranges and decibels from -10 to ± 65 db.

The kit includes the attractive black bakelite cabinet, new ring type range switch for easy assembly, test leads, batteries and all necessary parts. You will be proud to own the Heathkit MM-1 Multimeter.



Heathkit TUBE CHECKER KIT



Features:

- Improved harness type wiring.
 - New, smooth acting roller assembly.
- Roll chart illumination.
- Up-to-date tube listings.

No. 355 TV Picture Tube Test Adapter: This factory assembled adapter can be used with any Heathkit tube checker. It consists of the standard 12 pin TV socket, octal socket, 4 feet of connecting cable and tube data sheet. Check TV picture tubes for quality of emission, shorts, opens and filament continuity without removing them from the set.

The advantages found in the Heathkit Model TC-2 Tube Checker are new and unique in the kit instrument field. The wiring is greatly simplified by the use of

color coded wire and a neat, harness type arrangement. The new roller assembly is trouble-free and easy to operate. Roll chart illumination adds to the professional appearance of the completed unit. All tubes normally used in modern radio and TV service are ade-

quately covered. Obsolete tubes appear on a separate chart in the confrom time to time in order to include all of the latest developments. Panel sockets are furnished to accommodate 4, 5, 6 and 7 pin tubes, octal and loctal, 7 and 9 pin miniatures, 5 pin Hytron and a blank socket for future possibilities. In addition to the regular quality test, individual tube elements are



new



New, 12 volt auto electrical systems have prompted the development of the combination 6-12 volt Heathkit Battery Eliminator. It is now a necessity in the car radio service shop. A convenient panel switch is provided for selecting either the 0-8 or 0-16 continuously variable voltage ranges. Output voltage and current drain are constantly monitored by individual panel mounted meters.

Maximum current ratings for 6 volt operation are 10 amperes continuously and 15 amperes intermittently. For 12 volt operation the ratings are 5 and 7.5 amperes. Model BE-4 features a well filtered output circuit using (2) 10,000 MFD condensers, fuse protected trans-former, a self-resetting overload relay and an 18 plate heavy duty rectifier.

Use it to check vibrator starting voltages, to simulate high and low battery voltages in radio repair, to charge storage batteries and as a DC filament supply for audio work.

NEW Heathkit

PORTABLE TUBE CHECKER KIT

Designed for portable and bench use, Model TC-2P is modern in all respects. The cabinet is attractively finished in rich maroon proxylin im-pregnated fabric covering with gray on the inside cover. A removable lid, brass plated hardware and rugged handle add to the appearance and

\$3450 Ship. Wgt. 14 lbs,

MODEL TC-2P

Blank socket for special tube

Large 3-color meter scale.

ine voltage compensation.

No. 355 \$450 Ship. Wgt. 1 lb.

Individual element test.

types.

Heathkit VISUAL-AURAL

SIGNAL TRACER

One of the most versatile of Heathkits, the Visual-Aural Signal Tracer incorporates features never before com-bined in one instrument. Essentially it is a high gain audio amplifier and can actually be used as such. A highly sensitive preamplifier stage is switched in for RP work and the kit is complete with audio and RF demodulator type probes. Transmitted signals can be traced from a receiver antenna through the complete set. The relative signal strength is indicated clearly in the action of a built-in tuning eye and also by the signal tracer speaker. The features and uses are almost numberless. Model

T-3 includes a built-in wattmeter for a preliminary check of power consumption, a noise locater to isolate noisy or power consumption, a noise locater to isolate holsy components without removing them from their circuit dual channel tracer inputs for high and low gain circuits and convenient external binding posts for using the speaker, output transformer or both for test purposes. The Heathkit Signal Tracer is truly a sensational kit.

It is the type of instrument that you can own for years and still continue to discover new and practical uses for it each time you throw the switch.

NEW

TV ALIGNMENT GENERATOR

Jeatures:

*INCREDUCTOR controllable inductor sweep.

