



Heathkit: History and Overview

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Ottawa Vintage Radio Club
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About Me – Jeff Tranter

- Based in Ottawa area since 1983.
- Worked in telecom and computer industry as Electrical Engineer, Software Developer, Consultant, and Manager.
- Retired in 2025.
- Interests include: retrocomputing, amateur radio, vintage radio, vintage test equipment, Heathkit products, embedded computing (Arduino, Raspberry Pi, etc.), 3D printing, pinball machines, jukeboxes, music (guitar, ukulele).
- Author of two Heathkit books:
 - *Classic Heathkit Electronic Test Equipment*
 - *Classic Heathkit Computers, Calculators, and Robots*

About Me – Jeff Tranter



Company Overview

- Heathkit sold consumer electronic products in kit form.
- The premise was that you could save as much as 50% over factory built products by assembling it yourself.
- The kits included all necessary parts and components.
- Most could be built with little or no prior experience in electronics.
- They were renowned for the quality and level of detail of the instruction manuals.
- The manuals also covered theory of operation, troubleshooting, etc. so you could maintain the product yourself.

Why Do Millions Build Heathkit® Electronics?



Creative Fun And Unique Personal Satisfaction

Building your own Heathkit provides a chance to create useful, sophisticated products from your own effort . . . a chance to enjoy a hobby that's a fascinating change from the everyday routine . . . a chance to have fun and relax, to escape from the ordinary. And the greatest thrill comes when you finish your kit and turn it on. You experience that exhilarating sense of self-accomplishment . . . that feeling of personal victory that only comes from doing something you doubted was possible for you to do.

Up to 50% Savings Over Factory-Built Versions

Besides the fun, building your own Heathkit is economical. It's like getting paid for the hours you spend enjoying your hobby. For example, when you build the AD-27 Stereo Compact you "earn" as much as \$7.50 an hour when you consider the big savings.

A Finished Product With Superlative Performance

Over 550 years of accumulated kit engineering, the most experienced staff in the business, are brought to bear on design problems in all Heathkit product areas. And each product group has its own staff of engineering specialists who devote their entire efforts to bringing you the latest techniques and advances in the "state of the art".

In addition, each new kit design must survive several stages of rigid performance testing. These tests are your assurance that every Heathkit is "specification guaranteed". But don't take our word for it. Compare specifications. Read the reviews by respected electronics editors. Or ask any Heathkit owner . . . you'll find plenty of them around.

Direct Factory-To-You Delivery

Heath Company uses the most effective transportation means direct from its factory and warehouse in Mississauga.

Prices in This Catalogue Include Delivery

Liberal Credit Terms

Build your Heathkit now . . . pay later with the convenient Heath Time-Payment Plan. No money down and up to 12 months to pay on orders from \$25 to \$300 . . . 10% down and up to 24 months on orders over \$300. See Page 9 for details.

FREE Factory Consulting Service

Heath maintains a staff of expert technical correspondents to answer any question about selection, construction and use of your kit. And it costs you nothing. Just drop them a line. In addition, factory repair service facilities are at your command should you ever need it.



Prompt, efficient service is a by-word at Heath. Your order is shipped the day it is received. Trained Engineering Consultants are ready to assist you with any problem. Standing behind every kit sold is a modern, efficient Service Department ready to serve you.



As you unpack your kit you'll see for yourself that none but the highest quality parts and components are used in Heathkits. Over the years Heathkits have earned a reputation for being second to none in overall quality and performance.



You'll be amazed at how simple Heathkits are to assemble. A step at a time you follow the manual which is written in plain, everyday language. Large pictorial diagrams show you exactly where each part goes. The manual tells you everything you need to know about your kit and serves as a handy reference guide for servicing or replacing parts.



You'll find an enjoyable hobby in building your Heathkit. Fun-filled hours working with your hands are in store, and you'll learn a lot, too. You will gain knowledge of electronics as you build and acquire a more thorough understanding of the functions and capabilities of your equipment.



You can always depend on your Heathkit for years of trouble-free service and performance. Whether you have assembled a test instrument, hi-fi system, marine or ham kit, you are confident of the Heath quality and reliability behind every kit.



You are rewarded in many ways when you complete your Heathkit. You save up to one-half the cost of ready-made equipment, you have the fun of building the kit and, finally, the self satisfaction and pride of personal accomplishment. Clean, modern styling make Heathkits a handsome addition to your home or workshop.

Company Overview

- Typically no test equipment was needed for test, alignment, and calibration.
- You could get assistance at their stores, by telephone, or mail.
- As a last resort, you could bring or ship the kit to Heathkit to be repaired (at a nominal cost).
- They had a chain of dealers and retail stores in major cities in USA and Canada. They also sold through mail order.
- Many kits (such as test equipment) were also sold as factory assembled versions at higher prices.
- They also sold training courses and hardware for the technical training market (individuals, colleges, businesses).

Prices effective Jan. 10, 1983
Subject to change without notice.

Visit your nearest
Heathkit Electronic and
Computer Centre.

Heathkit products are sold, displayed
and serviced at the following locations.

