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Official magazine for users of  computer equipment.



Policy & Reference Issue



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**Our new 1985 illustrated catalog is now available
Many new items and lower prices. Call us for your FREE copy.**



Just some of the new products we have include:
Winchester sub-systems, Bernoulli boxes, Dynex/Brother printers, Houston Instruments plotters,
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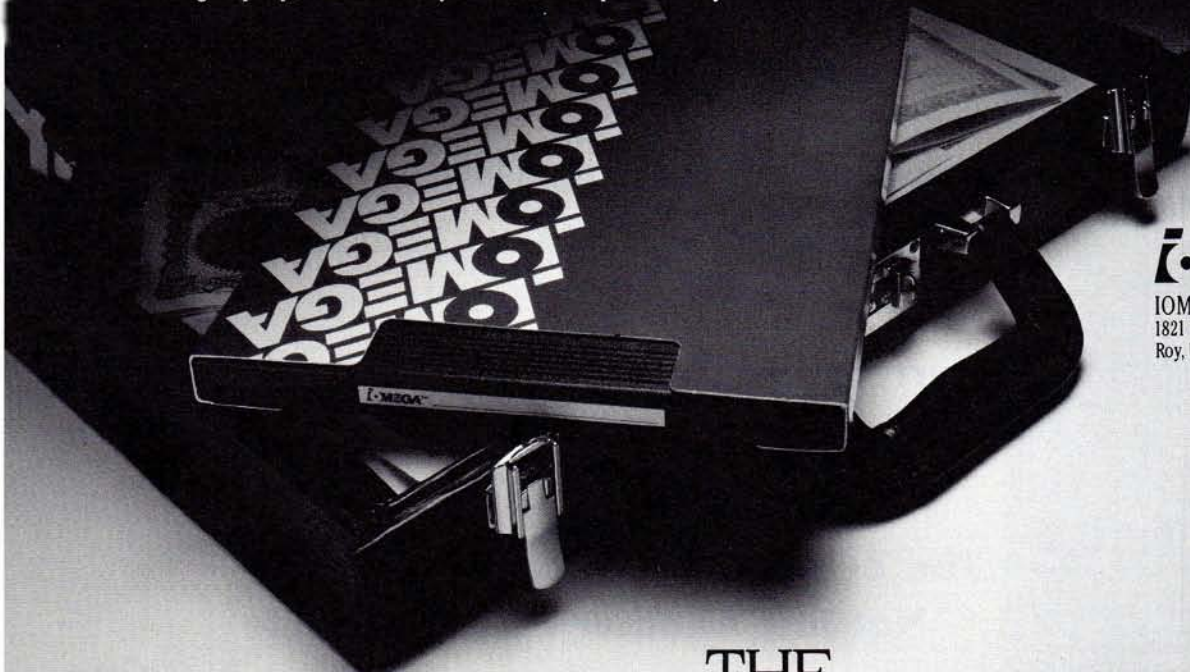
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* U.S. Funds

Limited back issues are available at \$2.50, plus 10% shipping and handling. Check HUG Product List for availability of bound volumes of past issues. Requests for magazines mailed to foreign countries should specify mailing method and appropriate added cost.

Send Payment to: Heath/Zenith Users' Group
Hilltop Road
St. Joseph, MI 49085
(616) 982-3463

Although it is a policy to check material placed in REMark for accuracy, HUG offers no warranty, either expressed or implied, and is not responsible for any losses due to the use of any material in this magazine.

Articles submitted by users and published in REMark, which describe hardware modifications, are not supported by Heathkit Electronic Centers or Heath Technical Consultation. HUG is provided as a service to its members for the purpose of fostering the exchange of ideas to enhance their usage of Heath equipment. As such, little or no evaluation of the programs or products advertised in REMark, the Software Catalog, or other HUG publications is performed by Heath Company, in general and HUG, in particular. The prospective user is hereby put on notice that the programs may contain faults, the consequence of which Heath Company, in general, and HUG, in particular, cannot be held responsible. The prospective user is, by virtue of obtaining and using these programs, assuming full risk for all consequences.

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On The Cover: Computers are everywhere. Now even into 'pop' art. This month's cover shows one computer's rendition of the Heath/Zenith Family of Computers surrounding the HUG logo.

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104 Lakefront Drive, Hunt Valley, MD 21031

Welcome to the Heath/Zenith Users' Group!



Bob Ellerton
HUG Manager

It is our pleasure to present the following information to fellow members and the newcomers to the National Heath/Zenith Users' Group. The January Issue of REMark will provide you with compiled material especially designed to update your records with a cross-reference index to all previous articles found in REMark during 1984, the HUG Software Library abstracts as presented in 1983 and 1984, a listing of companies that provide Heath/Zenith related hardware and software products, a listing of Local Heath/Zenith Users' Groups, related publications information, and a variety of small, but useful, tips for contacting knowledgeable individuals who are familiar with Heath/Zenith equipment.

For the New Member:

This Issue of REMark will be your first contact with the Heath/Zenith Users' Group. The material contained herein represents a good look at the number of people, clubs, and organizations supporting the Heath/Zenith Computer Product Line. Further, HUG has selected that information which you may find most helpful to get you familiar with our organization. This Issue, along with the Software Catalog and following issues of REMark provided as a part of your membership, will help you explore the exciting and powerful world of micro-computing.

For the "Oldtimer":

The material contained in this Issue of REMark will help previous members stay current with new HUG policies, available HUG software, additional Local HUG Clubs, and the new support activities from companies that may be of particular interest. The HUG Software Catalog, as well as the January Issue of REMark, are a permanent part of the HUG membership package provided to any user joining the HUG community.

General Heath/Zenith Users' Group Information

Membership Eligibility

A bona fide interest in Heath/Zenith computer related products is all that is necessary for membership eligibility. You need not be an owner of a Heath/Zenith product to join. Membership is open to any individual or company representative.

As a member, you will receive:

- A subscription to REMark, the official Heath/Zenith magazine
- A HUG binder
- A personal identification card
- HUG Software Catalog
- Access to the Heath/Zenith Users' Group Software Library
- Access to the HUG Bulletin Board via MicroNET *
- Discounts on a variety of Heath/Zenith computer products

* **Note:** Requires CompuServe membership available from the Heath Users' Group.



Margaret Bacon
HUG Secretary



Walt Gillespie
REMark Editor



Pat Swayne
HUG Software Engineer

These benefits are described in the following paragraphs.

HUG Membership Rates

The following rate schedule applies as of January, 1985 for membership:

Type of Membership	U.S. Domestic	APO/FPO & All Others
Initial	\$20.00	* \$35.00
Renewal	\$17.00	* \$30.00

* Must be in U.S. funds

The initial membership package includes the HUG binder, the HUG Software Catalog, a Heath Parts Order Form, and a copy of the January Issue of REMark.

Identification Card

When your membership is accepted, a computer generated ID card is issued. The ID card is sent to you separately via first class mail. This card identifies you as a member of the Heath/Zenith Users' Group. It contains a unique number which can be verified for membership. **(Allow several weeks for the processing and delivery of your personal ID card.)**

Your HUG ID Card entitles you to discounts on a variety of Heath/Zenith computer products. Please review and retain the following information for your records.

HUG Discount Rules and Regulations:

1. You must be a member of the Heath/Zenith Users' Group for a period of 90 days before you can use your HUG ID to participate in the discount program. If you renew your membership in the Heath/Zenith Users' Group, you may use your ID card immediately to participate.
2. Your ID card can only be used at your local Heath/Zenith Computers & Electronics Center or through mail order purchases placed with Heath Company. **Telephone orders will not be accepted.**
3. Your discount applies to the first \$5,000 of products purchased per year. The \$5,000 ceiling on purchases is based on the current list price of the products you purchase at the date shown on the invoice.
4. You may purchase only one of any given product per year, (e.g. one "Z" or "H" 100 series computer per year).
5. Your HUG ID card is not transferable. You will be required to show both your HUG ID and another suitable piece of identification to receive the benefits of the discount program.
6. You cannot make a purchase at the discounted rates without your HUG ID card.
7. Your HUG ID cannot be used to purchase individual parts or HUG software products under the discount program from the Heath/Zenith Computers & Electronics Centers or from Heath Company. **HUG products are considered parts.**
8. The ID card can be used for a 10% discount on Heathkit computer related items only.
9. The ID card can be used for a 20% discount on Zenith Data Systems (assembled) computer related items only.
10. Any item purchased which installs as a modification to the internal portions of the computer (i.e. boards, drives, ROMs, etc.) is considered a kit item.



Nancy Strunk
HUG Software Coordinator



Jim Buszkiewicz
HUG Software Developer



Lori Latham
REMark Editorial and
Advertising Assistant

11. Any item (unless purchased as a kit) which is an external addition to the computer as a system (e.g. complete wired drive enclosures, printers, etc.) is considered a wired item.

12. Heath or Zenith Data Systems software is considered a finished or assembled item and therefore, can be purchased at the 20% discount. Since HUG software is considered a part, it is not included in either program.

13. Unless stated specifically in "sales specials" that other discounts do not apply, the HUG ID can be used in addition to discounts offered through local Heath/Zenith Computers & Electronics Centers or through the Heathkit Mail Order Catalog. However, the HUG ID may not be used with any promotional certificates offered by Heath Company or the Heath/Zenith Computers & Electronics Center.

14. **Heathkit Mail Order Catalog purchases must be accompanied by your HUG ID card and a SELF-ADDRESSED STAMPED ENVELOPE for return of your ID once the order has been processed.**

15. If you lose your ID card, you can only receive a replacement by purchasing a new membership to HUG at the current renewal rate. You may however, use this ID immediately if you have been a HUG member for more than 90 days.

16. To receive a replacement ID, send your request along with your **HUG ID number (found on your REMark mailing label) and renewal fee to:**

■ Attention: HUG Secretary/New ID Card
Heath/Zenith Users' Group
Hilltop Road
St. Joseph, MI 49085

Publications

REMark, the official magazine for users of Heath/Zenith computer products, is sent to each member 12 times a year. The January Issue is designed as a cross-reference to the previous issues and contains valuable information that you may need. Individual back issues may be obtained during the current year. However, at the end of each year, all twelve issues become a single bound REMark Volume which may be purchased as a separate item. There are currently five REMark Volumes available.

A subscription to REMark is included with your membership. The magazine is sent via bulk mail, as are most other organization's publications. Bulk mailing means **your REMark will not be forwarded should you move.** Therefore, please notify the HUG Secretary of your address change and the date which you wish the change to take effect.

We encourage each member to use REMark to communicate with other users. You can do this by submitting articles for publication. We strongly encourage any comments which you feel would benefit other users. We welcome your letters, hardware descriptions, software enhancements, applications programs, and other material you may wish to share.

Major Article Program

Major articles are defined as articles containing 2000 words or more. Authors contributing major articles that are printed in REMark will receive a "Certificate of Recognition and Appreciation" from the Heath/Zenith Users' Group and their choice of any single Heath/Zenith software product **FREE or ONE HUG BUCK.**

"HUG BUCK"....new for 1985

The Heath/Zenith Users' Group is proud to announce the addition of the HUG BUCK as a new incentive for authors contributing major articles to REMark. You can receive the HUG BUCK instead of free Heath/Zenith software. This award is worth \$100.00 toward the purchase of **any** Heathkit or Zenith Data Systems product. HUG BUCKs can be collected to completely or partially purchase the product of your choice. Specifics regarding the use of the HUG BUCK accompanies the award itself.

Those individuals that contribute smaller articles will receive the "Certificate of Recognition and Appreciation" from the Heath/Zenith Users' Group. As you can see, we feel that any information you send us is important.

Sometimes, good things come in small packages. Therefore, all articles appearing in REMark are eligible for the "Article of the Year" award presented to the individual that develops the most popular material during the year.

Certificates, software or HUG BUCKs are sent out after your article appears in REMark.

"Article of the Year" Award!

Win a \$500 Gift Certificate!

The December Issue of REMark will include a ballot card for selecting the "Article of the Year." Fill in your choice for the article that you found most useful or interesting during the year. HUG must receive your ballot before February of the following year. The results of the vote and the winner of the \$500 gift certificate will be announced in the March Issue of REMark. Give your favorite author your vote of appreciation!

How to Submit Articles to REMark

What Subject?

Feel free to submit article manuscripts on any subject matter that you think will be of interest to the Heath/Zenith Users' Group community. Tutorial or How-To articles tend to be the most popular. Highly technical articles, although acceptable, do not have a broad readership base.

If you choose what might be considered a highly technical subject, try not to use terms which the average user would not be familiar with. If you should feel the need to use such terms, give a definition. Be kind to those who might not understand your application and explain your special programming tricks with a little extra detail. It's these "tricks" that help others to comprehend programming techniques and to be better programmers themselves.

If you feel that you have a unique program or hardware application, sit down and write about it. Do you have a special program for the bowling team, softball league, maybe a different business or farm program? Possibly you have interfaced your computer to some special machine to gather data for later evaluation. These are just some of the things other HUGgies are interested in reading about.

Following is only a sample list of possible subjects:

Software:

Application	I/O handling
Modification	Enhancements
New approaches	Reviews
File handling	

Hardware:

Special applications
(Schools, Business, Handicap, etc.)
Enhancements
Interfacing
Problem solving

Review past issues of REMark. See what subjects have been covered. Try not to cover the same subject unless you have a better or totally different approach. Don't be a "me too" writer, open new doors.

How Big?

To qualify for the "Major Article Program," your manuscript must be 2,000 words or more (listings not included). Articles in excess of 5,000 words generally need to be broken into installments for separate publication.

Articles of less than 2,000 words and "Buggin' HUG" letters are acceptable. However, this type of submittal does not qualify for HUG reimbursement of a Heath/Zenith software product or HUG BUCK.

How About Photos?

If a photograph will help explain, include it. Clear, sharply focused, black and white photos reproduce best but, color photos can be used. Include a caption with each photo to help with the explanation. Any photographs become the property of REMark and cannot be returned.

What About Drawings?

If a drawing, like photographs, will help, include it. We request that you provide us with finished India Ink drawings suitable for reproduction. Should you feel you are not capable of supplying finished artwork, check with a local high school drafting class. Generally, these students are anxious to display their talent. REMark, in some cases, will provide artwork but, this will delay publication of your article.

Is Hardcopy Necessary?

Yes! We request that any submittal include a printout of all files.

Is A Disk Copy Needed?

Yes! REMark uses the latest techniques for the preparation of copy. Submitting your manuscript on disk along with all pertinent files moves the information through our system faster. We can accept any standard Heath/Zenith disk format. Your text files should not have visible or hidden coding, since these codes can delay the production process.

Should you have questions about an article you would like to submit, please feel free to contact the REMark Editor.

Once you have completed your article, send it directly to:

The Heath/Zenith Users' Group
Attention: REMark Editor
Hilltop Road
St. Joseph, MI 49085

How to Submit Programs to the Heath Users' Group

After you have developed a program and before you submit it, check it thoroughly. Be reasonably sure that it is error free.

Three methods of submitting programs to the Heath/Zenith Users' Group are available for your selection based on your judgement of

the finished program and its value to other members. Your program may be contributed under the following categories:

Public Domain Library -- free distribution to the membership via bulletin boards or other means available to HUG with the possibility of inclusion into the HUG Software Library.

HUG Software Library -- for development by HUG as a finished software product to be offered for sale to other individuals as source for HUG income to further develop the users' group.

Royalty Software Library -- author supported, finished, reliable software with a signed contract paying the author for availability of the program to users of Heath/Zenith computer products.

Submit your program by completely filling out the submittal form included in this issue of REMark. Send your program on disk. Include with your submittal a complete listing of the contents on the disk and any additional documentation that you feel will be helpful for our records. Submit a sample "run" of your program from a hard copy terminal when possible. If one is not available, hand copy as much as you feel necessary to give us an idea of how the program is supposed to perform. Be sure to sign and date the completed submittal form and check the category that you feel is appropriate for your program.

Once we receive your program, you will be notified. On the completion of the review, we will contact you with the status of your program. Remember, the person submitting the program is expected to handle any programming problems.

If your program is accepted and used by the Heath/Zenith Users' Group, you will be eligible for certain types of reward based on the category you have selected on the submittal form. **Please note however, that no reward can be made until the product is released to the members of the user community through an announcement in the "New HUG Products" section of REMark.**

Rewards for Program Contributions:

Public Domain Software Library--

You will receive a copy of the disk volume of public domain software that your program is included on when released to other members of the Heath/Zenith Users' Group.

HUG Software Library--

One year extension of your HUG membership.
One year membership if you are not already a member.
A free copy of your program as released by HUG.
Your choice of any single Heath/Zenith software product.

Royalty Software Library--

You are paid on a quarterly basis for the number of disks sold during a three month period. Checks are generally sent 30 days after the end of each quarter. Since you are paid for your program submittal, no other compensation applies.