- Fundamental frequency range 4 MC - 220 MC.
- RF output well over 100,000 microvolts.
- Sharp blanking and wide range phasing.
- crystal furnished. Up to 30 MC sweep width at . TV IF frequencies.

Heathkit

Voltage regulated power supply.

Triple marker system — 4.5 MC

Constant RF output level.

Entirely new, Model TS-3 represents a radical departure from the conventional sweep generator design. The heart of the new system is the *INCREDUCTOR controllable inductor which is part of the frequency control circuit for a standard Colpitts sweep oscillator. Sweep width is variable from 0 to at least 12 MC at the lowest RF frequency and from 0 to approximately 50 MC at the highest.

Another unusual advantage is the fact that the swept oscil-lator operates upward only from the base frequency instead of each side of a center frequency. Blanking is automatic and

each side of a center frequency. Blanking is automatic and sharp. A two-way system removes plate potential from the sweep oscillator and drives the control grid negative by approxi-mately 100 volts. This occurs during 180° of the sweep cycle. The fundamental frequency range of the Colpitts marker oscillator is from 19 MC to 60 MC and from 57 MC to 180 MC on calibrated harmonics. Higher order harmonics can also be used very effectively. A Pierce crystal oscillator is also used (4.5 MC crystal furnished) in conjunction with the variable. (4.5 MC crystal furnished) in conjunction with the variable. Mixing the output of 2 oscillators in a common load causes both frequencies to be present as well as their sum, difference and harmonics. Thus 4.5 MC spaced



\$1450

Aptly named, Model M-1 Handitester is just that. It's small size, compact design and wide range of operation makes it ideal as a very portable volt-ohm-milliameter. The standard 1.5 volt flashlight cell is used for ease of replacement. Full scale AC and DC voltage ranges are 10, 30, 300, 1000 and 5000. Ohmmeter ranges are 0-3000 and 0-300,000. Two DC milliampere ranges, 0-10 and 0-100. Featured are 1% resistors, single switch operation, 400 microampere meter, hand-some black bakelite case and all necessary test leads Model M-1 is easily constructed and can be leads. Model M-1 is easily constructed and can be tucked away in your tool box or glove compart-ment with plenty of room to spare.

> Ship. Wgt. 6 Ibs.



The lack of transmitted test patterns presents a problem to the TV service man whenever linearity adjustments must be made. The small, compact Bar Generator is the answer. Equally spaced horizontal or vertical bars can be observed without the necessity of tapping into the internal circuit of the TV re-ceiver. The Bar Generator test clip is merely attached to the antenna terminals. MODEL BG-1 \$1450 antenna terminals.

antenna terminals. Model BG-1 produces a carrier frequency of 60 MC to 80 IC which can be modulated by a signal of 113 KC to 172 KC for vertical bars or 480 CPS for horizontal bars. It is very simply operated by the 3 position panel switch (stand by— vert.—hor.). Sync. stability can also be checked with this instrument. Other features include a transformer operated power supply, 12AT7 twin triode oscillator for RF and video frequencies and a neon relaxation oscillator for the low fre-quencies. The kit includes full instructions and all necessary components. components.



that are closer or more distantly spaced. In addition, provisions are made for the use of an external marker generator if desired.

For maximum flexibility the marker amplitude control and RF attenuator circuits operate entirely independent of each other. RF attenuator circuits operate entirely independent of each other. RF output features a step type and fine adjustment. All output cables are furnished including proper termination for isolation and the 50 ohm generator matching impedance. A constant RF output is maintained by the use of voltage regulation. A wide range phasing control allows easy trace centering.

The tube lineup as follows: 12AT7 sweep oscillator and buffer, 12AT7 variable and crystal marker oscillator, 12AU7 blanking clipper, 6AQ5 series high voltage regulator, 6AU6 regulator control, OA2 control tube reference regulator and a 6X5 rectifier for the trans-

8 lbs.