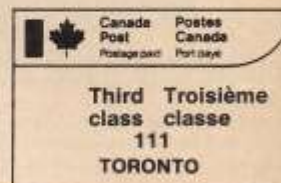
- VANCOUVER, B.C. V5R 5J7
3058 Kingsway. 604-437-7626
- CALGARY, ALBERTA T2H 0J9
5809 Macleod Trail S. 403-252-2688
- EDMONTON, ALBERTA T5E 4C2
12863-97th Street. 403-475-9331
- WINNIPEG, MANITOBA R3G 0V3
1315 Portage Ave. 204-783-3334
- MONTREAL, QUEBEC H4N 1C5
1400 Sauve Ouest. 514-332-3666



HEATH COMPANY
1020 ISLINGTON AVENUE
TORONTO, ONTARIO
M8Z 5Z3

POSTMASTER:

If Undeliverable, Please Do Not Return



- OTTAWA, ONTARIO K1Z 5Z6
866 Merivale Rd. 613-728-3731
- MISSISSAUGA, ONTARIO L4X 2R7
1478 Dundas St. E. 416-277-3191

MAIL ORDER:- HEATH CO.
1020 Islington Ave., Toronto, Ontario
M8Z 5Z3 416-232-2686
8:30 am-4:30 pm Eastern Time, Weekdays

Heathkit History

Major Milestones for the Heath Company:

- 1912 Heath Company founded as aircraft company by Edward Bayard Heath.
- 1926 Offered Heath Parasol airplane kit.
- 1931 Edward Heath killed in test flight.
- 1935 Assets purchased by Howard Anthony. Company sells aircraft accessories.
- 1947 Introduced O1 oscilloscope kit using war surplus parts. Focus shifts to electronic kits.
- 1954 Howard Anthony killed in plane crash.
- 1955 Heath Company acquired by Daystrom Company.
- 1962 Daystrom acquired by Schlumberger Limited.
- 1974 Heathkit Educational Systems division formed.
- 1977 Introduction of H-8 and H-11 computers.
- 1979 Acquired by Zenith Radio Company, forming Zenith Data Systems (ZDS).

HEATH "PARASOL"

America's Most Popular Sport Plane

Easy to

Buy
Build
Maintain
Fly
Handle



Low

First Cost
Fuel Cost
Upkeep
Landing
Speed



The Product of Victory
\$975.00 Flyaway at Our Airport

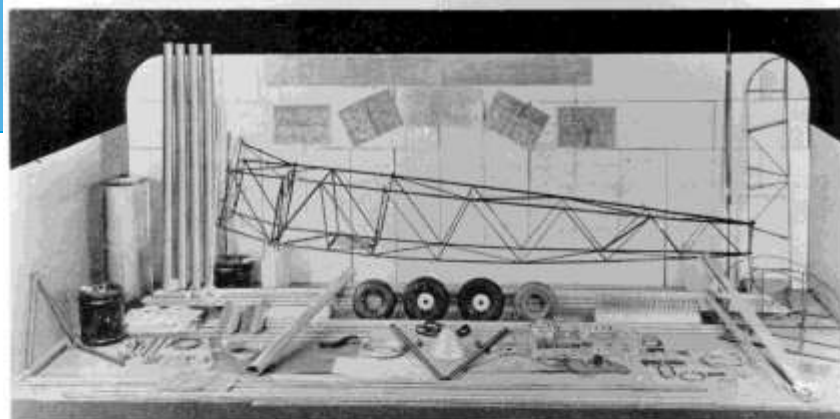
HEATH AIRCRAFT CORPORATION

Formerly HEATH AIRPLANE COMPANY, Inc.

LINCOLN 6196

1721-29 Sedgwick Street

Chicago, Illinois



THE BIG NEW HEATH CONSTRUCTION KIT COMPLETE

Note the Factory-Welded Fuselage and Tail Surfaces.

Note the Factory-Welded Fuselage and Tail Surfaces. Everything needed is furnished in this kit. Material for the ribs is the finest of long-fiber, government-inspected spruce. All steel and aluminum parts are the best and strongest obtainable. The semi-cowheels are your assurance of safe, easy

landings and takeoffs and longer life for your plane. Throughout this kit only the highest-grade, government-inspected materials are used. Twenty-eight years of service in the light-plane field are your guarantee of complete satisfaction.

NOTE: These are construction kits in which the customer does a portion of the building. Therefore, it is impossible to license this type of kit. However, Heath Aviation Company produces a line of assembly kits which are licenseable; the same quality of materials being used in both kits. The licensed assembly kits are supplied with the ribs preconstructed, the drilling and routing being done, leaving the work for the purchaser that of assembling the various sections. This kit sells for approximately twice the amount of the licensed Model V Construction Kit, to cover the extra cost of production. If you require a licensed kit, write for the Model LN and CH Booklet.

IMPORTANT NOTICE

For individuals living in mountainous regions where the altitude is more than 2000 ft., we supply the Model V Long Wing, the same plane except that the wing span is 31 ft., giving the same performance at high altitudes as the standard plane gives at sea level. If you live in these locations, specify the Model V Long Wing.

SPECIFICATIONS of the HEATH PARASOL

Span	25 ft. or 31 ft.	High Speed	85
Length	16 ft. 9 in.	Cruising Speed	75
Height	5 ft. 10 in.	Landing Speed	28
Weight, empty	368 lbs.	Leaves ground	in 4 seconds
Payload	300 lbs.	Cruising Range	400 miles
Ceiling	17,500 ft.	Miles per gal.	40

See the new Easy-Reference Price List of complete price data on groups and individual parts.