Notes on Software Submittals

HUG receives literally hundreds of programs each year for possible distribution to the user community. As you know, to review a software package requires learning the package. The review cycle is extremely time consuming. Therefore, we look for packages with the following attributes that are critical to the success of your program as a HUG Software Product:

We begin the review process as "beginners." In other words, your package must contain information that instructs the user through the

set up and operation of the program from a very basic point of view. Remember to include information about your system that will enable the user (in this case the reviewer) to duplicate the system requirements that made the software respond. Include operating system and version (e.g. CP/M 2.2.03), language and version (e.g. MBASIC 5.21), your machine type, and your memory requirements for the program.

Beyond set up and operation of the program itself, we look for thorough documentation as to what the program is going to do. If, for example, the program is a game; the user must know the rules, what is to be expected, what is the object of the game, and what input is required to make the game playable.

Next, we review the operation of the program. If the set up and operational instructions are good, there should be no problem getting the program to perform as expected. In many cases, reviewers are stymied not because the program will not perform but, because the documentation for set up and operation did not give sufficient detail to allow a thorough operational check.

A First-Time-Through-Section, although optional, is most advantageous for the reviewer and the end user. The First-Time-Through-Section should include the basics of setting up the program(s). It also should detail a mock run through your program with "dummy" data. This section should touch on most of the important options of your program. All option details should be explained in the documentation.

After we have made basic operational tests, we begin looking for undocumented "bugs" in the program itself. If a program defect is detected, the review process is ended. Any program fault that we find could be a reason for rejection of your program. Be sure to document operational peculiarities both for the reviewer and the end user. An example of one common program fault would be the lack of testing for both upper and lower case keys (e.g. "Y" or "y" for YES). There is nothing wrong with a program that only responds to upper case as long as the user is informed that the CAPS LOCK key should be down when operating the software. A good test for your program is to have another user in your area who is unfamiliar with your product attempt to operate it.

These points are some of the most important you should consider when generating software to be submitted to the Heath/Zenith Users' Group. As you can see, developing a solid software product requires a new attention to detail whether you intend your product to be released through HUG or whether you intend to offer it through other channels. We have found that software which was developed following the basic information supplied here generates fewer user contacts and, in general, gains the acceptance and respect of a vast majority of the user community.

Once you feel that your software will meet the requirements of the various HUG Software Libraries, please submit your material to the following address:

The Heath/Zenith Users' Group
Attention: Software Coordinator
Hilltop Road
St. Joseph, MI 49085

Ordering Information

HUG Software Products are ordered as a standard Heath Company Part. The order can be mailed on a Heath Company Parts Order Form or on a separate sheet of paper. When ordering, include with your payment the following information:

1. The part number (p/n), quantity, and description of the product to be ordered,
2. your name, address and HUG ID number, and
3. 10% postage and handling, up to a maximum of \$5.00, minimum of \$1.00. UPS is \$1.75 minimum with no maximum. UPS Blue Label is \$4.00 minimum.
4. Visa & MasterCard also accepted, minimum \$10.00 order.

Send the order to:

Heath Company Parts Department
Hilltop Road
St. Joseph, MI 49085

For Visa and MasterCard phone orders; telephone Heath Company Parts Department at (616) 982-3571. Have the part number (p/n), description, and quantity ready for quick processing.

Note: HUG currently offers formats for CP/M, HDOS, ZDOS, MSDOS and CP/M-86 5-1/4 inch disks:

Single sided, single density, hard-sectored
Single Sided, single density, soft-sectored
ZDOS double sided
MSDOS double sided
CP/M-86 double sided

To order soft-sectored, add a "-37" to the part number (p/n) of the product (e.g. 885-1207-37). Your order is processed by part number (p/n), not by description, so please be sure to include the "-37" when ordering soft-sectored.

The Heath Company Parts Department is NOT capable of answering questions regarding software. For additional information concerning any of the HUG software products, contact the Heath/Zenith Users' Group (616) 982-3463.

If you should have a problem with a HUG product, please call HUG to determine if you have a bad disk or another problem before you return the product for replacement. A call may save you a lot of time and money. If it is determined that your disk requires replacement, return the original disk along with the invoice directly to the Heath/Zenith Users' Group, Attention: Software Coordinator.

Change of Address

If you change your address, be sure to let us know. REMark is sent via bulk mail and is not forwarded. It takes approximately six weeks for our system to cycle through. Therefore, take this delay into consideration along with mail delays when notifying us. **Please tell us when the change is to take effect.**

Use the form in the back of this issue or a suitable copy to change your address. Send it directly to:

The Heath/Zenith Users' Group
Attention: HUG Secretary
Hilltop Road
St. Joseph, MI 49085

HUG Bulletin Board via MicroNET

MicroNET is a time-share system of CompuServe Inc., which most anyone, located near a major city, can access through a telephone link. The National HUG Bulletin Board or SIG (Special Interest Group) on MicroNET provides a way of sharing ideas, questions, and information with over 3000 other members, by simply dialing a number and leaving a message.

MicroNET membership applications are available through the HUG Library or through any Heathkit Electronics Center as HUG part number 885-1122 (HDOS), 885-1224 (CP/M), or 885-1224-37 (CP/M Z-100 soft-sectored). The package includes free modem software, as well as the necessary information about CompuServe and one hour of free time on the system. This membership is separate from the HUG membership application. For further information about CompuServe, contact the Heath/Zenith Users' Group, or CompuServe Inc., 5000 Arlington Centre Blvd, Columbus, OH 43220, (614) 457-8600.

A booklet of the HUG Bulletin Board commands and command descriptions is now available from the Heath/Zenith Users' Group. This handy reference can be used while on the system to save you both time and money. Since changes are made to the system on occasion, the material contained in the booklet may require some modification by the user in the form of notes as the changes are implemented. The BB-Reference is available as HUG part number 885-4700.

Special Interest and Local HUG Groups

One of the best sources for information and help is the Local Heath Users' Groups which are becoming a major voice for the Heath/Zenith user community. Many of the local groups can be contacted through your nearest Heath/Zenith Computers & Electronics Centers. These stores can usually provide you the necessary contact information. A listing of known Local HUGs is published twice a year with new additions appearing under the category of "Local HUG News" found in most issues of REMark.

Heath/Zenith Related Publications

Of major importance to the new user is the availability of additional information for the Heath/Zenith computer products. Many of the Local HUGs publish newsletters on a regular basis. Using the Local HUG Club listing appearing in this issue, the user can select those clubs that may produce additional documentation.

Three excellent independent publications are listed here:

BUSS Newsletter

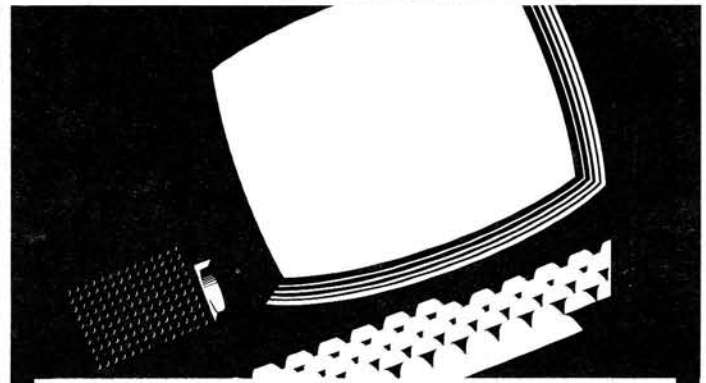
Editor: Charles Floto
Phone: (202) 544-0900
Address: 716 E Street SE
Washington, DC 20003
Rates: 20 issues/year \$28.00

H-Scoop

Editor: Henry Fale
Phone: (414) 452-4172
Address: 2618 Penn. Circle
Sheboygan, WI 53081
Rates: \$20.00 /year (\$27.00 overseas)

Sextant

Editor: Charles Floto
Phone: (202) 544-0900
Address: 716 E Street SE
Washington, DC 20003
Rates: 6 issues/year \$14.97



Heath/Zenith Data Systems Software Consultation Information Bulletin Board

(616) 982-3503

This computer bulletin board is normally available 24 hours a day, 7 days a week, all year long except for periodic maintenance and updating. At these times the phone will not be answered.

The bulletin board contains:

- up-to-date source of information
- helpful hints
- Z150 software compatibility list
- sample programs
- product announcements
- answers to common problems
- easy to use procedures
- no passwords
- updated weekly
- information only - no messages

The bulletin board uses:

- Hayes Smartmodem at 1200 and 300 baud
- automatic baud rate selection
- compatible with most modems
- standard 7 bit ASCII characters
- 8 data bits, 1 stop bit and no parity
- for any standard ASCII terminal or
- computer emulating an ASCII terminal

If you have any comments or questions about the bulletin board, please feel free to contact the Software Consultation group at (616) 982-3860 during normal business hours (8:00 am to 7:30 pm Eastern Time Zone). This number is also used to obtain answers for specific questions about operating systems and programming languages software. Questions about applications software should be directed to the consultation group at (616) 982-3884 also during normal business hours.



Public Domain Anyone?

Public Domain Library - Yes, there is such an animal... After all these months of letters to the authors and announcements about when this announcement would be made...

The following list of clubs have requested that they be the distributors of the Public Domain Software. Your local club may wish to purchase the disks for their members or individuals may obtain them. The cost is \$3.00 plus a blank disk, per disk requested. **CP/M Disk orders: Hard Sector requests require two disks per disk ordered, one disk for Soft Sector.** Please pay by check or money order made out to the club name you are purchasing from. There are eleven disks available at this time and are labeled as follows: HDOS Disk 1,2,3,4 CP/M Disk 1,2,3,4,5 ZDOS Disk 1,2. Watch REMark for future releases of these Public Domain disks.

HUG/m Heath Users' Group of Montgomery
Attn: John D. Guenther
120 Kingswood Road
Montgomery, AL 36108

Military/Civilian Microcomputer Society/HUG
Attn: Jim L. Nielsen, Public Domain Librarian
2712 W Aberdeen Drive
Montgomery, AL 36116

Pomona Heath Users' Group
Attn: Librarian
1555 N Orange Grove Ave.
Pomona, CA 91767

Redding Heath Users' Group
Attn: Librarian
PO Box 370
Palo Cedro, CA 96073

Naval Postgraduate School Hobby Computer Club
Attn: Lt. Dave Smith
SMC 1791
Monterey, CA 93940

Tally-Heath Users' Group
Attn: P/D Librarian
PO Box 4276
Tallahassee, FL 32315

Al Lynch Heath Users' Group
Attn: Librarian
PO Box 151762
Tampa, FL 33684-1762

MGHUG Middle Georgia Heath/Zenith Users' Group
Attn: Public Domain Library
PO Box 1989
Warner Robins, GA 31099-1989

HUGMETRO
Attn: Marvin Gino, Software Librarian
124 Arlington Road
Barrington, IL 60010

St. Louis Heath Users' Group
Attn: Brad Pulaski
120 Riverwoods Cove
East Alton, IL 62024

MIHUG Michiana Heath Users' Group
Attn: Mark L. Meidel
51061 US-31 North
South Bend, IN 46637

Des Moines Area Heath Users' Group
Attn: Harold Dykens
10275 NE 23rd Avenue
Mitchellville, IA 50169

MUG Mission Users' Group
Attn: Library
PO Box 2093
Shawnee Mission, KS 66201

LSU Heath/Zenith Users' Group
Attn: Danny Reible
Louisiana State University
Department of Chemical Engineering
Baton Rouge, LA 70803

Metro Detroit Area HUG
Attn: Neil Coffin
35681 Hees
Livonia, MI 48150

SMUGH St. Paul-Minneapolis Users' Group
Attn: Public Domain Librarian
15533 Sand Hill Circle
Eden Prairie, MN 55344

Omaha Zenith/Heath Users' Group
Attn: Disk Librarian
Box 777
Bellevue, NE 68005

Buffalo Users' Group
Attn: Jack Thompson
3476 Sheridan Drive
Amherst, NY 14226-1598

Syracuse HUG
Attn: Garrett Voss
Box 6
Oran, NY 13125

CINCHBUG
Attn: Public Domain Librarian
10133 Springfield Pike
Cincinnati, OH 45215

Cleveland Heath Users' Group
Attn: Public Domain Librarian
28100 Chagrin Blvd
Cleveland, OH 44122

THUG Toledo Heath Users' Group

Attn: Dale L. Ellard Sr.
48 S Byrne Road
Toledo, OH 43615

Heath Users' Group 'RI'

Attn: Club Librarian
c/o HEC #39
558 Greenwich Avenue
Warwick, RI 02886

Capitol Heath Users' Group

Attn: Mike Supley
PO Box 2653
Fairfax, VA 22031

PNHUG Pacific Northwest Heath Users' Group

Attn: Barry Dupler
14213 SE 52nd Place
Bellevue, WA 98006

MHUG Milwaukee Heath Users' Group

Attn: Marvin B. Olson, Treasurer
9040 N. Lake Drive
Milwaukee, WI 53217

Central Wisconsin HUG

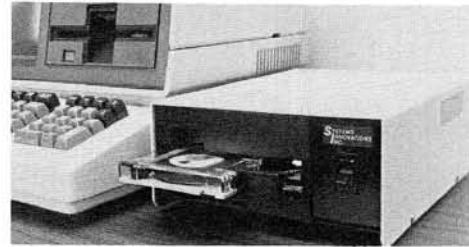
Attn: Ron Armstrong
1602 Foothill Avenue
Schofield, WI 54476

OKIHUG Okinawa Heath Users' Group

Attn: Kenneth K. Bailey Jr.
Box 38 USAFSO
APO SF 96331



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408-377-8920

EL CERRITO, CA

6000 Potrero Ave
415-236-8870

LA MESA, CA

8363 Center Dr.
619-461-0110

LOS ANGELES, CA

2309 S. Flower St.
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801-566-4626

SEATTLE, WA

505 8th Ave. N.
206-682-2172

TUKWILA, WA

15439 53rd Ave. S.
206-246-5357

VANCOUVER, WA

516 SE Chaklov Dr.
206-254-4441

Operating System Emulators

(Or, How Can I Run "CAMEL" On My HS-151?)

Pat Swayne
HUG Software Engineer

In case you haven't noticed, things have become quite complex in the world of HUG software lately. If you are a new HUG member, you may be confused about all of the HDOS, CP/M, Z-DOS and MS-DOS programs you see listed in the HUG catalog and this magazine. If your computer uses just one of those operating systems, perhaps you are wondering if any of the programs requiring the other ones will run on it.

Under ordinary conditions, a program will only run under the control of the operating system for which it was written. For example, an HDOS program will not run under CP/M or MS-DOS. With HUG operating system emulators, however, you can run many programs designed for one operating system under the control of another system. You simply copy the programs you want to run from the "foreign" operating system disks to your disks and then run them using the emulator.

The HDOS Emulator

If your operating system is CP/M and you want to run HDOS programs, you can use the HRUN program (HUG part no. 885-1223[-37]). It includes a program that can copy HDOS programs to your CP/M disks. The HDOS disks must be in the sector format used by your machine (hard or soft sector). That means soft sector if you have an H/Z-100 series computer. Nearly every HDOS program in the HUG catalog will run under HRUN. Exceptions are disk cataloging utilities, disk alteration utilities, and modem programs. There is one problem, however, many of the HUG HDOS programs require Microsoft BASIC to run, and it must be the HDOS version of Microsoft BASIC. (If you do not have the HDOS version of Microsoft BASIC, but you do have MBASIC (BASIC-80) version 5.22 as sold by Heath/Zenith, there is a version called OBASIC.COM on your distribution disk that may be able to run some of the HDOS MBASIC programs after they have been copied to CP/M disks. The programs might require some editing before they will work.)

If an HDOS program requires Benton Harbor BASIC, you can run it with HRUN, because Benton Harbor BASIC is supplied with HRUN.

The CP/M Emulators

If you use the MS-DOS or Z-DOS operating system and want to run CP/M programs, you can use either CP/EMulator (HUG part no. 885-3007-37) or CP/EMulator II (HUG part no. 885-6002-37). CP/EMulator is for use on H/Z-100 series computers, and CP/EMulator II is for all others, including the H/Z-100-PC series

(H/Z-150 or 160) and the ET/ETA-100. You can not only run many CP/M programs using CP/EMulator, but you can also run the HRUN HDOS emulator, which in turn will allow you to run many HDOS programs. There are some problems that you should be aware of, however. As stated above, HDOS MBASIC programs will require the HDOS version of Microsoft BASIC, and CP/M MBASIC programs will require the CP/M version. On an H/Z-100 series computer, the RDCPM program supplied with your operating system can copy files from any HUG soft sector CP/M disk, but with an H/Z-100-PC series computer, the RDCPM program can only copy H/Z-100 format or IBM format CP/M disks. HUG CP/M disks are in H/Z-89 format, so you will have to enlist the help of an H/Z-100 owner to copy HUG CP/M programs if you own an H/Z-100-PC. Your local Heath/Zenith Computers and Electronics store or local HUG group may be able to help you copy disks.