 \mathbf{KIT}

Heathkit

CONDENSER CHECKER KIT

Here is a handy test instrument for any service shop. Unknown values of capacity and resistance are quickly determined on the direct reading Condenser Checker dial. Capacity is measured in 4 ranges from .00001 MFD to 1000 MFD. Resistance is read in the range from 100 ohms to 5 megohms. DC polarizing voltages of 25, 150, 250, 350 and 450 are available for leakage tests on all types of condensers. For electrolytics a power factor control is provided to balance out inherent leakage and to indicate directly the power factor of a condenser under test. Proper balancing of the AC bridge is reflected in the degree of closure of an electron beam indicator tube. Model C-3 uses a transformer operated power supply, spring return leakage test switch and convenient combination panel scales for all readings. Test leads are furnished in addition to precision components for calibrating pur-poses. Quick and easy to operate, the Heathkit Condenser Checker will save valuable time and increase your shop efficiency.

Ship. Wgt. 3 lbs.

LABORATORY EQUIPMENT for Shop - School - Laboratory



Heathkit **``0**'' METER KIT

MODEL QM-1 \$4450 Shipping Weight 14 lbs.

Do you realize the full capabilities of a meter? Think it over. TV sets are full of tuned circuits that can best be checked by simulating actual operating conditions. This is easily done with

Model QM-1 and therefore it becomes useful in the service shop as well as in

the lab. All readings appear clearly on the calibrated meter scale. Operating frequencies (150 KC—18 MC) are provided by the very stable built-in oscillator. Check all characteristics of coils, chokes, yokes, condensers and tuned circuits. Calibrate capacitor is adjustable from 40 MMFD to 450 MMFD with a vernier of ± 3 MMFD. You can't beat it for versatility and accuracy.

Easy to build. Easy to operate. Priced well within the reach of everyone.





MODEL AG-8 Shipping Weight \$ 11 lbs.

How many times in the past have you needed an accurate source of a perfect sine wave voltage? If the required frequency falls between 20 CPS and 1 MC, you need look no farther than the Heathkit Model

AG-8 Audio Generator. Its impedance is 600 ohms and its output of 10 volts (no load) will vary no more than ± 1 db from 20 CPS to 400 KC. At 600 KC it will be down 6 db and a maximum of 8 db at 1 MC. Total distortion from 100 CPS through the complete audible range will measure less than .4%.

The wide frequency range and the fact that the output voltage can be controlled both continuously and in calibrated steps, makes Model AG-8 especially useful in the investigation of wide band audio circuits. Its usefulness is almost unlimited and you will be continually amazed at its rock steady and accurate performance.



Heathkit CONDENSER SUBSTITUTION BOX KIT

Use the new Heathkit Condenser Substitu-tion Box with it's companion, the Resist-ance Substitution Box, and increase your shop efficiency. Eighteen standard RTMA values are available from .0001 MFD to .22 MFD. An eighteen position switch set in the panel of an attractive bakelite case allows quick changes without touching the 18' test leads, invest a few minutes of time in building one or more of these kits and save hours of work later. \$

Heathkit DECADE RESISTANCE

KIT

Here is the lab-oratory type re-sistance decade that has be-

\$1950 Ship. Wgt. 4 lbs. Thip: Value between 1 ohm and 99,999 ohms. Model DR-1 has found it's way into many of the coun-try's leading electronic laboratories and educa-tional institutions as a valuable aid in precision applications.

MODEL DR-1

\$1950

tional institutions as a valuable aid in precision applications. All parts are of the highest quality. Sturdy ceramic type switches with silver plated contacts will serve you long and faithfully. Use the De-cade Resistance in bridge circuits, meter multi-pliers, calibration, or any application requiring a wide range of precision resistance values. This versatile instrument in its highly polished birch cabinet will be a welcome addition to your lab or shop. Only the ability of the Heath Company to purchase in large quantities makes it possible for you to secure such a collection of precision parts at a ridiculously low price.



mounted 200 microampere Simpson meter, calibrated in both output voltage and percent of modulation, provides an accurately set level for service and development work. The fundamental operating frequency of the Colpitts oscillator is from 150 KC to 30 MC in 5 ranges. Oscillator, buffer, and output circuits are completely shielded. The carefully designed attenuator circuit operates into a 50 chm output cable providing .1 volts output throughout the frequency range. Other features include provisions for metering internal and external modulation, AC line filter and regulated power supply. A thoroughly professional instrument that you will be proud to own.