SPECIFICATIONS OF HEATH B-4 OR HENDERSON MOTORS

30 H. P. at 2000 r. p. m.
Weight dry, with hub and accessories, 115 lbs.

For complete information and specifications write for Heath Motor Manual.

HEATH AVIATION COMPANY

Benton Harbor Michigan

Patented U. S. A.

THE NEW
HEATH 5" OSCILLOSCOPE

Complete kit to build a beautiful 5" scope, cabinet, chassis and panel punched, formed and lettered. Every part supplied, including tubes with 5BP1, cased power transformer, oil condenser. Frequency compensated amplifier, 15 to 30M cy. sweep, all controls, blueprint and instructions. This kit makes an excellent training course. Complete. **\$39.50**

Heathkit History

Major Milestones for the Heath Company:

- 1982 HERO 1 robot introduced.
- 1984 Computer kits focus on IBM PC compatibles.
- 1989 Zenith Data Systems acquired by Groupe Bull.
- 1992 Heathkit leaves the kit business, focuses on educational products.
- 1995 Heathkit sold to HIG.
- 1998 Sold to investment group, then to DESA International.
- 2008 DESA International files bankruptcy. Heathkit Educational Systems continues.
- 2012 Heathkit Educational Systems files for bankruptcy and shuts down.
- 2013 New owner of Heathkit name announces intention to return to kit business.
- 2015 Heathkit releases first new kit: GR-150 Explorer TRF AM radio receiver.
- 2017 Heathkit offers GC-1006 Most Reliable Clock and AN-P2L Pipetenna VHF/UHF antenna kit. Announces HM-1002 Precision RF Meter.

Move into the world of robotics with the first sophisticated teaching robot—HERO 1

While teaching your robot to move, sense, see, hear, and speak, you can be learning robotics from HERO and its companion Heathkit/Zenith educational course. And it's so inexpensive, with the HERO 1 Robot Kit available from \$999.95 and the assembled Robot, with both arm and voice options, for \$2499.95.



Programmable robot: Completely self-contained, HERO 1 is capable of interacting with its environment. It detects light, sound, motion and objects in its path. It can travel over a set course and repeat specific functions on a predetermined schedule. With an optional arm and voice, HERO 1 can grasp items and speak.

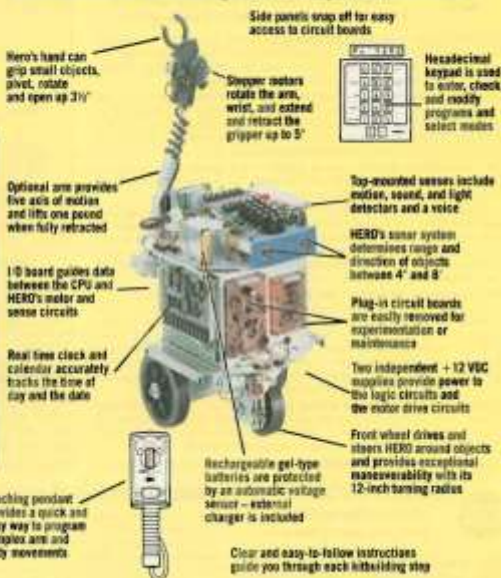
A computer on wheels: HERO 1 is controlled by an on-board 8-bit 6808 microprocessor. Following programmed instructions, the microprocessor can guide HERO 1 through complex maneuvers, activate and monitor its sensors, and modify the robot's actions as a result of sensor or real-time clock inputs. To store user-programmed instructions, Hero comes equipped with 4K of RAM memory. An 8K ROM stores a number of built-in commands and speeches.

Three programming methods: HERO 1 can be programmed by entering instructions through the hexadecimal keypad mounted on top of its head. By using a hand-held remote control teaching pendant, manually-controlled motor and arm movements can be programmed into memory. This pendant can be used to select individual motors and their directions of rotation. Another method of programming HERO 1 is through a rear-panel serial cassette port. By connecting an ordinary audio cassette recorder here, programs can be saved on a cassette tape and then reloaded into the robot.

Four sensor circuits: Within HERO 1's head are four sensors which act as its eyes and ears. A sound detector hears sound from 300 to 5000 Hz while a light detector sees light over the visible spectrum. A motion detector senses movement up to 15 feet away and a solar system determines range.

Learn by doing: HERO 1 provides a hands-on knowledge of industrial electronics, mechanics, computer theory and programming as applied to robots by putting them into action. An experimental breadboard is also included for experiments and interfacing user-designed circuits to the on-board microprocessor. The top-mounted breadboard has direct access to a user I/O port, a user defined interrupt, CPU control lines, and +12 VDC and +5 VDC. For a more extensive background in robotics and its associated technology, a companion Robotics Education Course (see opposite page) is available.

HERO contains all the basic systems of today's industrial robots



Rechargeable batteries with charger: When HERO 1 tells you that its voltage is low, use the external battery charger even while it is operating.