If you own an H/Z-100-PC series computer, an additional problem you will encounter when running CP/M program programs under the emulator is that they may run at a slower speed than normal. That is because the CP/M programs were written for an 8-bit microprocessor that your computer does not have, and the emulator must not only emulate the CP/M operating system, but the 8-bit processor as well. Owners of H/Z-100 computers will not experience this slow down with their version of the emulator, because the emulator utilizes the 8-bit processor in H/Z-100 computers to run the CP/M programs.

The Z-100 Emulator

The CP/EMulator II disk includes a program called ZEMulator, which emulates the keyboard, screen control functions, and block graphic characters of an H/Z-100 series computer on an H/Z-100-PC series computer. By itself, it will allow you to run a few of the Z-DOS programs for the H/Z-100 that would not ordinarily run on the PC series computers, such as the Fast Eddy editor (885-8029-37) or some of the utilities from disk 885-3008-37. When used with CP/EMulator II, it increases the number of HUG CP/M programs that you can run, because many of them use the H/Z-100 compatible screen and graphic functions.

If you are wondering about the "CAMEL" mentioned in the title of this article, it is a game program on HUG disk no. 885-1029[-37]. Using the CP/EMulator II and HRUN programs, you CAN run it on an HS-151 computer!



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ACCESS, H/Z-150 or 160 with MSDOS or CP/M-86 \$69.95

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Current Local HUG Clubs

(NOTE: This listing is current as of November 7, 1984. If your club is not listed or you are forming a new club and would like to have it included in our list, please send the proper information to: Heath/Zenith Users' Group, Attn: Nancy Strunk, Hilltop Road, St. Joseph, MI 49085.)

AK, Eagle River

Alaska HUG
206 E Firweed Ln, Suite 208
Anchorage, AK 99503
(907) 276-5917 Group Size 15
Contact Person: Roger Pickels or Ben Sevier
RBBS 9pm-9am Pacific time 907 276-5917

AK, Ft. Greely

Club no longer in existence

AL, Birmingham

BEARHUG (Birmingham HUG)
C/O Jack Goertz Rte 19, Box 248
Birmingham, AL 35244
(205) 991-5519 Group Size 20
Contact Person: Jack Goertz
Meeting time and place varies

AL, Huntsville

Club no longer in existence

AL, Mobile

MOBHUG (Mobile HUG)
3636 Linden Lane
Mobile, AL 36608
(205) 344-5065 Group Size 21
Contact Person: Bud Hobdy
Meet 3rd Sun at 2:00 pm

AL, Montgomery

HUG of Montgomery
2948 Willow Lane Drive
Montgomery, AL 36109
(205) 272-6964 Group Size 50+
Contact Person: Ronald Travis or John Guenther
Meet 1st Tues 7:30 pm at AF Logs Mgt Ctr

AR, Fayetteville

TRY-STATE HUG
2617 Country Way
Fayetteville, AR 72701
(501) 521-4818 Group Size

Contact Person: Gil Hoellerich
Meet 3rd Sat 1pm at NW Voc-Tech School Springdale
Group just starting, but growing!

AR, Little Rock

Little Rock H/ZUG
C/o David Schade 113 Dakota
Jacksonville, AR 72076
(501) 988-5273 Group Size 30
Contact Person: David Schade
Meet 2nd Sat 12:00 noon at AR College of Tech.
Phone for Fri meeting time & place

AZ, Phoenix

PHUG (Phoenix Heath Users' GP)
C/o Will Summers PO Box 37783
Phoenix, AZ 85069
Group Size 75
Contact Person: Will Summers, President
2nd Tues at 7:00 pm at Phoenix HEC
Membership \$5 initiation \$12/year

AZ, Sierra Vista

HuachUGa
1964 Viola Dr c/o Gerald King
Sierra Vista, AZ 85635
(602) 459-2119 Group Size 30
Contact Person: Gerald King
Meet monthly at homes of members

AZ, Tucson

SUNHUG (Tucson HUG)
7109 E Broadway
Tucson, AZ 85710
(602) 325-0096 Group Size 40
Contact Person: Allan Anderson
Meet even months first Sunday 2:00 pm Tucson HEC
Meet odd months first Tues. 7:00

CA, Anaheim

ANAHUG (Anaheim HUG)
330 E. Ball Road

Anaheim, CA 92805
(213) 330-8118 Group Size 103
Contact Person: Bob Chamberlain, Sec.
3rd Thursday 7:30 PM at HEC
BB 714 774-7860

CA, Campbell

San Jose HUG
2350 S Bascom Avenue
Campbell, CA 95008
(408) 377-8472 Group Size 70
Contact Person: Gerlene York, Sec.
Meet 1st Wed from 7-8pm at the Campbell HEC

CA, El Cerrito

ECHUG (El Cerrito HUG)
6000 Potrero Avenue
El Cerrito, CA 94530
(415) 236-8870
Contact Person: Alan Biocca
4th Wednesday at HEC

CA, El Monte

ETUG (ET/ETA 3400 Users Group)
11231 Oak Street
El Monte, CA 91731
Group Size 100
Contact Person: Charles Van Dyke
Newsletter 4 times year

CA, Fresno

FresHUG (Fresno HUG)
4833 East Santa Ana
Fresno, CA 93726
(209) 291-6258 Group Size 12
Contact Person: Harlen Collins

CA, Glendora

Southern CA H11 Users Group
430 W. Highland Avenue
Redlands, CA 92373
(714) 886-4766 Group Size 40
Contact Person: Dr. M.J. Di Girolamo
Meets at 625 E. Palm, Glendora, CA

CA, Lancaster

AVZUG (Antelope Valley ZUG)
PO Box 4619
Lancaster, CA 93535
(805) 942-7576 Group Size 25
Contact Person: Jerry Jones
Meet 4th Sat 1:00 pm at United Methodist Church
Club newly formed 10/84

CA, Los Angeles

Los Angeles HUG
4469 E Olympic Blvd
Los Angeles, CA 90023
(213) 248-1580 Group Size 90
Contact Person: Doug Holser
1st Thursday 7:00 PM at HEC
BB (213) 749-8442

CA, Los Angeles

LAETUG (Los Angeles ET3400 GP)
2309 S Flower
Los Angeles, CA 90007

(213) 749-0261 Group Size
Contact Person: Gilbert Murillo
Other contact Charlie at (213) 443-2237
Contact for meeting time and place

CA, Monterey

Naval Pstgrd Sch Hobby Com Clb
C/o Dave Smith 376 Bergin Dr #F
Monterey, CA 93940
(408) 373-4202 Group Size 175
Contact Person: Dave Smith, President

CA, Pomona

Pomona HUG
1555 N Orange Grove Avenue
Pomona, CA 91767
(714) 985-5303 Group Size 102
Contact Person: Herb Friedman, President
Meet 4th Thursday each month at 7:30p.m. at HEC
BB (714) 624-5191

CA, Redding

Redding Heath Users' Group
22526 Bridlewood Lane PO BOX 370
Palo Cedro, CA 96073
(916) 547-3461 Group Size 6
Contact Person: Dave Ballard
Meet monthly various locations

CA, Redwood City

BAHUG Bay Area HUG
2001 Middlefield Road
Redwood City, CA 94063
(415) 365-8155 Group Size 219+
Contact Person: Bob Bance, Sec.
Meet 4th Tues 7:00 pm at HEC

CA, Riverside

Tri-HUG
5705 Via Sotelo
Riverside, CA 92506
(714) 683-2929 Group Size 20
Contact Person: Kenny Adcock

CA, Sacramento

SHUG (Sacramento HUG)
1334 Silica Ave Sp 25
Sacramento, CA 95815
(916) 662-7220 Group Size 35
Contact Person: Gloria Stewart, Sec.
Meet 2nd Wed 7:30pm at Sacramento HEC
Send mail Attn: Wally Ranch

CA, San Diego

San Diego HUG
PO Box 33046
San Diego, CA 92103
(619) 484-5120 Group Size 170
Contact Person: Clem Pepper
Meet 1st Wed 7:00pm at Kearny-Mesa Rec. Ctr.
Monthly guest speakers, Newsletter

CA, Santa Maria

4168 Glenview Drive
Santa Maria, CA 93455
(805) 937-6938 Group Size 24
Contact Person: Raymond S. Isenson
Meet 1st Mon 7:00 pm at Vandenburg Air Force Base
Meet in Base Library

CA, Visalia

Visalia HUG
5230 San Joaquin Ave
Visalia, CA 93277
(209) 739-7228 Group Size 3
Contact Person: Peter Shkabara
Meeting time and place not on regular schedule

CA, Woodland Hills

LUVAHUG
22504 Ventura Blvd.
Woodland Hills, CA 91364
(213) 883-0531 Group Size 40
Contact Person: Paul S. Townsend
2nd Thursday 7:00 PM at HEC

CO, Colorado Springs

CSHUG (Colorado Springs HUG)
C/o Innovative Computer Service
125 E Arvada St Colorado Spg, CO 80906
(303) 632-3019
Contact Person: Richard Evers
Group is reforming - meeting times not set
24hr BB (303) 598-4662

CO, Denver

DENHUG (Denver HUG)
PO Box 449 Contract Station 22
Denver, CO 80221
(303) 426-7404 Group Size 160
Contact Person: Bob Eson Sec/Tres
BB (303) 423-3224 24hrs Support newsltr exchange
Meet 2nd Monday 7:00 pm at HEC

CO, Denver

ZUG (Zenith Users' Group)
AFAFC/MPA Bldg 444 Lowry AFB
Denver, CO 80279
(303) 370-7153 Group Size 75
Contact Person: S.L. Brantley, President
Meet 2nd Wed at Gilchrist Building

CO, Ft. Collins

FT.HUG (Fort Collins HUG)
3317 Buckskin Trail
Laporte, CO 80535
(303) 493-2987 Group Size 30
Contact Person: Charles McJilton
Meet 2nd Wed 7:00 pm at members homes
BB expected late 84. \$10.00 dues, NL

CT, Avon

CONNHUG (Connecticut HUG)
395 W Main Street
Avon, CT 06001
(203) 589-3824 Group Size 50+
Contact Person: BOB Conlon, President
1st Wednesday at 7:00 pm at HEC
BB (203) 674-8915

CT, Mystic

Mystic ZDS/HUG
11 Allen Street
Mystic, CT 06355
(203) 536-6953 Group Size
Contact Person: Larry Moxon
Meet last Thurs 7:00pm at 11 Allen Mystic, CT

FL, Cocoa Beach

Brevard Heath Users' Group
680 Java Road
Cocoa Beach, FL 32931
(305) 783-6352 Group Size 50
Contact Person: Gene E. Stillman
Meet last Sun of each mo at 6:00 pm
Meet at Patrick AFB, Comet Rec. Ctr.

FL, Fort Myers

SWFHUG (Southwest Florida HUG)
PO Box 05-0037
Tice, FL 33905
(813) 334-6190 Group Size 30
Contact Person: Robert Sloat
Meet 2nd Wed 8:00 pm
Meet at J. Hamilton Welch Academy

FL, Fort Walton

NWFHUG (NorthWest Florida HUG)
205 Dumaine Court
Ft Walton Bch, FL 32548
(904) 862-5588 Group Size 45
Contact Person: Lou Peca
Meetings 2nd Wed at DATATEC Inc. 7 PM

FL, Jacksonville

Jacksonville Users Group Inc.
8262 Arlington Expressway
Jacksonville, FL 32211
(904) 264-9763 Group Size 150
Contact Person: Harry Walker
Meet 1st Wed at 7:00 pm at Englewood HS Library
BB (904) 725-4995 24 hrs

FL, Miami

Miami Amateur Computer Club
C/o Heathkit Electronics Center
4705 W 16th Ave Hialeah, FL 33012
(305) 823-2280 Group Size 85
Contact Person: Charlie Robertson, Secretary
Meet 2nd Thurs each month 7:00 pm at HEC BB (305) 823-2281

FL, Orlando

HUG of Central FL Computer Sc.
121 Talmeda Trail
Maitland, FL 32751
(305) 644-6848 Group Size 11
Contact Person: Joseph Walker, President
4th Wednesday at various locations

FL, Pensacola

221 E. Government
Pensacola, FL 32501
Group Size
Contact Person: John Causey
Meet 2nd Tue each month 7:00 pm at above address
Meet at Professional Business Sys.

FL, Plantation

PHUG Plantation HUG
7173 W Broward Blvd
Plantation, FL 33317
(305) 791-7300 Group Size 50
Contact Person: Paul Price
Meet 2nd Thurs 8-10 pm at HEC
BB (305) 791-7302 24hrs on H/Z100

FL, Tallahassee

Tally HUG
C/o TACS PO Box 6716
Tallahassee, FL 32314
(904) 562-1412 Group Size 10
Contact Person: Bill Hill
Meet 3rd Thurs at 7:30pm
Meet at Godby HS, Bldg 400, Room 10

FL, Tampa

Al Lynch HUG
PO Box 151762
Tampa, FL 33684-1762
(813) 885-1923 Group Size 80
Contact Person: Jim Cottingham, Secretary
Meet 1st and 3rd Wed 7:30 pm at Tampa HEC
Dues \$10.00 year

GA, Atlanta

HUG-GA (Georgia HUG)
2775 NE Expressway Apt 0-3
Atlanta, GA 30345
(404) 325-8781 Group Size 30
Contact Person: James Afuso
Meet 2nd Mon at 7:00 pm at HEC
BB (404) 252-4345 24 hrs.

GA, Warner Robins

MGHUG Middle Georgia H/ZUG
PO Box 1989
Warner Robins, GA 31099-1989
(912) 923-1353 Group Size 30
Contact Person: Gary H. Arnett, President
Meet 3rd Tues at Nola Brantley Public Library

GA, Augusta

CSRA Computer Club
PO Box 284
Augusta, GA 30903
(803) 648-3603 Group Size 10
Contact Person: Dave Howard
Meet 4th Wed-location rotates
BB (803) 279-5392

HI, Hilo

BIHUG (Big Island HUG)
P.O. Box 4271
Hilo, HI 96720
(808) 959-8985 Group Size 20
Contact Person: R.A. Curtis
Meet 1st Thurs 7:00 pm at HELCO Conference Room
BB (808) 961-4818

HI, Honolulu

HUGH (HUG Hawaii)
1255 Nuuanu Avenue # 1405
Honolulu, HI 96817
(808) 531-8843 Group Size 87
Contact Person: Jim Branchaud, President
Meet 3rd Wed 7:00 pm at Pearl City HEC
BB (808) 487-8755

IA, Des Moines

DMA HUG (Des Moines Area HUG)
10275 NE 23rd Avenue
Mitchellville, IA 50169
(515) 967-6042 Group Size 21

Contact Person: Harold Dykens
Meet third Mon each month 7:00 pm

IL, Champaign

CCCC Champaign County Cmp Club
1004 Kinch
Urbana, IL 61801
(217) 344-2178 Group Size 150
Contact Person: Jim Mullen
Meet 1st Wed 7:30 pm at Urbana Civic Center
24hr Public Service BB (217) 359-9090

IL, Chicago

CHI-HUG (Chicago HUG)
C/o Heathkit Electronics Center
3466 W Devon Chicago, IL 60645
(312) 674-2491 Group Size 20
Contact Person: Hank LaBarbara, President
Meet 2nd Thurs 7:30pm at Chicago HEC
BB (312) 679-8980 after store hours

IL, Davis

NI-HUG Northern IL HUG
427 Lockwood Rt 1
Davis, IL 61019
(815) 248-2241 Group Size
Contact Person: Jim Isenhardt
Just starting

IL, Downers Grove

I-HUG (Illinois HUG)
6116 Lane
Downers Grove, IL 60516
(312) 971-1660 Group Size 15
Contact Person: Len Bateman
3rd Wednesday at various locations

IL, Downers Grove

HUG Metro (Local Chicago)
124 Arlington Road
Barrington, IL 60010
(312) 358-6293 Group Size 40
Contact Person: Marvin Gino, Secretary
Meet 2nd Monday of each Month 7:30pm at HEC

IL, Peoria

CIHUG (Central Illinois HUG)
2422 Willow
Pekin, IL 61554
(309) 347-3366 Group Size 18
Contact Person: John Cole, Jr.
3rd Sunday at 3 PM (Jan, Mar, May, Jul, etc.)