Heathkit LABORATORY

50

GENERATOR

MODEL LG-1 Shipping Weight \$

Heathkit **IMPEDANCE BRIDGE KIT**

MODEL IB-2

Shipping Weight 15 lbs.



Looking for bargains? How about four complete precision instrum for the price of one. They are combined in the ultra-modern Heathkit Model IB-2 Impedance Bridge Kit. Use the Wheatstone

bridge for resistance measurements, Capacitance Comparison for capacities, Maxwell for low Q inductances and Hay for high Q inductances. Each bridge

uses ½% resistors and precision mica condensers for maximum accuracy. Complete AC operation eliminates all batteries. The internal 1000 cycle phase shift generator uses battery type tubes for instantaneous operation with built-in detector and amplifier stages. Generator impedance is variable to match each bridge circuit. Q, D, and DQ are easily read on a combination dial and CRL adjustments are made on a unique step plus variable control. It's entirely new and no lab is complete without it.



Serving a purpose similar to that of the Decade Resistance, the Heathkit Decade Condenser provides a ready source of capacity values from 100 MMFD to .111 MFD inclusive. Easy adjustment of the decade switches will vary the capacity in steps of 100 MMFD. Silver plated contacts on husky ceramic switches serve to make positive detent action assured for each switch position. Precision silver condensers result in an accura ± 1% for your close tolerance way ifferent coupling, by-pass and tone control capacities with no trouble or delay. Easy construction and con-venient use makes Model DC-1 Dec-ade Condenser an important part of your experimental or service lab.



550 Ship. Wgt. 2 lbs.

The Best of EQUIPMENT for the AMATEUR

IMPROVED Heathkit **CRID DIP METER KIT**



Shipping Weight 4 lbs.

Features:

- **Continuous** Frequency coverage from 2 MC to 250 MC.
- Simpson 500 microampere meter with controlled sensitivity.
- Headphone monitoring jack for audible null indication.
- Pre-calibrated dial scaleblank dials for hand calibration.

For a quick and accurate frequency check of tuned circuits, the Heathkit Grid Dip Meter can't be beat. A highly sensitive microammeter, connected in the grid circuit of a 6AF4 or 6T4 high frequency triode, indicates definitely the strength of oscillation. By means of the diode switch, the Grid Dipper can be used as an oscillator or an absorption wave meter. This feature provides for the testing of both energized and de-energized tuned circuits.

This kit instrument will be invaluable to the ham, the TV service man and to the experimenter. It can be used to locate the source of spurious oscillations, to align TV tuned circuits, to measure C, L and components as well as many other uses. For the ham in particular,

Heathkit Grid Dip Meter will provide a relative indication of bransmitter stage power, assist in correcting TVI and checking neu-tralization. Stability, accuracy, and ease of handling are only a few of the outstanding features.

As always, high quality parts are used throughout and the con-struction manual is complete in all detail. You take no chances when ordering this fine kit instrument.





Features:

- Sensitive 100 microampere Simpson meter
- Precision resistance type SWR bridge.
- Frequency range 0 150 MC.
- Impedance range 0-600 ohms.
- Headphone jack for phone monitoring.

Attention hams! Don't overlook the many possibilities of the Heathkit Antenna Impedance Meter. It is easily ener-gized by any low power RF source such as the Heathkit Grid Dip Meter. The frequency and impedance ranges, ease of operation and high sensitivity make it extremely useful in your ham shack.