Grasps small objects: With the optional ET-18-1 Arm and Gripper Mechanism, HERO 1 can be programmed to pick up small items. Using five stepper motors, the ET-18-1 is capable of five axis of motion and can perform precision mechanical tasks. On command, the gripper can open up to 3 1/2" and close. The wrist rotates 350 degrees and pivots 180 degrees, the arm pivots 150 degrees, and the arm extends up to 5 inches.

Speech Synthesizer: The ET-18-2 Speech Synthesizer gives HERO 1 a voice. It uses a phoneme-based synthesizer system that generates 64 phonemes (speech sounds). The phonemes are then linked together by your computer program to simulate human speech or various sound effects. Using this system, HERO 1 has access to an unlimited vocabulary.

KIT ET-18, Basic HERO 1 Robot (less arm, vocal), 69 lbs.	999.95
ET-18-1, HERO 1's Arm (Arm and Gripper Mechanism), 6 lbs.	209.95
ET-18-2, HERO 1's Voice (Phoneme Speech Synthesizer), 1 lb.	149.95
NEW! ET-18-4, Demo ROM, plug-in ROM containing several routines demonstrating all HERO 1's motor and sense circuits, including voice. Shpg. wt. 1 lb.	49.95
ET-18-5, Monitor ROM Listing, Shpg. wt. 1 lb.	39.95
ETW-18, Complete Assembled Robot (with arm, vocal), 70 lbs.	2499.95
SAVE \$50.00! Kit ET-18, complete HERO 1 Robot (with arm and voice), Shpg. wt. 91 lbs.	\$1549.95 separately. NOW ONLY 1499.95



Use your Visa or MasterCard credit cards to purchase your kit

New Heathkit Merch! Buy Now!

[Shop now](#)



Most Reliable Clock™ - GC-1006

\$324.00



Explorer™ AM: TRF AM radio receiver (solder kit) - black case - GR-152-BK

\$352.00



AMSAT CubeSatSim Kit - Heathkit Edition Educator Pack

\$1,400.00



Davis Wireless Vantage Pro2 Weather Station with Standard Radiation Shield and WeatherLink Console - SKU 6252, 6252M

\$1,400.00

Parts and More!

[Shop now](#)



[kit.com/products/thd-improvement-kit-for-ig-18-series-audio-generator-test-equipment-complete-kit-iga-18-1](#)

Major Product Lines

- Amateur Radio and Shortwave Listening
- Automotive
- Aviation Electronics
- Calculators
- Clocks
- Computers
- Consumer radios (AM, FM)
- Educational training courses and trainers
- Energy products
- Furniture
- High Fidelity and stereo equipment
- Home Products
- Intercoms
- Marine Products
- Metal locators
- Music (electronic organs, metronomes, guitar amps)
- Photography and darkroom products
- Radio Control modeling
- Robots (HERO etc.)
- Scientific and laboratory instruments
- Security
- Telephone products
- Televisions
- Test Equipment
- Tools
- Weather stations and thermometers



over 250 electronic kits — world's largest selection

Radio, Hi-Fi, and Audio Products

- Amplifiers & Integrated Amps:
 - Tube Era (1950s–1960s):
 - W-Series Power Amplifiers (W-1, W-2, W-3, W-4, W-5): Classic Williamson-type amps
 - UA-Series UL Amplifiers (UA-1, UA-2): Ultra-linear monoblocks using EL84 tubes, known for excellent sound and reliability.
 - AA-Series Integrated Amps (AA-151, AA-100, AA-32): Affordable tube integrated amps; the AA-151 is still popular with collectors.
 - Solid-State Era (1960s–1970s):
 - AR-Series Receivers (AR-15, AR-1500, AR-1515): The AR-15 was one of Heathkit's most advanced receivers at its introduction.
 - AA-1640 Power Amplifier: A very powerful (200 W/ch) solid-state amp, well-regarded for robust construction.
 - AA-29, AA-1214 Integrated Amps: Solid-state integrated amplifiers that were popular kits for hobbyists entering Hi-Fi.

Radio, Hi-Fi, and Audio Products

- Preamplifiers:
 - SP-2 and SP-2A Stereo Preamps: Tube-based, often paired with the W-series amps.
 - AP-1800 Preamplifier: A high-end solid-state preamp from the late 1970s with advanced controls and low-noise design.
- Tuners:
 - AJ-30, AJ-32 Tube Tuners: Early AM/FM stereo tuners.
 - AJ-41, AJ-1510 Solid-State Tuners: The AJ-1510 was unusual in being a digital-synthesized tuner in the 1970s
- Turntables:
 - Heathkit TT-1/TT-1A: Belt-drive turntable kit, OEM'd from Rek-O-Kut.
 - AD-Series Turntable: These used high-quality Japanese mechanisms (often from CEC).

Radio, Hi-Fi, and Audio Products

- Speakers:
 - AS-10, AS-21, AS-1348, AS-163: Many used drivers OEM'd from Acoustic Research, Altec, and Jensen.
 - AS-101: A kit version of the Altec Lansing Valencia; very collectible today.
- Tape Decks:
 - AD-1700, AD-1300 Reel-to-Reel Decks: Often based on Sony transports.
 - AR-1600 Cassette Deck: A high-quality 3-head cassette deck kit.
- Televisions:
 - GR-2000: A popular 25-inch color television kit, notable for being the first TV anywhere with on-screen channel and time displays.
 - GR-2001: An updated version of the GR-2000, advertised in 1976 as a "computerized TV system" capable of programming an entire evening's viewing.