IL, Springfield

Springfield HUG
2621 S. College
Springfield, IL 62704
(217) 525-1878 Group Size 12
Contact Person: Jim or Bobbie Suttie
Club just forming

IN, Indianapolis

Indiana HUG (IHUG)
11425 Lakeshore Dr West
Carmel, IN 46032
(317) 852-3530 Group Size 75+
Contact Person: Charles C. Hillman Jr.
Meet 2nd Wed 7:30pm at HEC

IN, South Bend

MIHUG (Michiana HUG)
51061 US 31 North
South Bend, IN 46637
(219) 255-3923 Group Size 10
Contact Person: Mark L. Meidel
Meet 3rd Monday 7:30 pm

KS, Mission

MUG (Mission Users' Group)
5960 Lamar Avenue
Mission, KS 66202
(913) 649-0879 Group Size 80+
Contact Person: Charles L. Bennett
Meet last Sun of the month 2:00pm at Mission HEC
BB (913) 362-9583 and Newsletter

KS, Wichita

Wichita HUG
8010 E. Zimmerly
Wichita, KS 67207
(316) 794-2698 Group Size 18
Contact Person: Don Robinson
Meet 2nd Sun of each month at 2:00 pm
Phone for location of meetings

KY, Louisville

LHUG (Louisville HUG)
6802 Crossmoor Lane
Louisville, KY 40222
(502) 426-9433 Group Size
Contact Person: Ray Donner
Meet last Sun at 8:00pm at Louisville HEC

LA, Baton Rouge

LSU H/Z Users' Group
Dept of Chem Eng LA State Univ
Baton Rouge, LA 70803
(504) 388-1426 Group Size 40
Contact Person: Danny Reible, President
Meet 2nd Wed at 4:00pm Ctr for Eng & Bus Admin
\$5.00 dues/yr

LA, Lafayette

ZUG (Zenith Users' Group)
318 W. St. Mary Blvd
Lafayette, LA 70506
(318) 948-7804 Group Size 40
Contact Person: Tommy Billiodeaux
Meet every other Tues 6:00 pm
Meet at Zenith Computer Depot

LA, New Orleans

NOHUG
1900 Veterans Blvd.
Kenner, LA 70062
(504) 467-6321 Group Size 80
Contact Person: John Ligda
Meet 3rd Wed at 7:30 pm at HEC

MA, Northampton

Hampshire Computer Club
37 Drewson Drive
Northampton, MA 01060
(617) 584-6227 Group Size 80
Contact Person: George Scheurer

2nd Tuesday 7 PM at McConnel Hall Smith College
Beginners Group 1st Tuesday

MA, Peabody

HUG North Shore
12 Stanley Road
Lynnfield, MA 02940
(617) 334-5128 Group Size 60
Contact Person: Ernest Bay, President
Meet 2nd Wed at Peabody Heathkit Center
BB (617) 531-9332 24 hrs

MA, Pittsfield

BerCHUG (Berkshire County HUG)
Box 1985
Pittsfield, MA 01202
(413) 499-2903 Group Size 12
Contact Person: Paul E. Ouellette, President
Meeting place and time vary
Evening phone number (413) 443-1862

MA, Wellesley

HUG'EM
165 Worcester Ave
Wellesley, MA 02181
(617) 237-1510 Group Size 200
Contact Person: Malcolm Partridge, Director
3rd Wed 7:00 p.m. at HEC
BB (617) 237-1511 24 hrs

MD, Baltimore

Baltimore HUG
C/o Heathkit Electronics Center
1713 E Joppa Rd Baltimore, MD 21234
Group Size 50
Contact Person: James Kratzer
2nd Mon 7:00 pm at Park School, Old Court Rd
May also meet at the Heathkit Center

MI, Ann Arbor

A-SQR-HUG
895 Starwick Drive
Ann Arbor, MI 48105
(313) 769-6052 Group Size 15+
Contact Person: Leonard E Geisler
Meet last Thurs 7-9:30 pm Jun-Aug Huron High Sch
Meet Sep-May at Northside School

MI, Detroit

Metro Detroit Area HUG
35681 Hees
Livonia, MI 48150
(313) 427-3905 Group Size 65+
Contact Person: Neil Coffin-Sec, Tres, Librn
Meet 2nd Sat of alternate months at the 2 HECs
Club meets in the evening

MI, Kalamazoo

SMHUG (Southwest Michigan HUG)
1054 Blanchard SW
Wyoming, MI 49509
(616) 532-3875 Group Size 20
Contact Person: Bob Hamel
Meet 2nd Sat 10:00am Kalamazoo Val Comm College
Main building Room 4010D

MI, Saint Joseph

BLHUG (Blossomland HUG)
P.O. Box 414
Saint Joseph, MI 49085
(616) 983-0161 Group Size 50
Contact Person: Vance Fisher, Chair Person
1st Tues 7:00 pm at St Joe High Sch Cmptr Classrm
\$15.00 dues/yr Monthly Newsletter

MN, St. Paul-Minneapolis

SMUGH
15533 Sandhill Circle
Eden Prairie, MN 55344
(612) 934-0159 Group Size 150
Contact Person: Mike Warren, President
Meet last Sun 2:00 pm at Falcon Hgts Comm Ctr
BB (612) 778-1213 24 hrs

MO, St. Louis

SLHUG (St. Louis HUG)
3794 McKelvey Road
Bridgeton, MO 63044
(618) 259-8113 Group Size 120
Contact Person: Brad Pulaski, Treasurer
Meet 2nd Wed 7:30 pm at HEC

NC, Charlotte

HUG Charlotte
4415 Emory Lane
Charlotte, NC 28211
(704) 364-9667 Group Size 25
Contact Person: Mike Lafleur
Meet 1st Tues at 7:30 pm

NC, Fayetteville

Club no longer in existence

NC, Glen Alpine

Western Piedmont HUG
Rt 2, Box 371
Morganton, NC 28655
(704) 584-3684 Group Size 10
Contact Person: Bill Poteat
Meeting time and place varies
Will have BB

NC, Greensboro

Carolina HUG
2711 Azalea Drive
Greensboro, NC 27407
(919) 855-5188 Group Size 40
Contact Person: Graham Andrews
Meet 3rd Thurs at 7:30 pm at Greensboro HEC
BB (919) 292-5392 after hours

NC, Hillsborough

HUG-RTP
Rt 3, Box 39A
Hillsborough, NC 27278
Group Size
Contact Person: Joe Williams
Meeting place and time unknown

NE, Omaha

OMAHUG (Omaha HUG)
PO Box 777
Bellevue, NE 68005

(402) 291-4676 Group Size 100
Contact Person: Robert Wasilewski, President
3rd Sun odd mos. 6:30 Bellevue W HS or Offutt AFB
Meet even mos Amer Red Cross 6:30 pm

NH, Amherst

HUG of New Hampshire
61 Stearns Road
Amherst, NH 03031
(603) 673-6040 Group Size 43+
Contact Person: Dean Hayden-Macy
Meet 2nd Mon 7:30 pm at Systematic Solutions Inc.
BB (603) 673-7366 Newsletter on BB

NJ, Fairlawn

HUGNJ (HUG of New Jersey)
124 Mohawk Drive
Cranford, NJ 07016
(201) 791-6935 Group Size 155
Contact Person: Mel Beiman
BB (201) 791-6936 evenings
3rd Monday 8:00pm at HEC

NJ, Ocean

SHUG (Shore HUG)
1013 State Hwy 35
Ocean, NJ 07712
(201) 775-1231 Group Size 71
Contact Person: James J Jones Jr. (Sec)
Meet 1st Wed 7:30 p.m. at Ocean HEC
BB (201) 775-8705 24 hrs.

NM, Albuquerque

Albuquerque HUG
7909 Hendrix NE
Albuquerque, NM 87110
(505) 294-1658 Group Size 25+
Contact Person: Ken Benson
Meet 3rd Sun at members homes

NY, APO New York

BWHUG (Bentwaters HUG)
PSC Box 3703 RAF Bentwaters
APO New York, NY 09755
Group Size 6
Contact Person: TSGT Rodney Jones
Phone Autouon 225-2161 or Saxmundham 3519

NY, APO New York

BAHUG (Bad Aibling HUG)
UNIT AA Box 561
APO New York, NY 09098
Group Size 10
Contact Person: Louis J. DeMichele
Phone 08061-4519/6340 West Germany

NY, Buffalo

BUG (Buffalo Users Group)
223 Clark Road
Kenmore, NY 14223
Group Size 75
Contact Person: Bob Allen
Meet 3rd Sun 1:30 pm at Amherst HEC
Club doesn't meet July, Aug or Dec

NY, Long Island

Jeri-HUG (Jericho HUG)
5 Helen Place
Glen Cove, NY 11542
(516) 676-5616 Group Size 75
Contact Person: Alan Scott Dodge, Sec./Tres.
Meet 2nd Thurs at 8:00 pm at the Jericho HEC
Newsletter, Software library, BB

NY, North White Plains

North White Plains HUG
Elliott Ser Co 720 White Plns Rd
Scarsdale, NY 10583
Group Size 50
Contact Person: Peter Abramson
Meet 2nd Tues. ea mo 7:30 pm at HEC

NY, Potsdam

CCT HUG (Clarkston College)
Woodstock Vlg Apt 3B24
Potsdam, NY 13676
(315) 268-6455 Group Size 60
Contact Person: Marc A. Rubin
Meet monthly-call for date, time and place
Club just getting started

NY, Rochester

RH/ZUG (Rochester H/ZUG)
937 Jefferson Road
Rochester, NY 14623
(716) 424-2560 Group Size 55
Contact Person: RHUG Editor, Blanche Nail
Meet last Tuesday each month 7:30 pm at HEC
BB (716) 424-2576

NY, Schenectady

Schenectady HUG
C/o T. Budge 715 Sanders Ave.
Scotia, NY 12302
(518) 377-4273 Group Size 20
Contact Person: Walter Whipple
Meet 3rd Wed 7:30 pm at above address

NY, Syracuse

SYRHUG (Syracuse HUG)
C/o Garrett Voss Box 6
Oran, NY 13125
(315) 682-2358 Group Size 18
Contact Person: Garrett Voss
Meet 1st Wed at 7:00 pm
24 hr BB for club members

OH, Cincinnati

Cincinnati HUG
10133 Springfield Pike
Woodlawn, OH 45215
(513) 771-8850 Group Size 90
Contact Person: President
2nd Tuesday 7:00 pm at HEC, \$10.00 dues/year
Newsletter, 24hr BB (513) 772-6190

OH, Cleveland

NOHUG (Northeastern Ohio HUG)
7838 Valley Villas Dr.
Parma, OH 44130
(216) 845-6752 Group Size 54

Contact Person: Don Danko, Sec.
Meet 2nd & 4th Thurs 7pm at St. Gregorys Church

OH, Cleveland

Cleveland HUG
28100 Chagrin Blvd
Cleveland, OH 44122
(216) 291-0698 Group Size 30
Contact Person: Kent Currie
First Thurs 7:00 p.m. at HEC
BB (216) 292-7554 Non-store hrs only

OH, Columbus

Columbus HUG
2095 Mildred Road
Columbus, OH 43221
(614) 457-0419 Group Size 40
Contact Person: Jay Eikes
Meet 2nd Tues at HEC
BB (614) 475-7201 after store hours

OH, Dayton

Dayton HUG
1670 N Laddie Ct
Beaver Creek, OH 45432
(513) 426-5014 Group Size 160
Contact Person: George Elwood
Meet 1st Thurs 4:00 pm for H8/89 users
Meet 3rd Thurs for H/Z100 users 4:15

OH, Toledo

THUG (Toledo HUG)
48 S. Byrne Road
Toledo, OH 43615
(419) 729-4621 Group Size 300
Contact Person: Ryck Zarich
Meet last Sunday of the month at 7:00 p.m. at HEC
BB (419) 537-1888 24 hrs also (419) 729-4221

OH, Youngstown

YOU-HUG
1502 S. Raccoon Road
Youngstown, OH 44515
(216) 799-5028 Group Size 12
Contact Person: Mario DeSantis
Club just getting started

OK, Oklahoma City

OKC TUGS
C/o Bill Cadwallader PO Box 1171
Lawton, OK 73502
(405) 848-7593 Group Size 40
Contact Person: Bill Cadwallader
Meet 3rd Thurs 7:30 pm at HEC
BBS (405) 848-9329 24 hours

OK, Tulsa

Tulsa HUG
Rt1, Box 813
Sperry, OK 74073
Group Size 5
Contact Person: Christian Kessler
Meet 2nd Tues at members homes
Club just starting - No dues

PA, Allentown

Lehigh Valley HUG

1425 N. Broad St
Allentown, PA 18104
(215) 770-5993 Group Size 30
Contact Person: James Batug
2nd contact Bob Kendi (215) 861-3992

PA, Frazer

FUG (Frazer Users Group)
1641 Princess Anne Drive
Lancaster, PA 17601
(717) 397-3146 Group Size 80
Contact Person: Dave Hendrie, President
1st Saturday 4:00 pm at Frazer HEC
BB (215) 644-7661

PA, Harrisburg

CPaHUG (Cent Pennsylvania HUG)
7540 Mourningstar Dr %E. Asper
Harrisburg, PA 17112
(717) 545-2764 Group Size 7
Contact Person: Ernest E. Asper
Meeting time & place varies
Club just getting started

PA, Philadelphia

Philadelphia Heath Users' Group
6318 Roosevelt Blvd
Philadelphia, PA 19149
(215) 748-1439 Group Size 75
Contact Person: Colin C. McGowan
Meet 2nd Wed. each month 7:30 p.m. at HEC
RBBS (phone # to be announced)

PA, Pittsburgh

Pittsburg HUG
3482 William Penn Highway
Pittsburgh, PA 15235
(412) 793-6781 Group Size 35
Contact Person: John C. Schultz, President
Meet 3rd Tues at 7:00 pm at HEC
BB (412) 824-3565 after store hours

RI, Warwick

HUG-'RI' (HUG of Rhode Island)
558 Greenwich Avenue
Warwick, RI 02886
(401) 738-5150 Group Size 150
Contact Person: Dave Haskell or Bill Rothman
2nd Wed 8:00 pm at HEC

SD, Sioux Falls

Sioux Falls Area HUG
2001 S Spring Avenue
Sioux Falls, SD 57105-2820
(605) 336-8629 Group Size 20
Contact Person: Lorin Dobson
Meet once a month on Sat-time and place varies
BB (605) 336-3935 24 hrs

TN, Knoxville

ETCHUG East Tenn Central HUG
7608 Luscombe Dr
Knoxville, TN 37919
(615) 690-3864 Group Size 20
Contact Person: Walter M. Scott III
Meet 3rd Thurs 7:30 pm
Meet at John XXIII Center

TN, Memphis

Memphis HUG
6874 Kirby Brooks Drive
Memphis, TN 38115
(901) 362-8860 Group Size 16
Contact Person: Morris Proctor
Meet 2nd Tues 7:00 pm at The Computer Center

TN, Nashville

Mi Te HUG (Middle Tenn HUG)
C/o Radio Ser Ctr 116 17th Ave S
Nashville, TN 37203
(615) 242-0556 Group Size
Contact Person: Charlie Wolf
Meet 2nd Monday 6:30 pm at Radio Service Center

TX, Austin

AHUG Austin Heath Users Group
4206 Tamarack Trail
Austin, TX 78727
(512) 255-0376 Group Size 60
Contact Person: George Koehler
Meet 1st Thurs 8:00pm Univ. of TX \$10.00/yr dues
Meet at Robert Lee Moore Hall

TX, Dallas

DFW HUG (Dallas-Fort Worth)
2715 Ross Avenue
Dallas, TX 75201
(214) 826-4053 Group Size 70
Contact Person: Henry Gardiner, President
1st Thursday and 15 days later (Wed.) at 7:30 PM
At HEC BB (214) 742-1380

TX, El Paso

EPHUG (El Paso HUG)
8701 Norton #11B
El Paso, TX 79904
(915) 755-2703 Group Size 25
Contact Person: Rick Peterson
Meet 3rd Wed at 7:00 pm at 444 Executive Ctr Blvd
BB (915) 544-1432 24 hr 300/1200 baud

TX, Ft. Worth

FWHUG
6825A Greenoakes Road
Ft. Worth, TX 76116
(817) 737-8822 Group Size 40
Contact Person: Larry Lands
Meet 4th Thurs 7:30 pm at HEC

TX, Houston

HUG-H
7798 Braniff
Houston, TX 77061
(713) 644-5689 Group Size 75
Contact Person: Tom McCormick, President

TX, Houston

NHHUG (North Houston HUG)
20207 Cotton Glade
Humble, TX 77338
Group Size 50+
Contact Person: Barbara Gabner, Secretary
Meet 3rd Tues 7:30 at HEC
24 hour BB (713) 583-1287

TX, San Antonio

San Antonio (SAHUG)
7111 Blanco Road
San Antonio, TX 78216
(512) 341-8876 Group Size 65
Contact Person: Tom Schneider
First Tuesday at HEC, 7:30 PM

TX, Wichita Falls

NORTEX HUG (N. Texas S. Okla)
2413 Kemp Blvd in Office World
Wichita Falls, TX 76309
(817) 322-1007 Group Size 24
Contact Person: Alan D. Martin
Meet third Sat 9 am at above address

UT, Castle Dale

Castle Mesa Computer Group
670 N 90 E Box 587
Castle Dale, UT 84513
(801) 381-5173 Group Size 10
Contact Person: Doug Sorensen
Meet 2nd Mon 5:30 pm at above address