Determine antenna resonance and resistance, transmission line surge impedance and receiver input impedance.Works with half and quarter wave lines; half wave and folded dipoles; harmonic, mobile and parasitic beam antennas. Use it with headphones to monitor radio telephone transmissions. Match transmission lines for minimum SWR. Locate radia-

tion from natural objects by using the AM-1 to obtain a relative indication of field strength. Ruggedly built with shielded aluminum cabinet and sub-stantial binding posts. The construction manual is a text book in itself. The Heathkit Antenna Impedance Meter is Generated and useful corrige. efficiently designed for long and useful service.

All metal parts are completely formed and punched. Each component carries the now famous Heathkit guarantee of good quality and dependable service. No longer must you purchase a battery of instruments when one inexpensive item can perform so many tasks.



MODEL AT-1

Heathkit AMATEUR

TRANSMITTER KIT

This is it; the ham transmitter that has been tried and enthusiastically accepted by hundreds of experienced operators as well as beginners. Power input up to 35 watts for the novice and suitable as a stand-by or exciter for your higher powered

rig later on. Model AT-1 can be crystal or VFO ship. Wgt. 16 lbs. 17 lbs. 17 lbs. 17 lbs. 18 lbs.

al grid and plate current on the panel mounted meter. Modulator input JVFO power sockets are provided as well as a key jack for CW operation. VFO power sockets are provided as well as a key jack for Ow operation. Other features include a crystal socket, stand-by switch, key click filter, AC line filter, good shielding and a 52 ohm coaxial output. The 425 volt, 100 milliampere power supply with 5U4 rectifier, is more than adequate for

All parts including copper plated chassis are provided with the kit. Get on the air. Model AT-1 has passed the acid test with flying colors.

NEW Heathkit ANTENNA COUPLER KIT MODEL AC-1 Ship. Wgt. 3 lbs.



Designed especially for the Heathkit or a comparable amateur transmitter, Model AC-1 Antenna parable amateur transmitter, Model AC-1 Antenna Coupler will handle a power up to 75 watts at its 52 ohm coaxial input. Matches a wide range of antenna impedances with its L type tuning net-work and neon indicator. A tapped inductance pro-vides coarse adjustment and a transmitting type variable condenser sets it right on the nose. Model AC 1 is complete with a 3 contion low.

Model AC-1 is complete with a 3 section low-pass filter cutting off at approximately 36 MC. It will feed the simple end-fed Hertz type antenna and will operate on the 10 through 80 meter bands. Longer antenna lengths or a loading coil in the antenna lead will allow operation at 160 meters. This new Heathkit has been tried and tested.

You can't afford to pass this one up.





MODEL VC-2 \$

Peak-to-peak voltage measurements are very important in many TV and experimental circuits. After a simple calibration using an oscilloscope and VTVM, Model VC-2 Voltage Calibrator will accurately indicate peak-to-peak values from .01 to 100 volts without shifting of test leads.

In the signal position of the output multiplier switch, the signal by-passes the Voltage Calibrator. In any other position the output voltage is compared regardless of shape, to a known value for a direct peak-to-peak reading. No calculations are required.

Model VC-2 features an easy-to-read peak-topeak scale, transformer operated and regulated power supply and very compact design. Physical size $8\frac{1}{2}$ " wide x $4\frac{3}{2}$ " high x $4\frac{3}{6}$ " deep. Complete with instructions and all parts necessary for operation. Heathkit VIBRATOR TESTER KIT

MODEL VT-1 \$14 Ship. Wgt. 6 lbs

> This time saving device will quickly pay for itself in your auto radio service shop. 6 volt vibrators can be checked instantly on the good-bad type meter scale. It requires only a variable DC voltage from 4 to 6 volts at 4 amperes. Model BE-4 Battery Eliminator is highly recommended.

> Five test sockets provide for the testing of hundreds of interrupter and self-rectifier types. Proper starting voltage is determined easily and accurately. Overall quality is then unmistakenly indicated on the panel mounted meter.

> Service time is an important factor to consider in the estimation of profit to be realized on a job. The Heathkit Vibrator Tester will reduce that time to a minimum by its ease of operation and accuracy in testing the major cause of auto radio failure.

Heathkit REGULATED

MODEL PS-2 \$ Ship. Wgt.