Radio, Hi-Fi, and Audio Products



NEW Heathkit WILLIAMSON TYPE AMPLIFIER KIT

AMPLIFIER Performance

- First Williamson Type Amplifier supplied with matching preamplifier.
- Uses Alter Lansing Perleco output transformer.
- Practically distortionless - Harmonic and intermodulation distortion both less than 1% at 5 watts output.
- Frequency response ± 1 db from 10 cycles to 100 kc.
- Output impedance 4, 8, or 16 ohms.

The new Heathkit Williamson Type Amplifier kit is the best obtainable in amplifier today—the choice of the really discerning listener. You can hear the difference and measurements actually bear out the superb performance. Frequency response ± 1 db from 10 cycles to 100 kc allows you to hear the highs and lows with equal crispness and clarity. Harmonic and intermodulation distortion both less than 1% at 5 watts output eliminate the harsh and unpleasant qualities which contribute to listening fatigue.

The circuit is similar to the one published in Audio Engineering Magazine for November, 1949, and is recommended by engineers throughout the audio field as one of the best ever developed. The Main Amplifier (which may be purchased separately) consists of a voltage amplifier and phase splitter using a 6BN7, a driver stage using a 6BN7, and a push-pull output stage using a pair of 6BT tubes. The output transformer is manufactured by Perleco Division of Alter Lansing and is built to their highest standards. Output impedances of 4, 8, and 16 ohms are available. The power supply uses a separate chassis with bulky Chicago Transformer power transformer and choke, and 100 V. full-wave filter for long burn-free operation. A 5V-62 rectifier is used.

The main amplifier and power supply are each on a chassis measuring 17" high by 3 1/2" wide by 11" long.

PREAMPLIFIER AND TONE CONTROL UNIT KIT

The preamplifier kit consists of: a 12AX7 (or 12AV7) dual triode first amplifier stage with a bypassed control for LP or 78 record types, and a 12AU7 amplifier stage with individual bass and treble tone controls which each provide up to 15db of boost or attenuation. A switch on panel selects either magnetic, crystal, or tuner inputs. The operating voltages are obtained from the Main Amplifier. Off-line switch on Preamplifier conveniently controls AC power to both Preamplifier and Main Amplifier thereby eliminating separate switching. Preamplifier has an attractive brushed-steel finish and is mounted on rubber feet so that it may be placed near the record player or tuner. The Preamplifier also is well suited to custom installations—it will operate in either vertical or horizontal position, and special switched shafts of the controls and switches allow a variety of shaft heights to be selected. Dimensions: 2 1/4" high by 10 1/2" wide by 7 1/2" deep.

BOTH UNITS (Main Amplifier and Preamplifier) are supplied complete with tubes, cables, plugs, and all other parts. Detailed assembly manual with its detailed step-by-step instructions and pictorial diagrams makes assembly easy. Both Preamplifier and Main Amplifier are finished in attractive and durable grey lacquer-tour finish.

PRICES OF VARIOUS COMBINATIONS

WAA-1 Amplifier kit only—Combination 1—Main Amplifier and Power Supply complete with WAA-1 Preamplifier kit. Total Shipping Weight 45 lbs. (Shipped Express only) **\$69.50**

WAA-1 Amplifier kit only—Combination 2—Main Amplifier and Power Supply complete with WAA-1 Preamplifier kit. Total Shipping Weight 37 lbs. (Shipped Express only) **\$49.75**

WAA-1 Preamplifier kit only. (Best power supply) Tubes included. Total Shipping Weight 7 lbs. (Shipped Express only) **\$19.75**

PLEASE BE SURE TO STATE COMBINATION NUMBER WHEN ORDERING.



Amateur Radio Products

- HW-101 HF Transceiver
- SB-Series
- "Benton Harbor Lunchbox" series (HW-19, HW-29A, HW-30)
- DX-Series Transmitters (AT-1, DX-100, DX-60)
- Linear Amplifiers (SB-200 and SB-220)
- QRP transceivers (HW-7, HW-8, HW-9)
- Accessories and test equipment (SWR and power meters, dummy loads, keyers)

Amateur Radio Products



Amateur Radio Products



Test Equipment Products

- VTVMs, VOMs, and multimeters
- RF and audio signal generators
- Oscilloscopes
- Power supplies
- Tube and transistor testers
- Impedance bridges, capacitor testers
- Television servicing equipment

Test Equipment Products

The World's Finest Test



IT-21
\$38.50

SINGLE PROBE CONVENIENCE
Also, all-purpose probe with switch for all functions and feature operation for bench-top connection.

CIRCUIT BOARD ASSEMBLY
For uniformity and reliability, all units are assembled in one factory. The standard 100-point circuit board for accurate component wiring.

PRECISION RESISTORS
The IT-21 voltage divider circuitry is constructed with precision resistors for maximum accuracy.



IT-21
\$67.50



IT-21
\$69.95

the chart taut at all times for easy reading of all tube test data. Chart and meter are both illuminated. The compact size of the IT-21 with convenient carrying handle makes it ideal for portable use as well as on the test bench.