UT, Midvale

UHUG (Utah HUG)
58 E. 7200 South
Midvale, UT 84047
(801) 262-8810 Group Size 130
Contact Person: Wayne Newland
2nd Wednesday 7:00 PM at HEC
BB (801) 566-4551

VA, Christiansburg

New River Valley HUG
C/o CCS Data Sta. 8 Roanoke St
Christiansburg, VA 24073
703 382-4234 Group Size 42
Contact Person: Ted Fleshman
Meet 1st Thurs 7:30 pm Christiansburg High School

VA, Fairfax

CHUG (Capital HUG)
P.O. Box 2653
Fairfax, VA 22031
(703) 360-3812 Group Size 1000
Contact Person: John Roach
Meet 3rd Mon 7:00 pm at Fairfax High School
Large Software Library (150+ disks)

VA, Richmond

RHUG (Richmond HUG)
4302 Smithdeal Avenue
Richmond, VA 23225
(804) 231-6759 Group Size 20+
Contact Person: Carlos Chafin
Meet 3rd Mon 7:30 pm
Meet at Alpha Audio 2049 W Broad

VA, Virginia Beach

THUG (Tidewater HUG)
1055 Independence Blvd.
Virginia Beach, VA 23455
(804) 464-4156 Group Size 90
Contact Person: Alison Phillips
1st & 3rd Tues 7:30 pm at HEC

WA, Bellevue

PNHUG (Pacific Northwest HUG)
14213 SE 52nd Place
Bellevue, WA 98006
(206) 643-6651 Group Size 250
Contact Person: Barry Dupler
Meet 2nd Thurs odd months Tukwila HEC (both 7:00)
Meet 2nd Mon even months Seattle HEC

WA, Spokane

SPOHUG (Spokane HUG)
S. 3810 Havana
Spokane, WA 99204
(509) 448-9727 Group Size 25
Contact Person: Charles Ballinger/Ron Hodges
Meet last Thurs 7-9pm at Acme Business Computers
Alternate phone # (509) 448-5009

WA, Vancouver

Portland-Vancouver HUG
516 SE Chkalov Drive
Vancouver, WA 98663
(206) 254-4441 Group Size 30
Contact Person: Dan Heims
1st Thursday at 7:30 PM at HEC
Portland OR and Vancouver Area

WA, Walla Walla

HUG/ZUG of Walla Walla
112 N. Division
Walla Walla, WA 99362
(509) 525-8404 Group Size 8+
Contact Person: Pat Hanna
Meet 2nd & 4th Tues 8pm at 112 N Division
2nd cont Pete Parcels (509) 527-5267

WI, Madison

Madison Area HUG
3519 Tally Ho Lane
Shorewood Hills, WI 53705
(608) 233-4588 Group Size 25
Contact Person: Thomas Gans
Meet 1st Wed 7:30pm at Wisconsin Union South

WI, Madison

UWHUG (Univ of Wisconsin HUG)
109 N Few
Madison, WI 53703
(608) 257-0373 Group Size 30
Contact Person: Walter Burt
Meet 1st Wed 7:30pm at Univ WI Union South
Club newly formed 12/83

WI, Milwaukee

MHUG Milwaukee Heath Users' Gp
9040 N. Lake Drive
Milwaukee, WI 53217
(414) 352-3346 Group Size 80
Contact Person: Marvin Olson, Tres.
Meet 3rd Sat 2:00pm at Milw Sch of Eng Rm L-100

WI, Mosinee

CWHUG-Central Wisconsin HUG
2294 CTH DB
Mosinee, WI 54455
(715) 693-3429 Group Size 10
Contact Person: Edward Ignace Porwit

Meet las Sun 3:00pm in Ed's livingroom
BB coming soon

CANADA, Calgary, ALBERTA

HUG (Heath Users of Canada)
101 5809 Macleod Trail South
Calgary, Alberta T2H 0J9 CANADA
(403) 252-2688
Contact Person: Gary Selman

CANADA, Ottawa, ONTARIO

HUG 'O' (HUG Ottawa)
866 Merivale Road
Ottawa, ONTARIO K1Z 5Z6 CANADA
(613) 728-3731 Group Size 30
Contact Person: Brian Fultz, President
2nd Wednesday 8:00 PM at HEC

CANADA, Toronto, ONTARIO

THUG (Toronto and area HUG)
54 Camrose Crescent
Scarborough, Ont. CANADA M1L 2B7
(416) 273-3797 Group Size 20
Contact Person: Stephen Dugas, President
Meet 2nd Thurs 7:30pm - meeting place varies
BB (416) 755-8823

CANADA, Vancouver BC

VANHUG (Vancouver HUG)
3058 Kingsway Attn Robert Hudak
Vancouver BC, CANADA V5R 517
(604) 437-7626 Group Size 50+
Contact Person: Robert J Hudak
Meet last Tues 7:30 pm at HEC

CANADA, Vancouver, BC

Vancouver Island HUG
Suite 304 560 Johnson St
Victoria, BC CANADA V8W 3C6
(604) 384-3134 Group Size 9
Contact Person: Greg Greene, President
Meet 2nd Wed 7:30 pm at Dogwood Software

ENGLAND, Gloucester

United Kingdom Users' Group
ZDS Limited Bristol Road
Gloucester, GL2 6EE, ENGLAND
0452-29451 Group Size 80
Contact Person: Philip Meek
Group does not hold regular meetings

FRANCE, Paris

GUFIH (French HUG)
37 Boulevard Saint-Jacques
75014 Paris, FRANCE
1 565-10-11 Group Size 350
Contact Person: Dr. Bernard Pidoux
Meet every WED at 7:00 pm at club address
CBBS 1 565-10-09 Monthly newsletter

HOLLAND, Apeldorn

See NETHERLANDS club listing

HONG KONG

Computdragon
273 Prince Edward Road
11/C Kowloon, HONG KONG
3-711-8904

Contact Person: K.T. Lee
Club just organizing

KOREA, Yongsan, Seoul

K-HUG
HHC 1st SIG BDE c/o LTC Dismukes
APO San Fran, CA 96301
293-4132 Group Size 6
Contact Person: LTC William Dismukes
Just getting started-monthly not established yet.

NETHERLANDS

Dutch Heath Users' Group
NIEUWE KERKHOF 16
9712 PV Groningen, NETHERLANDS
050-180203 Group Size 120
Contact Person: Evert Jan Stokking
Meet quarterly at Amersfoort

NEW ZEALAND

HUG New Zealand
94 Dowse Dr
Maungaraki, Lower Hutt, NEW ZEALAND
695-924 Group Size 1
Contact Person: Mr. R. Siebers
Would appreciate New ZInd REMark readers contact
Eager to expand group

OKINAWA

OKIHUG (Okinawa Users Group)
Kenneth K Bailey, Jr Box 38 USAFSO
APO San Francisco, CA 96331
Group Size 22
Contact Person: Kenneth K Bailey Jr, President
Meet 2nd Fri at 7:00 pm at American Video Office
Alternate phone # 631-4244

PANAMA CANAL

Club no longer in existence

PUERTO RICO, Rosario

PRHUG (Puerto Rico HUG)
Calle La Paz #706, Miramar
Santurce, PR 00907
(809) 722-1612 Group Size 30
Contact Person: Joseph Gonzalez
Meet 2nd Sunday of odd numbered months

W. GERMANY, Frankfurt

Frankfurt HUG
American Consulate General FRDCO
APO NY, NY 09757
566187 Group Size 3
Contact Person: Carl Lovett

W. GERMANY, Sprendlingen

Contact German HEATHKIT store

The Z-100 PC Personal Computer Not Just Another PC-Compatible!

Mark J. Foster
Senior Systems Engineer
Zenith Data Systems Corporation

Even before the IBM Personal Computer was announced, there was no doubt that it would have an important effect on the entire microcomputer industry. Now that the PC market has matured, this effect has become so widespread that reviews of a new machine always cite the presence or lack of PC compatibility as an important factor in its potential success. With PC compatibility a virtual necessity, however, it may appear that there is no room for innovation - that the IBM 'standard' has boxed in the system developer. The new Zenith Z-100 PC series represents a challenge to that theme, by combining IBM-PC compatibility with significant new features and enhancements.

Zenith, while a late entrant into the PC-compatible market, had the advantage of hindsight by being able to get feedback from users as to what features they need in a personal/business computer. By incorporating these changes into the Z-100 PC, they have created a machine which is not only highly compatible with the IBM-PC, but one which is superior to other IBM-compatible machines. This article will present some of the special features of the Z-100 PC, how they were created, and why this machine better meets the needs of many computer users. This article also inaugurates a new column, which starting next month will provide an in-depth look at many of the technical aspects of the Z-100 PCs.

Overview

Throughout the development of the Z-100 PC series, the prime focus was on creating a machine which would stand out from the rest of the PC-compatible throng. With dozens of machines claiming compatibility, how could the Zenith computer hope to succeed? The Zenith Data Systems engineers were especially concerned. Zenith computers have traditionally been designed with many special features. The goal of a better, but compatible, machine provided a direction: achieving this goal was quite another story. After many man-years of development, the Z-100 PC fits the design goals very well, by providing a host of unique capabilities and features without sacrificing compatibility. Some of these features include:

- Small footprint (it doesn't take up much space)
- Quiet operation
- Improved video, with a faster, flicker-free display.
- Improved detached keyboard, with a double-width shift key, and an L-shaped Return key.
- Extensive diagnostics.
- Wide range of options, including a Winchester hard disk and a local-area network.
- Built-in debugger/monitor for programmers.

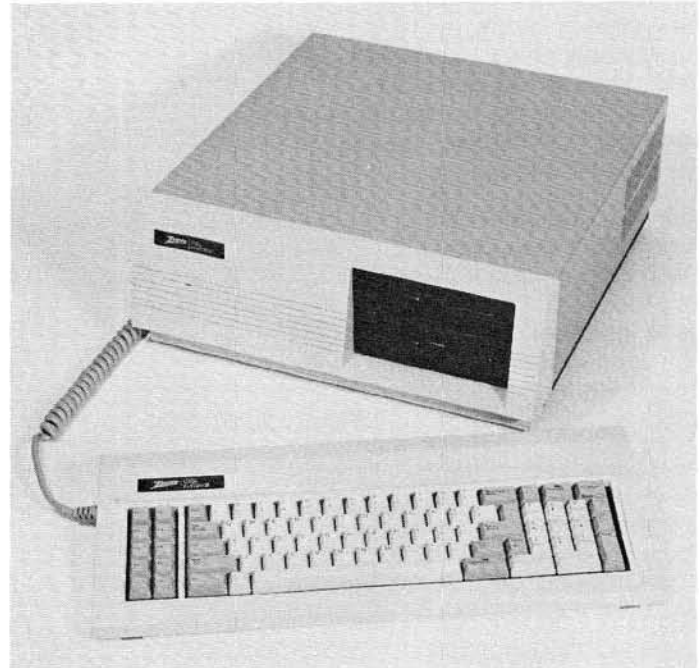


Photo 1

The Z-100 PC, as shown in Photo 1, is actually a family of machines, each of which is compatible with the IBM-PC. In the family are both a small desktop unit, the Z-150 (which is almost four inches narrower than the IBM machine), and a transportable unit, the Z-160, with a built-in 9" Zenith-patented Chromagold II amber phosphor monitor. The standard Z-100 PC encompasses a popular configuration for business machines:

- 8088 CPU (with a socket for an 8087 floating point coprocessor)
- 128K parity-checked RAM (expandable to 320K on-board; assembled double-drive units come with 320K already installed). Expandable via a second memory board to 640K.
- One IBM-compatible asynchronous serial port
- One IBM-compatible parallel printer port
- Color video board, with graphics capability
- 360 KByte 5-1/4" floppy disk drive
- 4 empty IBM-compatible expansion slots
- Optional integral second floppy disk drive, or a 10 MByte Winchester hard disk, compatible with the IBM-PC/XT

By providing the most commonly added features in the basic config-

uration, more expansion slots are available for future growth. The availability of four open slots in the Z-100 PCs give the machine powerful expansion capability. In addition, the Z-150 and Z-160 use a 162 watt power supply (2-1/2 times larger than the IBM-PC) so that ample power is available for add-on expansion cards. In fact, the standard machine can be easily upgraded to include a hard disk drive.

The Z-150 and Z-160 are also quiet! Careful attention to design has resulted in a Winchester hard-disk system which is much quieter than the IBM-PC/XT. At the same time, the Z-100 PC series uses a very effective cooling scheme which increases the reliability of the entire computer.

Diagnostics

The Z-150/160 series use specially designed diagnostics tests which run in only three to four seconds. These tests help to ensure that the machine is working correctly. Other machines have similar tests, but the Z-150's highly optimized diagnostics won't get in the way - they are completed by the time the monitor warms up!

The diagnostics philosophy used in the Z-100 PC is to test only what is needed. It is obviously not possible to test a great deal of system memory in just four seconds, so the approach Zenith uses is to test only the first 64K and the last 64K of RAM - enough to boot up the MS-DOS operating system and the disk-based diagnostics supplied by Zenith. Above and beyond the power-up diagnostics are the menu-driven diagnostics; which are run by typing "TEST" when in the ROM (Read-Only Memory) based debugger (see text box). The menu-driven diagnostics test all of system memory, using a very thorough testing algorithm. In addition, these diagnostics loop until either an error occurs, or the user aborts the test. With this tool, spurious or random errors can also be found.

Another important feature of the Z-100 PC's diagnostics is that they are both easy-to-use and informative. For example, if the keyboard isn't plugged in, the machine will display:

```
+++ ERROR: Invalid/No keyboard code received! +++
```

Memory errors, for example, are identified at the chip level, so that even novices can actually repair one of the most common causes of computer failure. As an example, a bad RAM chip might cause:

```
+++ ERROR: RAM Failure! Address 1000:0C8F, Bit 4, Chip U438
```

...to be displayed - just replace the defective part and the problem is fixed! If the user can't fix the problem, service is available from Zenith dealers and distributors.

As seen in Photo 2, the standard Z-100 PC's electronics are contained on only four boards, with a fifth board (the bus board), which they plug into. The four boards, from left to right, are:

- Memory board, with the parallel port.
- CPU board, with ROM, timers, interrupt controller, keyboard interface, and sound interface.
- Video board
- Floppy disk controller, with the serial ports.

Notice that there are six LEDs (Light Emitting Diodes - small lamps) on the CPU board. These LEDs help in identifying diagnostics failures, even if an error message can't be displayed on the video monitor. In addition, there are five LEDs mounted on the bus board - four show the presence of each of the power-supply lines, while the fifth is a 'power-OK' signal, which shows not only that all of the power-supplies are on, but that each is operating within specification!

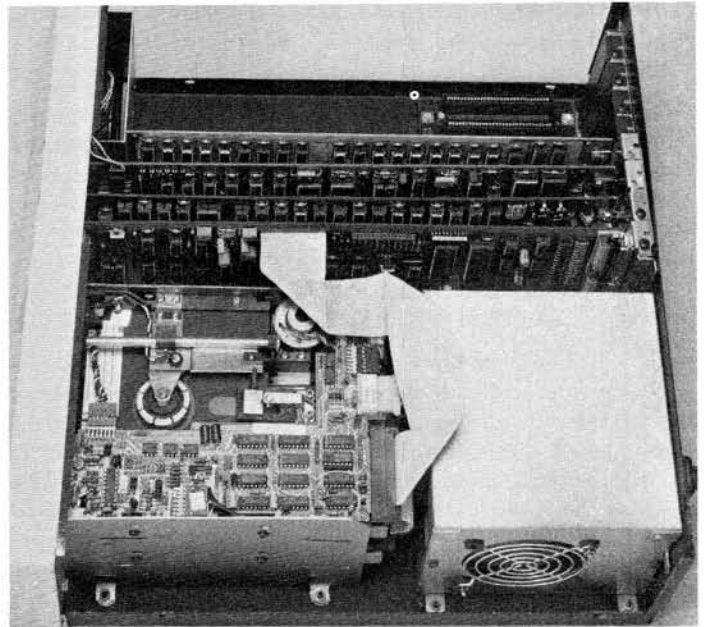


Photo 2

Since it uses a modular design scheme, the Z-100 PC series is very simple to service. Note that each of the components of the computer is easily accessible, and can be removed individually (with the exception of the bus board, which contains only power-supply status LEDs, and capacitors for power filtering). In fact, it takes less than 10 minutes to replace any module in the computer. Many other manufacturers use a large system board (also known as a motherboard), to make their computers less expensive. Unfortunately, this reduces modularity and is more difficult to service. Since the Zenith computer is easier to fix, the machine will be 'down' less, and therefore cheaper to operate.

Keyboard

The keyboard on the Z-100 PC has many advantages over other IBM-compatible computer systems. By far the most controversial design aspect of the IBM-PC is its keyboard. The unusual layout of this keyboard has created a flourishing market for IBM-compatible replacement keyboards. With the Z-100 PC, Zenith decided to improve upon other designs by creating a totally new keyboard, rather than using an existing replacement unit. The keyboard on the Z-100 PC, as shown in Photo 3, is similar to that used in many office typewriters, while retaining all of the keys and features of the PC keyboard.