> Here is a source of regulated DC voltage for circuit development work. Power supply voltage and current drain to the circuit under test are constantly monitored by the $4\frac{1}{2}$ " panel mounted meter. Model PS-2 also includes a 6.3 volt AC filament source at a rating of 4 MA.

Use the Heathkit Regulated Power Supply to furnish desired potentials for the ploiting of tube characteristics, for many service problems as well as all types of experimental work. The regulated and variable output voltage will be constant over wide load variations a the ripple will not exceed .012% at ' volts under a 50 MA load. Completelyisolated circuit, stand-by switch and other desirable features make Model PS-2 extremely useful in a wide variety of applications.

ALL HIGH QUALITY STANDARD BRAND COMPONENTS

Heathhit TECHNICAL APPLICATION BULLETINS

ventional scope input circuit. Excellent for high frequency, high impedance or broad bandwidth circuits. The attenuation ratio is variable and easily determined. You receive full instructions with the kit for its many uses.

Heathkit

TECHNICAL

APPLICATION BULLETINS

Fifty-two 4-page bulletins prepared

Fifty-two 4-page bulletins prepared by recognized electronic writers are yours for a total price of \$2.00. The set includes loose-leaf binder and ref-vernce index. Normal and are fully uses for test instruments are fully described and illustrated. Strictly a customer service by The Heath Com-

ustomer service by The Heath Comcustomer service by The Heath Com-pany. No C.O.D. orders for this item please. Shipping weight 3 lbs.

An oscilloscope accessory, No. 342 probe per-mits observation of complex TV waveforms with no danger of distortion. An adjustable trimmer provides proper matching to any com-ventional scope input circuit. Excellent for high frequency, high impedance or broad bandwidth

Heathkit LOW CAPACITY PROBE KIT No. 342 \$350 Ship. Wgt.

Measure up to 30,000 volts DC using the Heatbkit Measure up to 30,000 volts DC using the Heathkit VTVM and No. 336 high voltage probe. Voltage ranges are increased by a multiplication factor of 100 by the precision probe resistor valued at 1090 megohms. The handsome and functional probe assembly can be used with any Heathkit 11 meg-100 by the precision prope resistor values at 1000 megohms. The handsome and functional proper assembly can be used with any Heathkit 11 meg-ohm input resistance VTVM including the older 3 volt full scale models.

\$450 Ship. Wgt. 2 lbs.

Heathkit 30,000 VOLT DC PROBE KIT No. 336

OACCESSORIES Heathkit PEAK-TO-PEAK PROBE KIT No. 338-B \$550

Ship. Wgt. 2 lbs.

Peak-to-peak values not exceeding 80 volts at a DC level of not more than 600 volts can now be read directly by the page 5 at a DC level of not more than 600 volts can now be read directly by using No. 338-B probe with the Heathkit VTVM. No con-version factors to consider. The frequency range of 5 KC to 5 MC makes No. 338-B probe extremely useful in TV service work

range of 5 KC to 5 MC makes No. 338-B probe extremely useful in TV service work. probe extremely useful in TV service work. It features the new polished aluminum hous-ings with polystyrene ends.

Heathkit

SCOPE DEMODULATOR

PROBE KIT

Extend the usefulness of your oscilloscope Extend the usefulness of your oscilloscope by observing modulation envelopes of RF or IF carriers found in TV and radio re-ceivers. Among other uses, the Heathkir Demodulator probe will be helpful in align-ment work, as a gain analyzer and signal

Demodulator probe will be helpful in align-ment work, as a gain analyzer and signal tracer. Applied voltage limits are 30 volts RMS and 500 volts DC.

No. 337-B

\$350 Ship. Wgt.

permit the measurement of **H.F.** voltages up to 250 MC at an accuracy of ±10%. The limits are 30 volts AC and a DC level of 500 volts. Designed for an 11 megohm input WTVM such as any one of the Heathkit 500 volts. Designed for an 11 megohm input VTVM such as any one of the Heathkit models. The newly styled housing and the low capacity test lead readily adapts this important item to the modern service lab.