Kit IT-21 . . . 12 lbs. . . \$7 dn., \$7 mn. **\$69.95**

TEST INSTRUMENTS

Choose



IT-12
\$26.95



IT-22
\$27.50



IT-11
\$38.50



IT-12
\$8.50



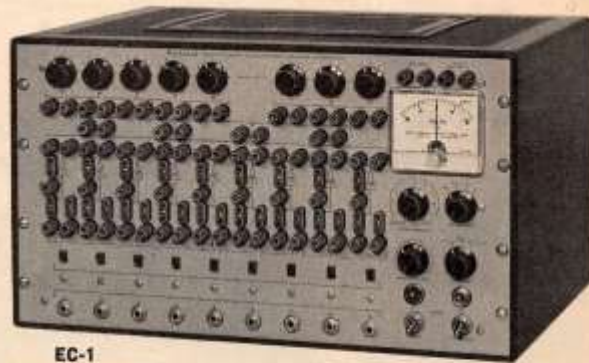
IT-22
\$7.50

78

Computer Products

- Analog computers
- Pocket calculators
- H-8
- H-11
- H-89
- H/Z-100
- IBM PC compatibles
- Robots: HERO-1, HERO Jr., HERO 2000

Computer Products



EC-1
\$225⁰⁰

Heathkit Educational Analog Computer

• Excellent teaching aid for a course in computer electronics • Vividly illustrates the electronic analogies to mathematical problems • Handles problems as complex as fluid flow, damped harmonic motion, and flight of a projectile in a viscous medium • 9 DC operational amplifiers • Switching allows amplifier balance without removing problem setup • Built-in regulated power supply—3 initial condition power supplies • 5 variable-coefficient potentiometers • Built-in oscillator for re-cycling computer through problem • Provides students with dramatic illustration of varying mathematical parameters • Simple assembly and operation • Complete instructions supplied

Kit EC-1, 48 lbs. \$225.00

EC-1 SPECIFICATIONS—Amplifiers: Open loop gain approximately 1000. Output—40 +60 volts at .7 ma. **Power supplies:** ±300 volts at 25 ma. electronically regulated, variable from +250 to +350 by control with meter reference for setting +300 volts. Negative 150 volts at 40 ma regulated by VR tube. **Repetitive operation:** Multivibrator cycles a relay at adjustable rates (0.1 to 15 Hz), to repeat the solution any number of times; permits observation of effect of changing parameters on solution. **Meter:** 50-0-50 uA movement. **Power requirements:** 105-125 or 210-250 V., 50-60 Hz, 100 watts. **Dimensions:** 19 1/4" W x 11 1/2" H x 15" D.

Count on quality and value...in a Heathkit

119⁹⁵
NO MONEY
DOWN

Heathkit Pocket Calculator

- 8-digit capability; adds, subtracts, multiplies, divides
- Full floating decimal; constant key and chain operation
- Clear-entry key; entry & total overflow indicators; negative answer indicator
- Battery-saver circuitry with low-battery indicator
- Permanent rechargeable batteries; tactile-feedback keyboard for positive entry "feel"

Use this pocket-size, 11-oz. "electronic brain" either as a self-contained portable or as a desk-top model. The internal Nickel-Cadmium battery gives 4 to 6 hours of use before recharging. Or, leave it connected to the charger for indefinite operation.

The heart of the IC-2009 is a MOS large-scale integrated circuit that performs addition, subtraction, multiplication and division with speed and accuracy. A special battery-saver circuit turns off the lighted

digital display if 15 seconds pass without entries. However, the calculator retains all information and the display is instantly reactivated with the display recall key (D), or by entering a new number or operation. The bright LED (light-emitting diode) readout device with no distorting "magnifier," has easy to read digits sloped for wide-angle viewing, indoors or out. Unlike other pocket calculators, the IC-2009 can be serviced by you. Both the keyboard and display board are plug-in modules. Your Heathkit Assembly Manual contains a complete trouble-shooting section. You can build your Pocket Calculator in just three or four evenings. The all-solid-state circuitry mounts neatly in a stylish, high impact-strength case with a "no-slip" textured surface. The separate battery charger, included, can be wired for either 120 or 240 VAC wall outlets.

Kit IC-2009, 3 lbs. 119.95

ICA-2009-1, carrying case, 1 lb. 5.25

IC-2009 SPECIFICATIONS—Operation: Portable (three internal batteries). Calculator can also be serviced while charging. **Operating temperatures:** 0 to 50°C (32 to 122°F). **Charger input voltage:** 120-250 VAC, 50-60 Hz. **Charger power requirements:** 3 A. **Operating time:** 5 hours typical, depending on display and amount of use while starting with a fully charged battery. **Charging time:** 14 hours with calculator off. **Dimensions:** Calculator, 5 1/2" W x 3 1/2" H x 1 1/4" D. Charger, 20 1/2" L x 1 1/2" W x 3 1/4" H.

Other/Unusual Products

[illegible][illegible][illegible]

Other/Unusual Products

[illegible]

Find out how easy it is to build a kit — order the manual. See page 49.