The design model for the keyboard naturally began with that used on the IBM-PC; the goal was to improve as much as possible while making only minimal changes. The most obvious changes include an L-shaped return key, a double-width shift key (with the backslash key moved down), full-width special-function keys, an additional

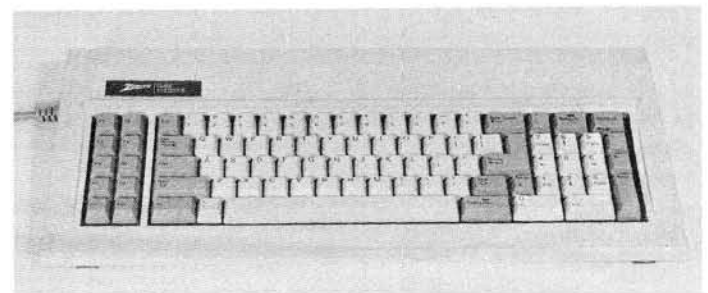


Photo 3

Enter key on the numeric keypad, and the addition of LEDs to indicate the status of the NumLck (Number Lock) and Caps Lock (Capitals Lock) keys.

Other unique features have been added to the Z-100 PC's keyboard; the keys are of a different type than those used in the IBM-PC. Rather than relying on a mechanical key 'clack', the Z-100 PC uses quiet positive tactile feedback, with an electronic key click. This electronic key click is an advantage in two ways; first of all, it can be disabled by pressing a simple key sequence (whereas you can't turn off a mechanical key click), and second, the key click is activated as keys repeat, so that there is feedback for auto-repeat, as well.

Another enhancement in the keyboard is that the auto-repeat rate speeds up as a key is held down (this means that it is possible to move the cursor much more rapidly in a text editor, for instance). Like the IBM-PC, the Z-100 PC has an IBM compatible type-ahead buffer. In addition, Zenith has added a special key sequence which will empty this buffer (ie, if you make a typing error). With many other computers, it is necessary to abort the program which is currently running to do this! Also, the standard compatible keyboard buffer is rather small (15 characters), so the Z-100 PC has the additional capability of a user-defined keyboard buffer (up to 32K characters long, and it can be located anywhere in system memory).

Video Display

For those who aren't familiar with the video display in the IBM-PC, there are five standard video modes:

- 40 characters by 25 lines, 16 foreground, 8 background colors, including the ability to flash (blink) text.
- 80 characters by 25 lines, 16 foreground, 8 background colors, with flash.
- 320 by 200 pixel (dot) graphics mode, with 4 colors/pixel.
- 640 by 200 pixel (dot) graphics mode, in black and white.
- 80 characters by 25 lines, using a high-resolution monochrome display board, such as the IBM Monochrome Display Adapter.

Each of these video modes is supported in the Z-100 PC in an absolutely compatible manner, including the special palette used in 320 by 200 pixel graphics mode, which allows you to use either of two different sets of four colors. Beyond compatibility with both the monochrome and color graphics boards, the Z-150/160's video display presents a number of additional features, with improved flexibility over other PC-compatibles.

During the development of the Z-100 PC, the video display received more attention than any other single area; the net result is a marked increase in usability and performance. The reason why so much attention was focused on the video display is that the speed and quality of a computer's display are critical, since so much time is spent looking at it. By concentrating on improving this aspect of the computer, the Z-150 and Z-160 have been made quite pleasant to use.

A side-by-side comparison of the Z-100 PC with other machines points out some immediate advantages. First of all, unlike many other computer systems, the Z-100 PC display does not flash or flicker - the display is much clearer. This has been achieved by the use of special circuitry which prevents display interference when the video memory is read or written. In addition, the Z-100 PC's display is very fast. For example, the Z-100 PC's video speed is between 20% and 250% faster than the IBM-PC, even though the display modes are identical (this speed increase was obtained by writing special-

case routines which are optimized for the most frequently used video modes).

Numbers like 20-250% can, however, be a little misleading. In fact, the machine is actually capable of much higher video performance (up to 650% faster than the IBM-PC - much faster than any of the other IBM-PC compatible machines we have tested), through the use of new 'scroll modes.' The IBM-PC has only one scroll mode - known as software scrolling. This means that as information rolls off the screen it is actually being moved around in video memory, which is simple but limited in performance. Normally, of course, the Z-100 PC also uses this technique (for compatibility) to scroll information around on the screen, though it is much faster than most other PC-compatibles. When a program needs very high performance it can easily select 'hardware scroll mode.' This new mode looks just like software scroll mode to the user, except that it is much faster - up to five times faster. There are some limitations to this mode, however. When operating in hardware scroll mode, some applications programs won't address the screen correctly. Therefore, the Z-100 PC includes several ways of easily switching between the different scroll modes.

The last scroll mode in the Z-100 PC is 'smooth' or 'soft' scrolling. In this mode, characters do not jump from one line to the next, but instead move smoothly from one line to another. Since smooth scrolling is much easier to read than the other scroll modes, it is ideal for viewing the contents of disk files, examining directories, etc. As with hardware scroll mode, smooth scroll mode may not be compatible with all applications programs - again, it is quite simple to flip back and forth between normal compatible scroll mode, and the enhanced scroll modes. It is important to note that not all applications programs use the system ROM to display information - those that don't may not experience the performance advantage noted above - but those that do will run faster.

Besides improved performance, the Z-100 PC includes several other improvements in its video display. In text mode, for instance, it is possible to have up to four different character sets in the machine - selection of each of the different 'fonts,' as they are known, takes only a single output instruction. This feature is ideal for multi-lingual or scientific applications which may require a large variety of displayed characters. Also, the Z-150 and Z-160 use a unique video address mapping scheme which permits all four of the video pages which can be displayed in 80 by 25 text mode to be individually hardware scrolled!

The last important feature of the Z-100 PC's video display is its ability to display all information from the video display card on a monochrome monitor. Rather than the solid objects displayed by many other machines, the Z-100 PCs display colored objects in 16 shades of gray on a monochrome monitor. This is an especially valuable feature, since it means that you don't have to buy a high-resolution RGB (Red-Green-Blue) color monitor to take advantage of color graphics displays unless you actually need to see the colors directly.

Serial/Parallel I/O

As mentioned above, the Z-100 PC is supplied with two IBM-compatible serial ports, as well as an IBM-compatible parallel printer port. To configure these ports for use with different peripherals, a simple menu-driven program called CONFIGUR is supplied with the machine. Most users prefer CONFIGUR's easily understood menu-driven format to the 'command codes' used by many other computer systems. By using CONFIGUR, owners of a Z-100 PC just select from a list of on-screen choices, which includes the most flexible hand-shaking scheme available on any IBM-compatible machine. In addi-

tion, to simplify the process, pre-defined configurations are included for a number of popular printers and modems.

Disk Drives

The disk drives used in the Z-100 PC are double-sided, double-density minifloppy drives, capable of recording up to 360K bytes per drive. These drives use the same disk format as the IBM-PC and PC/XT, and so can directly read and write disks from either of these machines.

For larger tasks, the Z-150 is available with an optional Winchester hard disk (compatible with the IBM-PC/XT), which expands the storage capacity to more than 10 Megabytes per drive. Many users like to share this large storage space between multiple operating systems (for instance, between MS-DOS and Concurrent CP/M), so the Winchester disk has the capability of being sub-divided into separate 'partitions' (unique areas which can be addressed individually). Then, any time the machine is booted, a single command will allow any of the operating systems on the disk to be executed. Most other manufacturers' machines are much more limited, since it is usually necessary to run a special program each time you want to use a different operating system. Even though the Z-150 allows you to enter a specific operating system, it is not necessary to - it is still possible to have a frequently used operating system boot up automatically whenever the Z-150 is turned on.

Another nice feature is that a utility called RDCPM is supplied with both the Z-150 and the Z-160. This utility allows you to read either IBM or Zenith CP/M files onto your MS-DOS disks.

Compatibility

The first question most people ask when presented with any machine claiming compatibility is "How compatible is it?" Zenith can safely say that the Z-100 PC is one of the most (if not the most) PC-compatible computer systems on the market. Since compatibility is an elusive, changing task, Zenith has an ongoing test program which continues to refine our definition of compatibility on a continuing basis. The goal of the program is to purchase IBM-compatible software and expansion products to determine whether or not they are compatible with the Z-100 PC. This list, currently over 300 programs long, continues to grow; when a product is found which doesn't run, the engineers will work to make it run. In fact, out of the 300 programs that have been tested so far, only a few will not work correctly, usually due to a reference to the BASIC contained in the IBM-PC's ROM (the Z-150 uses a disk-based BASIC which is compatible with IBM's BASICA). Since the Z-100 PC is very compatible with the IBM-PC, users have access to a huge (and growing) base of third-party applications software.

One major advantage Zenith has over many other vendors is that many add-on products are available in addition to the base computer system. The Z-100 PC is supplied with MS-DOS Version 1.25, as well as MS-DOS Version 2.11, for compatibility with existing software. In addition, GW-BASIC, Pascal and Fortran (with 8087 support), and other languages are available, as well as a special package of system utilities called the MS-DOS Programmer's Toolkit, which includes an extremely powerful full-screen editor. For business users, Zenith sells such products as Microsoft WORD and the BPI and PeachTree accounting packages, as well as the 3COM Ethernet-based local area network. Zenith, unlike most other computer vendors, has tailored each of these products specifically for its machines by adding special features and improving documentation (for example, only Zenith's version of Microsoft WORD can be used on the IBM Monochrome display adapter).

Other advantages offered by Zenith include a nationwide marketing, distribution and service network, along with the assurance of support implied by the Zenith name.

Summary

In summary, the Z-100 PC series is quite different from any other machine claiming PC compatibility. By combining compatibility with improved performance, additional features and ease-of-use, it has already become Zenith's most popular computer ever. It is significant that several major OEMs (Original Equipment Manufacturers) have selected the Z-100 PC series for use in their own products. Significant, because these companies have carefully examined many other PC-compatible computers - their results show that the Z-100 PC series is indeed a better machine.

TEXT BOX

The Z-100 PC's Monitor/Debugger

One especially powerful feature of the Z-100 PC is its monitor/debugger, which is contained in the ROM built-in to the machine. This flexible tool makes the Z-100 PC much more useful in a programming environment. The commands built-in to the debugger allow:

- Obtaining Help on debugger usage
- Generating a color bar for monitor setup
- Examining/Changing the contents of memory
- Examining/Changing the CPU registers
- Performing I/O to/from I/O ports
- Single-Stepping user programs
- **Disassembling** user programs
- Executing user programs, with optional breakpoints
- Filling memory with a constant
- Searching memory for a constant
- Moving blocks of memory
- Performing Hex arithmetic
- Setting the video and scroll modes
- Booting an operating system from any disk drive
- Testing various components of the system

The commands are identical to those used by Microsoft's disk-based DEBUG, so no re-training is necessary (particularly with the debugger's Help message). The Z-100 PC's debugger, however, adds additional flexibility beyond the capabilities of DEBUG.

To execute the debugger, just type Ctrl-Alt-Return when running a program. The debugger then 'loads' your program, and displays the contents of the CPU registers and the currently executing instruction. At this point, any of the usual DEBUG facilities are available, including single-stepping, setting breakpoints, etc. Beyond these capabilities, you can change between the different video and scroll modes (to go into smooth scroll mode, or to change back and forth between the monochrome and color cards, for instance). Once debugging is completed, just type G (for GO) and the program will pick up right where it left off!

One major advantage is that the Z-150's debugger is always available. It allows you to debug programs which might work correctly under DEBUG, but will not run properly otherwise. In such cases, it is simple to include an 'INT 3' instruction in your program - this will automatically transfer control to the debugger when it is executed.

Another feature provided by the monitor/debugger solves one of the most annoying problems that programmers who use DEBUG ever have to deal with. If you have ever single-stepped through a program only to have the machine lock up, you've experienced this problem. Surprisingly, the lock-up is actually caused by a design flaw within

the 8088 processor chip which causes single-stepping to continue into an interrupt service routine. Since the interrupt does not run to completion, no further interrupts are recognized, and the computer will no longer respond to the keyboard. The Z-100 PC's monitor/debugger bypasses this problem by simulating execution of some of the 8088 instructions in software - you can single-step to your heart's content.

Other useful features are:

- Register names can be used in place of any number
- Block lengths of a full 64K are permitted
- Pause and Break operate only at the end of each line
- Much faster operation - single-stepping, for example, is up to five times faster than when using DEBUG!



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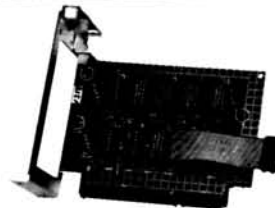
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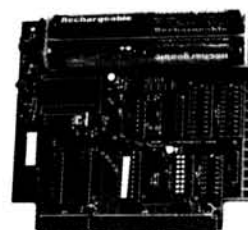
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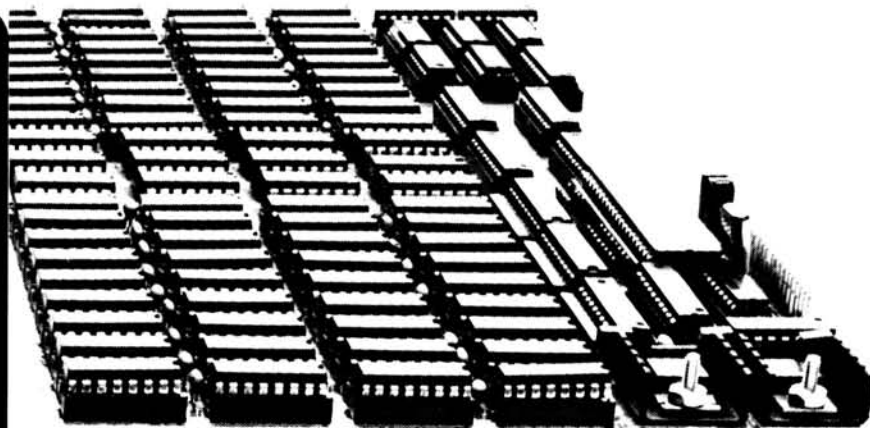
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HUG Price List

The following HUG Price List contains a list of all products not included in the HUG Software Catalog. For a detailed abstract of these products, refer to the issue of REMark specified.