PROBE KIT

No. 309-B

\$350

Ship. Wgt. 2 lbs.

Heathkit R.F.



Modernize your test instruments. 20 Modernize binding post assemblies (10 red—10 black) will accommodate 5 dif-ferent types of connections each. Takes alligator clips, banana plugs, test lead pins, bookup wire and spade lugs. 1 lb. only in kits of 20. Shipping weight \$4.00 Binding Post Kit: No. 362-A. Price \$4.00 Modernize your test instruments.



MODEL IT-1 \$1650 Ship. Wgt. 9 lbs.

NEW Heathkit VARIABLE VOLTAGE ISOLATION TRANSFORMER KIT

Variable output between 90 and 130 volts AC. Rated at 100 volt-amperes continu-ously and 200 volt-amperes intermittently. Heavily protected against overload. Model IT-1 can be built in a few minutes and will provide a saving of countless work hours

11-1 can be built in a rew minutes and will provide a saving of countless work hours the future. The principle function of the Heathkit ine principle function of the Heathkit isolation transformer is to isolate a circuit being tested from line interference caused in the future.

by motors, appliances, etc. It works back-wards too by isolating such devices from

by motors, appliances, etc. It works back-wards too by isolating such devices from the line. Do not confuse Model IT-1 with the bazard-ous auto transformer type line waters breater

the line. Do not confuse Model IT-1 with the hazard-out auto transformer type line voltage boosters. Use Model IT-1 at low and high voltages for cus-tomer demonstration of the effect of such conditions on TV receivers. Many other uses, especially with tomer demonstration of the effect of such conditions on TV receivers. Many other uses, especially with AC-DC type circuits will become apparent with the continued use of this fine instrument.



Landbard



precision electronic instruments in KIT form

5 Controlled inputs. 4 turnover and rolloff positions. 3 twin triode tubes. Here

In this issue. Introducing the new Heathkit high fidelity Preamplifier Kit Model WA-P2.

triode tubes. Here is the greater versatility that you have requested. It's yours for the same old price. Makes your

Williamson Type Amplifier better than ever.

FORM 3547 REQUESTED

Heathkit MODEL AR-2 COMMUNICATIONS RECEIVER KIT Best

Uhat you get

Continuous coverage 550 KC– 35 MC on four bands.

Electrical bandspread tuning with logging scales.

R.F. gain control with AGC on-off switch.

Phone-standby-CW panel switch.

Separate BFO tube and circuit.

Pre-wound coils in a shielded turret assembly.



A good example of the ability of the Heath Company to produce top quality kit merchandise at ridiculously low prices. In Model AR-2 Communications Receiver you enjoy all the advantages of much more expensive sets without the disadvantages usually found in economy-priced units. Model AR-2 is transformer operated which in itself is unusual in this price range.

In addition to the separately listed features, the Heathkit Communications Receiver employs high-gain, miniature tubes and IF transformers, chassis mounted $5\frac{1}{2}$ " P.M. speaker, headphone jack, slide rule dial with ham bands plainly identified and LESS CABINET Ship. Wgt. 12 lbs.

50

RECEIVER CABINET

Proxylin impregnated fabric covered plywood cabinet * available separately. Part No. 91-10. Shipping weight 5 lbs. Price . . **\$4.50**

easy tuning with direct planetary drive. The tube line-up as follows: 12BE6 mixeroscillator, 12BA6 I.F. Amplifier, 12AV6 detector—1st audio, 12A6 beam-power output, 12BA6 BFO and 5Y3 rectifier.

Model AR-2 has been designed for extreme sensitivity and selectivity. A lettered control plate is provided for the cabinet of your choice or you can order the optional Heathkit cabinet featuring the full size aluminum panel.

High quality parts, sound engineering and simplified construction procedure assures complete satisfaction with this very popular Heathkit.

OUTSTANDING COMMUNICATIONS RECEIVER PERFORMANCE