Turn your music into a dazzling light show

The TD-1006 Color Organ adds exciting sights to your sound system. With its extra wide dynamic range, it translates any kind of music into pulsing, whirling starbursts of color. Just connect the TD-1006 to the speaker leads of any sound source (except AM radio). Without effecting the sound, active filters separate the audio signal into four frequency bands, each with 35 brilliantly colored lights — red for bass, blue for low-midrange, green for upper-midrange and amber for treble (140 lights total). The lights pulsate in time to the music creating spokes of color that seem to swirl.

Just wire the two circuit boards and install the pre-strung lights in the factory-assembled cabinet. A single knob on the side controls sensitivity and turns power on or off. Just 4½" deep—even hang it on the wall. Walnut-grained vinyl-clad case, black-out front panel. We think you'll agree music has never looked better.

Kit TD-1006, Shpg. Wt. 32 lbs.	79.95
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TD-1005 Specifications

Dynamic Range: 25 dB, minimum. Input Signal: 1 volt RMS min. to 22 volts RMS max. Source Protection: line isolation. Power Requirement: 100/240 VAC, 50-60 Hz, 60 watts max. Dimensions: 220x80 mm x 220x80 mm x 40 mm D. Net Weight: 700 gm.

Split wood quickly, easily and safely with the low-cost, easy-to-build Heathkit Log Splitter



Full-time
Leisure with

\$549.00

- Flight less energy costly – right wing generates most thrust
- Lateral lunge – split legs on 2nd jump – split legs reduce drag by 10% and increase lift by 10%
- Forward, 40-60 km/hour take off and flight speeds at short bursts
- 100-150 km/hour in sustained flight
- Commercial wing loading – wing smaller, heavier by factor four (up to a combination for the glider) given
- Pigeon 100 g/lb heavier, heavier also short bursts and smaller wing loading for years of flight life
- Pigeons – weight balanced and strong strokes it means to achieve low drag (better by one work life)
- Sustainable 10000000, 4 cycles (no constant negative thrust on regular or sustained gliding)
- Takes just one evening to assemble

Net short-term contracting, introduced or recently being applied to land. The 100-1000 acres and steeper than 10:1, 10' or more, slopes and nearby high mountains. A typical 100-acre tract, for example, has frequent talus slopes 5 to 10 feet high, steep, exposed and underlain by 1000-year-old or older, with up to 10 feet of spalling from the rock. Large, angular talus slopes (1000 years old) with a 10:1 slope, 10' or more, will be a natural or man-made and may be a 1000-year old.

Be more standing around — The more you stand around, the more you'll burn. A study by researchers at the University of Illinois at Chicago found that people who stood for 15 minutes more each day burned an extra 100 calories. The researchers also found that people who stood for 15 minutes more each day were less likely to gain weight. So, if you're looking for a simple way to burn more calories, stand more. It's not just about standing around, though. It's about standing around in a way that's healthy. So, if you're standing around, make sure you're standing around in a way that's healthy. That means standing around in a way that's not just standing around, but standing around in a way that's healthy. So, if you're standing around, make sure you're standing around in a way that's healthy. That means standing around in a way that's not just standing around, but standing around in a way that's healthy.

Weight-balanced design is one of the simplest load-balancing techniques. It is based on the idea of having a fixed number of servers (called nodes) that can handle a fixed number of requests (called requests per second, or rps). The server that has the most requests is the one that is overloaded and is the one that is overloaded. The server that has the most requests is the one that is overloaded and is the one that is overloaded.



ment with high productivity to connect between pump and capsule. The two-angled 2001 model also fits the almost universal oval and square housing for fast and easy mounting.

What is light and energy? **Book 1** (2013) is a book for high school students who are starting with the topic of light and energy. It is a 100-page book, written by a physicist and a teacher, and is available for free download at www.lightandenergy.org. The book is available in both English and Spanish.

[illegible]

Other/Unusual Products

More-for-your-money Heathkit kitchen-aids

Heathkit Big-Capacity Microwave Oven

- One of the largest ovens available
- Cuts cooking time up to 70%
- 2 year warranty on tube
- "What you build, you can service" — another Heathkit "plus-value"

Get Mom away from the kitchen fast with the amazing Heathkit Microwave Oven. Just pop in the food, set the timer and you have meals in minutes. A baked potato in 7 minutes, a 5-lb. roast in 45! And while the Heathkit Microwave Oven is just right for houseboat, cruiser or mobile home use, it also has one of the largest oven cavities in the industry. Other deluxe features include an exclusive 3-way door safety interlock, warm-air purging device to eliminate condensation; long-life Lifton magnetron tube; vinyl-clad steel case (a uniquely styled, textured white with "diamond" front panel accents. Measures 33 1/2" H x 25 1/2" W x 14 1/2" D (15% including handle). Operates on standard household current. Kit includes self-service instructions and illustrated cookbook by Home Economist Ann Balcom with recipes and timing charts for your favorite dishes. Cut cooking time up to 70% — put a Heathkit microwave oven in your kitchen, camper, or boat today. Magnetron tube warranted two full years. NOTE: The GD-29 complies with all requirements of the Performance Standard for Microwave ovens (42 CFR 10.212) as set forth by the U.S. Dept. of Health, Education & Welfare. If at any time during the life of your oven, you wish to check its operation, it will be tested free of charge at any Heathkit Electronic Center or at the factory.