Part Number	Description of Product	Selling Price	Vol. Issue	Part Number	Description of Product	Selling Price	Vol. Issue	Part Number	Description of Product	Selling Price	Vol. Issue
HDOS HARDCOPY SOFTWARE											
885-1008	Volume I Documentation	9.00		885-1082	Programs for Printers H8/89	20.00					
885-1013	Volume II Documentation	12.00		885-1083-[37]	Disk XVI Misc H8/89	20.00	11	CPM			
885-1015	Volume III Documentation	9.00		885-1089-[37]	Disk XVII Misc H8/89	20.00	20	885-1208-[37]	CP/M Fig-Forth H8/89 2 Disks	40.00	18
885-1037	Volume IV Documentation	12.00	8	885-1090-[37]	Disk XIX Utilities H8/89	20.00	22	885-1215-[37]	CP/M BASIC-E	20.00	26
885-1058	Volume V Documentation	12.00		885-1092-[37]	Relocating Debug Tool H8/89	30.00	14	BUSINESS, FINANCE AND EDUCATION			
MISCELLANEOUS HDOS COLLECTIONS								HDOS			
885-1032	Disk V H8/89	18.00	8	885-1098	H8 Color Graphics ASM	20.00	19	885-1047	Stocks H8/89 Disk	18.00	
885-1044-[37]	Disk VI H8/89	18.00		885-1099	H8 Color Graphics Tiny PASCAL	20.00	19	885-1048	Personal Account H8/89 Disk	18.00	
885-1064-[37]	Disk IX H8/89 Disk	18.00		885-1105	HDOS Device Drivers H8/89	20.00	24	885-1049	Income Tax Records H8/89 Disk	18.00	
885-1066-[37]	Disk X H8/89	18.00	10	885-1116	HDOS Z80 Debugging Tool	20.00	27	885-1055-[37]	MBASIC Inventory Disk H8/89	30.00	
885-1069	Disk XIII Misc H8/89	18.00		885-1119-[37]	BHBASIC Support	20.00	29	885-1056	MBASIC Mail List	30.00	
GAMES								885-1070	Disk XIV Home Fin H8/89	18.00	
HDOS				885-1120-[37]	HDOS 'WHEW' Utilities	20.00	33	885-1071-[37]	MBASIC SmbPkg H8/H19/H89	75.00	17
885-1010	Adventure Disk H8/89	10.00	4	885-1121	HDOS Hard Sec Sup Pkg 2 disks	30.00	37	885-1091-[37]	Grade/Score Keeping H8/89	30.00	14
885-1029-[37]	Disk II Games 1 H8/89	18.00	8	885-1123	XMET Robot \$ Cross Assembler	20.00	40	885-1097-[37]	MBASIC Quiz Disk H8/89	20.00	18
885-1030-[37]	Disk III Games 2 H8/89	18.00	8	885-1126	HDOS Utilities by PS:	20.00	42	885-1118-[37]	MBASIC Payroll	60.00	30
885-1031	Disk IV MUSIC H8 Only	20.00	25	885-1127-[37]	HDOS Soft Sector Support Pkg	30.00	45	885-1131-[37]	HDOS CHEAPCALC	20.00	47
885-1067-[37]	Disk XI H8/19/89 Games	18.00	12	885-1128-[37]	HDOS DISKVIEW	16.00	46	885-8010	HDOS CHECKOFF	25.00	32
885-1068	Disk XII MBASIC Graphic Games	18.00	10	885-1129-[37]	HDOS CVT Color Video Terminal	20.00	46	885-8021	HDOS Student's Statistics Pkg	20.00	44
885-1088-[37]	Disk XVII MBASIC Graphic Games	20.00	14	885-8001	SE (Screen Editor)	25.00	28	885-8027	HDOS SCIALC	20.00	50
885-1093-[37]	DSD H8/89 Disk	20.00	16	885-8003	BHTOMB	25.00	28				
885-1096-[37]	MBASIC Action Games H8/89	20.00	18	885-8004	UDUMP	35.00	28	CP/M			
885-1103	Sea Battle HDOS H19/8/89	20.00	20	885-8006	HDOS SUBMIT	20.00	31	885-1218-[37]	CP/M MBASIC Payroll	60.00	31
885-1111-[37]	HDOS MBASIC Games H8/89	20.00	23	885-8007	EZTRANS.	30.00	30	885-1233-[37]	CP/M CHEAPCALC	20.00	47
885-1112-[37]	HDOS Graphic Games H8/89	20.00	23	885-8015	HDOS TEXTSET Formatter	30.00	42	885-1238-[37]	Spread Sht. Contest Disk I	20.00	
885-1113-[37]	HDOS Action Games H8/89	20.00	23	885-8017	HDOS Programmers Helper	16.00	42	885-1240-[37]	Spread Sht. Contest Disk II	20.00	
885-1114	H8 Color Raiders \$ Goop	20.00	23	885-8024	HDOS BHBASIC Utilities Disk	16.00	46	885-1241-[37]	Spread Sht. Contest Disk III	20.00	
885-1124	HUGMAN \$ Movie Animation Pkg	20.00	41					885-1242-[37]	Spread Sht. Contest Disk IV	20.00	
885-1125	MAZEMADNESS	20.00	41	CP/M				885-1243-[37]	Spread Sht. Contest Disk V	20.00	
885-1130	Star Battle	20.00	47	885-1210-[37]	CP/M ED (same as 885-1022)	20.00	20	885-1244-[37]	Spread Sht. Contest Disk VI	20.00	
885-1133-[37]	HDOS Games Collection I	20.00	59	885-1212-[37]	CP/M Utilities H8/89	20.00	21	885-8011-[37]	CP/M CHECKOFF	25.00	32
885-8009-[37]	HDOS \$ CP/M Galactic Warrior	20.00	32	885-1213-[37]	CP/M Disk Utilities H8/89	20.00	22	ZDOS			
885-8022	HDOS SHAPES	16.00	45	885-1217-[37]	HUG Disk Duplication Utilities	20.00	26	885-3006-37	ZDOS CHEAPCALC	20.00	47
885-8026	HDOS Space Drop	16.00	49	885-1223-[37]	JHRUN HDOS Emulator 3 disks	40.00	37	885-3013-37	ZDOS Checkbook Manager	20.00	54
885-8032-[37]	HDOS Castle	20.00	59	885-1225-[37]	CP/M Disk Dump \$ Edit Utility	30.00	40	885-3018-37	ZDOS Contest Spreadsheet Disk	25.00	58
CP/M				885-1226-[37]	CP/M Utilities by PS:	20.00	40	885-8028-37	ZDOS SCIALC	20.00	50
885-1206-[37]	CP/M Games Disk	20.00	11	885-1229-[37]	XMET Robot \$ Cross Assembler	20.00	40	885-8030-37	ZDOS MATHFLASH	20.00	55
885-1209-[37]	CP/M MBASIC DSD	20.00	19	885-1230-[37]	CP/M Function Key Mapper	20.00	42				
885-1211-[37]	CP/M Seabattle	20.00	20	885-1231-[37]	Cross Ref Utilities for MBASIC	20.00	43	DATA BASE MANAGEMENT SYSTEMS			
885-1220-[37]	CP/M Action Games	20.00	32	885-1232-[37]	CP/M Color Video Terminal	20.00	46	HDOS			
885-1222-[37]	CP/M Adventure	10.00	35	885-1235-37	CP/M COPYDOS	20.00	54	885-1107-[37]	HDOS Data Base System H8/89	30.00	23
885-1227-[37]	CP/M Cassino Gamess	20.00	38	885-1237-[37]	CP/M Utilities	20.00	55	885-1108-[37]	HDOS MBASIC Data Base Sys.	30.00	23
885-1228-[37]	CP/M Fast Action Games	20.00	39	885-5001-37	CP/M 86 KEYMAP	20.00	51	885-1109-[37]	HDOS Retriever ASM (3 disks)	40.00	23
885-1236-[37]	CP/M Fun Disk I	20.00	55	885-5002-37	CP/M 86 HUG Editor	20.00	52	885-1110	HDOS Autofile (2 disks)	30.00	23
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885-3004-37	ZDOS ZBASIC Graphic Games	20.00	37	885-8018-[37]	CP/M FAST EDDY \$ BIG EDDY	20.00	43	885-8008	Farm Accounting System	45.00	30
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885-3016-37	ZDOS/MSDOS Adventure	10.00	57					AMATEUR RADIO			
885-3017-37	ZDOS Contest Games Disk	25.00	58	ZDOS				HDOS			
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				885-3007-37	ZDOS CP/Emulator	20.00	47	CP/M			
				885-3008-37	ZDOS Utilities	20.00	47	885-1214-[37]	CP/M MBASIC Log Book (64k)	30.00	23
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				885-3014-37	ZDOS/MSDOS Utilities II	20.00	54	885-8020-[37]	CP/M RF Comp. Aided Design	30.00	44
				885-8029-37	ZDOS FAST EDDY	20.00	53	885-8031-[37]	CP/M Morse Code Transceiver	20.00	57
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				PROGRAMMING LANGUAGES							
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				885-1038-[37]	Wise on Disk H8/89	18.00					
				885-1042-[37]	PILOT on Disk H8/89	19.00					
				885-1059	FOCAL-8 H8/89 DISK	25.00	13				
				885-1078-[37]	HDOS Z80 Assembler	25.00	21				
				885-1085	PILOT Documentation	9.00					
				885-1086-[37]	Tiny HDOS Pascal H8/89	20.00	13				
				885-1094	HDOS Fig-Forth H8/89 2 Disks	40.00	18				
				885-1132-[37]	HDOS Tiny BASIC Compiler	20.00	59				

Part Number	Description of Product	Selling Price	Vol. - Issue
CP/M			
885-1207-[37]	CP/M TERM \$ HTOC	20.00	26
885-1224-[37]	CP/M MicroNET Connection	16.00	37
885-3003-[37]	CP/M ZTERM (Z100 Modem Pkg)	20.00	34
885-5004-37	CP/M86 TERM86 and DSKED	20.00	56
885-8005	MAPLE (Modem Appl. Effector)	35.00	29
885-8012-[37]	CP/M MAPLE (Modem Program)	35.00	34
885-8023-37	CP/M 85 MAPLE	35.00	45

Part Number	Description of Product	Selling Price	Vol. - Issue
MISCELLANEOUS			
885-0004	HUG Binder	5.75	
885-1221-[37]	Watzman ROM Source Code/Doc	30.00	33
885-4001	REMark Volumes 1 to 13	20.00	
885-4002	REMark Volumes 14 to 23	20.00	
885-4003	REMark Volume III issues 24-35	20.00	
885-4004	REMark Vol 4 Issues 36-47	20.00	
885-4500	HUG Software Catalog	9.75	
885-4600	Watzman/HUG ROM	45.00	41
885-4700	HUG Bulletin Board Handbook	5.00	50
885-3015-37	ZDOS SKYVIEWS	20.00	55

NOTE: The [-37] means the product is available in hard sector or soft sector. Remember, when ordering the soft sector format, you must include the "-37" after the part number; e.g. 885-1223-37.





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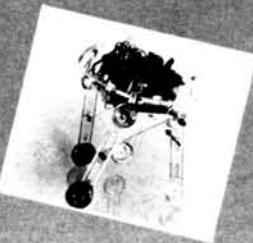
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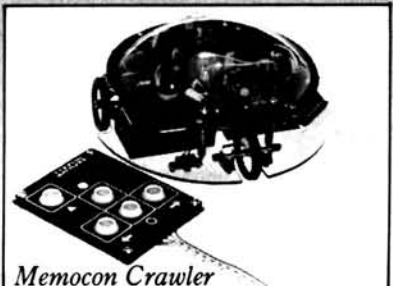
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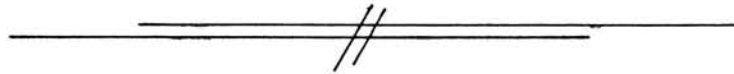
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HUG Software Catalog Update



1984 HUG Releases

P/N 885-1132-[37] HDOS Tiny BASIC Compiler

Introduction: TBC, or Tiny BASIC Compiler, is a set of programs written to compile standard BASIC source code into assembly language source code. This assembly source is then assembled into a standard executable binary file (.ABS). Although it is called "tiny", TBC has commands available that can be found in more sophisticated versions of BASIC, as well as H/Z19 graphics commands not found in any versions of BASIC!

Requirements: TBC will run on any H-8 or H/Z-89 with 48k of memory and one drive, although two or more drives are highly recommended for ease of use. Version 1.6 or higher of HDOS is also needed. If an H-8 is used, an H/Z-19 terminal is needed to make use of the graphics commands, as well as other compile time features. A printer is needed to get a hardcopy of the 18 page manual that comes on disk #2.

The following programs and files are included on the HUG P/N 885-1132-[37] Tiny BASIC Compiler Disks:

Disk 1:		LIB4	.ACM
TBC	.ABS	LIB5	.ACM
CHOMP	.TBC	LIB6	.ACM
CHOMP	.ABS	LIB7	.ACM
XFER	.TBC	READ	ME
XFER	.ABS	XTBC	.ABS
XFER	.DOC	README	.DOC
LIB1	.ACM		
LIB2	.ACM	Disk 2:	
LIB3	.ACM	TBC	.MAN

Author: Patrick J. O'Connor

Program Content: The following is a list of commands, keywords, and extensions, to give some idea of the capability of this Tiny BASIC Compiler. This list is taken directly from the manual.

Tiny BASIC Compiler With Z19 Extensions

Standard Keywords:

1. PRINT	13. OUT
2. IF/THEN	14. INP
3. LET	15. RND
4. INPUT	16. DATA
5. ON/GOSUB	17. RESTORE
6. FOR/STEP	18. REM
7. NEXT	19. ABS
8. GOSUB	20. PEEK
9. RETURN	21. ON/GOTO
10. GOTO	22. DIM
11. CHR\$	23. END
12. READ	

Standard Keyword Extensions:

1. LINK	5. INKEY\$
2. ASM	6. IMPARY
3. ENDASM	7. POINTER
4. PAUSE	8. CALL

File/Device Extensions:

1. OPEN	4. CLOSE
2. WRITE\$	5. EOF
3. READ\$	

String Handling Extensions:

1. DIM\$	8. PRINT\$
2. LET\$	9. STRING\$
3. LINE-IN	10. ADD\$
4. RIGHT\$	11. LEN
5. LEFT\$	12. VAL
6. MID\$	13. IF\$.EQ
7. INSTR	14. IF\$.NE

Bit Manipulation:

1. AND	4. SHR
2. OR	5. SHL
3. XOR	

Z19 Extensions:

1. GOTOXY	13. DELCHAR
2. SKETCH	14. CURBAK
3. DRAW	15. RVON
4. GRAFON	16. RVOFF
5. GRAFOFF	17. CURSAV
6. CLRSCRN	18. CURSET
7. CURHOM	19. CUROFF
8. CURFOR	20. CURON
9. INSTROFF	21. REVINX
10. INSRON	22. EN25TH
11. CURDWN	23. DIS25TH
12. CURUP	

Comments: Since this is not an interpretive type BASIC, the source code will have to be created using some sort of text editor. Any will suffice. Also, since assembly language source code is created by this compiler and since assembly language source can be inserted directly into the BASIC source, this compiler very much reminds one of the "C" language.

TABLE C Rating: (10), (0)

885-1133-[37] HDOS Games Collection I

Introduction: The programs on these disks are a collection of games written in various programming languages. These include Assembly, Tiny Pascal, Benton Harbor BASIC, and MBASIC. Most of these games will appeal to the younger crowd, including pre-schoolers. The game of Donkey is aimed at these younger folk, however, I found it quite challenging in trying to beat the computer at Monopoly (MONOP).

Requirements: This game package requires the HDOS operating system on an H/Z-89 with 56k of system memory. All of the games, except OTH(ello), will work on an H-8 with an H/Z-19. OTH(ello) requires a Z80 processor board. MBASIC is required for MONOP, and PAKRAT. Benton Harbor BASIC is needed for BHCRAZY8, MATCH, and TTT.

The following programs or files are included on the HUG P/N 885-1133-[37] HDOS Games Collection I disks.

Disk 1		Disk 2	
CATNDOG	.ABS	BHCRAZY8	.BAS
FIFTEEN	.ABS	DONKEY	.ABS
FIFTEEN	.ABS	DONKEY	.ASM
OTH	.ABS	DONKEY	.DOC
OTH	.ASM	MATCH	.BAS
OTH	.TXT	MONOP	.BAS
PROCLIB	.TPI	MONOP	.DOC
RATS	.ABS	PAKRAT	.BAS
RATS	.DOC	PAKRAT	.DOC
RATS	.TPS	TTT	.BAS
WARI	.ABS		
README	.DOC		

Authors:

CATNDOG -- David G. Pelowitz
 FIFTEEN -- John A. Curtis
 OTH -- Jack Curtis
 RATS -- Gary Gramblitt
 WARI -- David G. Pelowitz
 BHCRAZY8 -- R.E. Wethington
 DONKEY -- James R. Gockley
 MATCH -- Kenneth Kirby
 MONOP -- Robert Ripberger
 PAKRAT -- Gordon Wheaton
 TTT -- Kenneth Kirby

CATNDOG is a game geared to the young user, 4 to 10 years of age. It is a checker board type game in which the player (DOGS) must try to trap the computer (CAT). It only uses one step look ahead with a random factor to break ties. This keeps the game simple, but still allow some variation.

FIFTEEN is a computer rendition of the old favorite plastic puzzle we had as kids with fifteen numbered squares and one empty

square. When randomized, the puzzle is solved by moving the numbered squares one at a time into the blank space, with the final goal of getting all the squares in numerical order.

OTH is the full game of Othello written in assembly language using some Z80 op-codes. This program also uses the H19/H89 graphics capabilities.

Rats And Dragons is a fast action graphics game in which the object is to move a mouse around the screen in order to eat a piece of cheese without being caught by an evil dragon who relentlessly pursues the mouse. Each time the mouse runs into the cheese, the score is increased and a new piece of cheese randomly appears on the screen.

WARI is a game of logic for a more mature player. It requires some lower math skills and is patterned from the popular Oh-Wah-Ree game published by 3M Bookshelf Games. It is purported to be over 3500 years old. This game uses H19/H89 graphics to build the playing board.

BHCRAZY8 is a card game which uses H19/H89 screen graphics to play Crazy Eights. The game is similar to "War," except that Eights are wild and will match any suit. You play against the computer, and the winner is the first player to use his last card.

DONKEY is an excellent graphics game for the pre-schooler. The object of the game is to drive a car down a road without hitting any donkeys. The only interaction needed is for the player to hit any key to make the car change lanes to avoid hitting any donkeys.

MATCH is a graphics game that pits two people against each other, with each one trying to match up the most hidden symbols. The players receive points for each match, and the player with the most points when all matches have been made, wins.

MONOP is a full screen graphic game of Monopoly. This version allows one player to play against the computer or against another player.

PAKRAT is a program that gives you a rat's eye view of a computer generated maze. Using H19/H89 graphics, this program shows you what a maze looks like from the inside. It has three levels of difficulty.

TTT is a graphics game in which two people can play Tic-Tac-Toe, or one person can play the computer.

Comments: None.

TABLE C Rating: (0), (1), (2), (9)

885-1234[-37] CP/M HAMHELP

Introduction: HAMHELP makes use of the personal computer to calculate the MUF (Maximum Useable Frequency) for each half-hour throughout the day. Input data for the program can be obtained each hour from listening to WWV. HAMHELP is a valuable tool for the amateur radio operator.