Kit GD-29, 98 lbs. \$59.95

GD-29-1, cert. of hard-wood solid, welded steel, sturdy 16" x 17" tubing. A baked in glass, 21 1/2" H x 37 1/2" W x 15 1/2" D. 25 lbs. \$39.95



\$59.95
NO MONEY DOWN



C) Heathkit Minimizer™ Trash Compactor...159.95

For Mom, a Christmas present she'll enjoy year 'round. The most modern trash handling system for the home, in easy service kit form. The Minimizer handles all normal household glass and plastic containers, tin cans, wrappings, boxes, flings, light bulbs, etc. The packing ram descends with 200 lb. to reduce refuse to almost 1/4 of its original size, packaging material in a neat disposable bag — one bag holds an entire trash for an average family of four! When the bag's full, slide over the top and remove a neat, dry package for normal pickup. And the Minimizer deodorizes the contents each time the drawer is opened and closed. Your Heathkit Minimizer can stand under the kitchen counter or left free-standing. Its bright white finish with marble-tone vinyl-clad top complements any kitchen. You can build it yourself in 6 to 10 hours. The check-by-stamp has complete operational servicing and trouble-shooting instructions. Has long-life 1 1/2-hp. motor, plugs into 110-120 VAC or household outlet. Kit includes 5 plastic-lined bags, one odorant. Measures 34 1/2" x 35 1/2" H x 15" W x 25 1/2" D.

Kit GU-1800, 210 lbs., Exp./Frt.

GUA-1800-1, 15 plastic-lined bags, 10 lbs., mailable



Oven shown with optional roll-around cart

\$1299.95

GD-1110 Electronic Home Pinball Machine

The fabulous Bally Fireball pinball game is easy to build. Kit form by Heath.

That's right, the famous computer-controlled Bally Fireball is money-saving kit form. You've heard about this machine. It's the one you'll never grow tired of playing. Look at these unusual fun features! Scoring is displayed on a bright red LED readout and a computer synthesizer plays seven different tunes when extra scores or bonuses are won. The scores of up to four players are stored in the computer's memory and displayed automatically. Ball return is automatic. Bonus balls are also awarded automatically.

A "skill" control allows you to program the machine for the beginner or the advanced player. The colorful playfield is the same size as a commercial machine. "Thumper bumpers," "Blingblings" and player-controlled flippers give you plenty of ball action. Many of the components used in the GD-1110 are the same as used in commercial machines for outstanding reliability. The GD-1110 is not a toy but a sophisticated game designed to give your whole family years of fast-paced action, right in your own home.

Kit GD-1110, 84pp. wt. 186 lbs.

\$1299.95



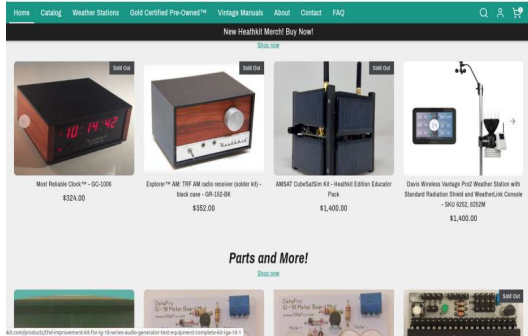
Buying and Restoring Heathkits

Source	Pros	Cons
eBay	Widest range of items. Some buyer protection. Feedback system for rating sellers.	Highest selling prices. Have to buy sight unseen. Shipping costs, possible duties, tariffs. Possibility of shipping damage.
Maxsold	Usually local, items can be picked up. Generally lower prices than eBay.	Have to buy sight unseen. Limited buyer protection and feedback system. High fees (some paid by seller). Have to pick up on specific day/time.
Flea Markets, Hamfests, Garage Sales, etc.	Usually good prices. Not bidding against others. Can see item before buying. No shipping cost.	Limited number of events. Hit and miss what you can find. Typically no buyer protection or feedback system.
Kijiji and Facebook Marketplace	Typically local. No fees.	Limited buyer protection and feedback system. Can be hard to find items.
OVRC and other live auctions	Often good prices (unless bidding war). Can see item before buying. No shipping cost.	Have to physically be there. Hit and miss what you will find. Some fees.
OVRC and other online auctions	Often good prices (unless bidding war). Don't have to physically be there. No shipping cost.	Have to buy sight unseen. Have to pick up on specific day/time. Some fees.

Buying and Restoring Heathkits

- Similar to restoring radios:
 - Replace electrolytic and paper caps, resistors shifted in value, etc.
 - Challenge finding unique parts (transformers, knobs, faceplates, unusual pots and switches, etc.)
 - Safety: May want to add 3-wire cord, fuse, safety caps, etc.
- Unique to Heathkits:
 - Original manuals cover full assembly, test/alignment procedures, theory of operation, etc.
 - Quality of build varies, can't assume built correctly.
 - Modifications are common.

Heathkit Today



Summary

- Why did they go out of business?
- Heathkits are sought after and collectible
- Many products still in use
- Many resources on the Internet

References

- My Lulu published books: <https://www.lulu.com/spotlight/tranter>
- My YouTube channel: <https://www.youtube.com/@jefftranter>
- My Github repositories: <https://github.com/jefftranter>

Q&A

- Questions?