Requirements: HAMHELP requires the CP/M operating system, version 2.2.03 or higher, an H8/H17 or H/Z-89 with one drive and at least 48K of memory. The soft-sectored version of this program (885-1234-37) will run on the H/Z-100 under CP/M-85. The program itself is compiled MBASIC (MBASIC is not required).

The following programs and files are included on HUG Disk P/N 885-1234[-37]:

README	.DOC	FOREIGN	.LOC
HAMHELP	.COM	NOAMER	.LOC
FILEFIX	.COM	HAMHELP	.DOC

Author: Ray (Raymond S.) Isenson, N6UE

Program Content: HAMHELP calculates the MUF (Maximum Useable Frequency) each half-hour throughout the day for the date and path between two stations specified by the user. The output of these calculations is then presented in a graphic chart which is easy to read. Along with the chart, it prints additional information including the antenna azimuth, optimum elevation beam angles, the expected path attenuation, and an estimate of the likely propagation conditions as a function of the existing electromagnetic envi-

ronment. If the two stations are more than some 4000 kilometers apart, the program will optionally calculate the exact times of Sunrise and Sunset for each of the locations. Also, the program will check for any unusual possibilities such as "Grayline" longpath openings or preferred paths to take advantage of certain bad or good polar cap propagation conditions.

FILEFIX.COM is included in order to make the HAMHELP program as "user friendly" as possible. Two lists of cities, each containing the names of 36 cities, along with their respective latitudes and longitudes, are stored in the files called:

```
FOREIGN .LOC
NOAMER .LOC
```

The computer presents one of these lists on command to the operator who then selects the remote city by number. The program, FILEFIX.COM, is used to modify the two data files so that the lists contain cities that are of major interest to the individual. HAMHELP will allow the user to enter the names and locations.

Comments: The HAMHELP program is limited by the lack of some math functions which result in only slight errors in final calculations. These limitations are well documented for the user in the HAMHELP.DOC included with the disk. The program is valuable and handy for the amateur radio operator.

TABLE C Rating: (0), (9)

885-1235[-37] CP/M COPYDOS

Introduction: RDZDOS is a CP/M program that can copy files from Z-DOS (or any 8-sector 5.25-inch MS-DOS) disks to CP/M disks. It will run on any Heath/Zenith CP/M compatible computer under CP/M-85 version 2.2.100 or higher, or CP/M 2.2.03 or 2.2.04. RDZDOS can also examine files in ASCII (text) or in hexadecimal.

Requirements: RDZDOS requires an H8, H/Z-89,90, or H/Z-100 type computer and Heath/Zenith CP/M. H8 and H/Z-89,90 computers must have a soft sector controller. A 5.25-inch double sided 40 track disk that has been formatted under CP/M-85 or CP/M-86 is also required for the program to "log in" on to regardless of what kind of computer it is run on. Z-DOS/MS-DOS disks must be 5.25 inch 40 track with one or two sides formatted. The drive the disk is read in can be a 40 or 80 track drive, but must be double sided. The destination drive can be any type.

The RDZDOS disk contains the following files:

```
README .DOC
RDZDOS .COM
RDZDOS .DOC
CONTROL .CHR
RDZDOS .ASM
```

Author: Glenn F. Roberts

RDZDOS.COM - This is the assembled RDZDOS program. It is menu driven and operated with function keys, which are labeled on the bottom screen line. Once the program is started, both the destination and source disks can be changed any number of times so that many files can be copied without restarting the program. **Note:** Z-DOS/MS-DOS programs cannot be run under CP/M, but RDZDOS is useful for transferring text files that have been edited under Z-DOS/MS-DOS, or BASIC programs that do not use graphics, or data files created by business programs, etc.

RDZDOS.DOC - Detailed instructions for RDZDOS. The program is very easy to use, and the instructions explain every aspect of it.

CONTROL.CHR - This is a replacement for ALTCHAR.SYS for CP/M-85 users that is useful when using the hex dump mode of RDZDOS. An ASCII interpretation of the hex codes is printed, and if CONTROL.CHR is loaded, non-printable characters show up as abbreviations, such as LF for Line Feed, etc.

RDZDOS.ASM - The assembly source code for RDZDOS.

Comments: none.

TABLE C Rating: (0),(1),(7),(10)

885-1236[-37] CP/M MBASIC Fun Disk I

Introduction: This first MBASIC FUN disk contains five games. Two of these games are adventure type games and the other three are mind-teaser types. All four games use H/Z-89 graphics to a small degree. The adventure games, ESCAPE and DRACULA'S

CASTLE, are slightly different types of adventures than you may be used to. Commands are given with two letters such as: 'GW' for Get Water. DRACULA'S CASTLE is in real time and you must be clever or the king of canines will get you. CONCENTRATION uses H/Z-89 type graphic characters and plays similar to the ever popular TV game show. MASTER-MIND also uses H/Z-89 graphic characters instead of pegs to play this old favorite. Finally, MERLIN has you remembering sequences of numbers in their proper order after being flashed on the screen momentarily.

Requirements: This MBASIC FUN DISK requires the CP/M operating system on either an H8 (with an H/Z-19 terminal), H/Z-89, or H/Z-100. 64K of RAM and MBASIC Ver 5.2x are also needed. Only one drive is needed for any of these games.

The following programs and files are included on the HUG P/N 885-1236[-37] CP/M MBASIC Fun Disk I:

```
README .DOC CONCEN .BAS
DRACULA .GAM MERLIN .DAT
MERLIN .BAS DRACULA .BAS
ESCAPE .BAS MASTMIND .BAS
```

Author: Iraj Aidun

ESCAPE - This is an adventure program that does not run in real time mode so you can take your time in solving it. The object is to escape from an abandoned house... alive!

DRACULA'S CASTLE - This is a highly advanced adventure game which, unlike ESCAPE, operates in real time mode. This game is not recommended for people who have a shortage of time or temperament. If it wasn't for the prisons, slaves, guards, surprises, and blood-sucking DRACULA, this game would be easier!

CONCENTRATION - Up to four people can play this game at once. The object is to beat your opponents by matching the most pairs of graphic symbols on the grid provided.

MASTER-MIND - The object of this game is to see who is the real master of your mind... you or your computer. The game is played with graphic symbols instead of colors. The object of the game is to guess the symbols of the computer in their correct order, in as few turns as possible.

MERLIN - This game puts up a picture of the computer's numeric keypad and then flashes sequences of numbers on that pad. You then must duplicate each sequence. At first the game is easy, but watch out, a photographic memory becomes a must.

Comments: None

TABLE C Rating: (0),(1),(2),(3),(7),(9)

885-1237[-37] CP/M UTILITIES

Introduction: This disk contains a new collection of utilities for users of 8-bit CP/M on H8, H/Z-80,90, and H/Z-100 computers.

Requirements: Any Heath/Zenith CP/M compatible computer, any version of 8-bit CP/M 2.x, and at least 32K of RAM. An H/Z-19 or compatible terminal is required for use on an H8 computer.

This disk contains the following files:

```
README .DOC SCRNLCK .ASM
SEE .COM CLOCK .COM
SEE .ASM CLOCK .ASM
SCR89 .COM CLKDEMO .BAS
SCRH85 .COM SWAP .COM
SCR100 .COM SWAP .ASM
SCR .ASM COLOR .COM
UNSCR .COM COLOR .ASM
UNSCR .ASM IBM .CHR
SCRNLCK .COM
```

Authors:

SWAP - Mark Aagenas, Zenith Data Systems
COLOR - from a Z-DOS program by Bob Metz
All other programs by P. Swayne, HUG

SEE - This program is a fancy replacement for the CP/M TYPE command. It allows you to scroll forward or backward through a file, to search for strings within the file, and to print screens of the file on a printer. It can also scroll sideways to allow you to view files up to 132 characters wide.

SCR89, SCRH85, SCR100 - SCR is a textual (not graphic) screen dump program. While it is loaded, any text on the screen is dumped to your printer when you type control-D. SCR becomes part of the system when it is loaded so that any program can be run, and screens of it "dumped". SCR89 is for use on H/Z-89,90 computers, and on H8 computers that use the H8-4 serial card. SCRH85 is

for H8's with the H8-5 card. SCR100 is for H/Z-100's.

UNSCR - This program unloads SCR from your system.

SCRNLCK - This program maintains a real time clock that can be optionally displayed as a digital clock on your computer screen, even while you are running other programs. It is similar to the screen clock presented in the November 1981 issue of REMark except that it requires no BIOS modifications, and the clock is maintained while the screen display is off. The time maintained by this program can be accessed by other programs. This program will not run on H/Z-100 computers.

CLOCK - This program is used to control the SCRNLCK program. It can enable or disable the screen clock display, set the time, display the time (useful when the screen clock is off), or unload the SCRNLCK program from your system.

CLKDEMO.BAS - This is a Microsoft BASIC program that demonstrates how the time can be accessed from SCRNLCK.

SWAP - This is the console swapper program presented in REMark that allows you to use an external terminal on your computer, and to switch back and forth between the normal keyboard/screen and the other terminal.

COLOR - This program is for H/Z-100's only, and lets you set the foreground and background colors on your screen.

IBM.CHR - This is a replacement for the ALTCHAR.SYS file on H/Z-100 CP/M system disks that provides an IBM PC-like character font. The characters are bolder, and some may find them easier to read, especially on color monitors. The normal H/Z-19 graphic characters are supported. For H/Z-100's only.

Comments: none.

P/N 885-1238[-37] CP/M Ascirity

Introduction: The program ASCIRITY is written for the Microsoft Basic Compiler and Macro 80 Assembler on the Heath H-89 computer with 64k of RAM and the CP/M operating system. With the proper interface or terminal unit and appropriate transmitting and receiving equipment, this program may be used to send and receive amateur radio RTTY and ASCII at all popular baud rates or transmission speeds (wpm).

ASCIRITY features include transmission and reception of baudot RTTY at 45, 50, 54, or 74 baud; and ASCII RTTY at 110 or 300 baud. A CQ message of up to 256 characters is automatically loaded and can be sent at any time by pressing two keys. A brag file, or any ASCII file may be sent from disk. Lower case letters are converted to upper case for baudot transmission.

When text is entered from the keyboard for transmission, a line feed (LF) is inserted after each carriage return (CR). A line length of 72 characters is standard for most of the mechanical teleprinters in amateur use, and when text is entered from the keyboard, this program will insert a (CR) and (LF) after 72 characters, if none is typed. No (CR) or (LF) insertion is made when transmitting a file from disk. For baudot operation, the LTRS and FIGS characters are sent twice for each case change. This is to help insure good copy of your transmissions.

The receive data line can be a full 80 columns wide. A (CR) and (LF) will be inserted after 80 columns to prevent data from being lost.

Transmitted and received data may be optionally stored to a 6000 character memory buffer, which can later be written to disk, if desired. There is a 1024 character transmit message buffer which may be filled from the keyboard while receiving or transmitting. If either of these buffers approaches being full, the terminal bell will sound with each new character.

Requirements: This software requires a Heath H/Z-89/90 with 64k of memory and a standard 3 port serial interface. An H/Z-19 and H-8 with 64k of memory and a standard 4 port serial interface will also work. Either system must be running the CP/M operating system and have at least one hard or soft sectored disk drive.

ASCIRITY is designed to communicate with most popular ham radio interfaces, (including the Heath HD-3030), or terminal units through the computer's RS-232 port at 330Q.

The following files are included on the HUG P/N 885-1238[-37] ASCIRITY disk:

```
ASCIRITY .BAS CQ .DAT
ASCIRITY .COM RTTYSUBS .MAC
ASCIRITY .DOC README .DOC
BRAG .DAT
```

Author: Allen Gilchrist, Jr.

Program Content: After ASCIRTY is executed, the top line of the display indicates the present mode, baud rate, and storage status of the program.

The control sequences recognized by the program are (ctl-A) through (ctl-F). The function of these control codes are as follows:

- ctl-A -Switch to transmit and send the CQ message.
ctl-B -Set new baud rate or mode.
ctl-C -Save memory buffer to disk and/or exit to CP/M.
ctl-D -Storage mode toggle switch.
ctl-E -Transmit/Receive toggle switch.
ctl-F -Transmit an ASCII file from disk.

Comments: none

TABLE C Rating: (0), (2), (5), (9)

P/N 885-1239-[37] CP/M Spreadsheet Contest Disk I

Introduction: This disk contains two SuperCalc spreadsheet templates that were submitted as contest entries.

Requirements: Both programs require an H/Z-89 or H-8 with H/Z-19 terminal. WEIGHT requires a 48k system, while AMORTIZE needs a full 64k system.

The following programs and files are contained on the HUG P/N 885-1239-[37] CP/M Spreadsheet Contest Disk I:

Table listing programs and files: WEIGHT (PRN, CAL), WTABSTR (PRN), WTQUEST (PRN), WTAUTO (CAL), AMORT48 (CAL), AMORTIZE (CAL), AMORTIZE (DOC), README (DOC)

Authors:

- WEIGHT -James H. Jones
AMORTIZE -Clifford E. Walls

Spreadsheet Descriptions:

WEIGHT is a SuperCalc Worksheet that assists decision analysis for tangible systems comparison. It employs an analytic hierarchy technique to objectify the normally subjective process of determining the relative worth of trade-off study criteria (weighting).

AMORTIZE is a SuperCalc template to allow amortization of any obligation through a variety of conditions of payment amounts, payment frequencies, and interest rates.

Comments: None

TABLE C Rating: (9)

P/N 885-1240-[37] CP/M Spreadsheet Contest Disk II

Introduction: This disk contains four SuperCalc spreadsheet templates that were submitted as contest entries.

Requirements: All four templates require SuperCalc running on an H/Z-89 or H-8 with an H/Z-19 terminal and the CP/M operating system. COST requires 32k, RETIREMENT PLANNING and GRATEMP require 48k, and RETIRED requires a 64k system.

The following programs and files are contained on the HUG P/N 885-1240-[37] CP/M Spreadsheet Contest Disk II:

Table listing programs and files: RETIRED (CAL, DOC), RETIRED (DOC), COST (CAL, DOC), GRATEMP (CAL, DOC), GRATEMP (DOC), GRADEX (CAL), PENSION (DOC), PENCOUN (PRN), PENREAD (ME), PENSING (CAL), PENSING (PRN), PENCOUN (CAL), README (DOC)

Authors:

- RETIRED -Henry C. Liverpool, Jr.
COST -Jean I. Reynolds
GRATEMP -Sanford Lamovsky
RETIREMENT PLANNING -L. Roland Doerschug

spreadsheet Descriptions:

RETIRED is a SuperCalc template for a military man about to retire to provide a comparison of after tax income before and after retirement. This is very useful to a retiring military man because of big differences in taxable portions of income and possible change of legal state of residence.

COST is a template designed to be an efficient way to provide a business client with an accurate cost estimate or cost estimate range for a given job or task. This spreadsheet can be used as (once the proper billing rates are inserted) for many businesses, and may be modified for conceivably any type of business.

GRATEMP is a spreadsheet template which is designed to keep track of student grades, much like a teacher's grade book. Unlike a grade book, however, it will automatically keep an updated account of the student's total points, percent correct, and calculate the average score for each set of grades.

RETIREMENT PLANNING is a template to model a retirement savings plan for Supplemental Retirement Annuities. A template for a single savings program is included, as well as one for a husband and wife.

Comments: None

TABLE C Rating: (9)

P/N 885-1241-[37] CP/M Spreadsheet Contest Disk III

Introduction: This disk contains two SuperCalc spreadsheet templates that were submitted as contest entries.

Requirements: Both programs require an H/Z-89 or H-8 with H/Z-19 terminal. BATSTATS requires a 48k system, while PLASTIC MONEY MANAGER needs a full 64k system.

The following programs and files are contained on the HUG P/N 885-1241-[37] CP/M Spreadsheet Contest Disk III:

Table listing programs and files: PMM (CAL, DOC), BATSTATS (DOC), PMM (DOC), BATSAMPL (CAL), BATSTATS (CAL), README (DOC)

Authors:

- PLASTIC MONEY MANAGER -V. N. Fritz
BATSTATS -Thomas M. Goymerac

Spreadsheet Descriptions:

PLASTIC MONEY MANAGER is a SuperCalc template designed to assist in the usage of credit cards, leaving liquid assets in an interest earning position until payment is essential. Features include: 1) a running total of balances, 2) current balance of each credit card, 3) computes next statement due date from next billing date, 4) projects balance payable on next statement, and 5) computes running total of projected balances.

BATSTATS is a SuperCalc template that contains all of the necessary formats and formulas to easily maintain a softball or baseball team's vital statistics. It is designed to keep seasonal cumulative data for each player and the team as a whole, by simply entering a minimum amount of new data after each week/game.

Comments: None

TABLE C Rating: (9)

P/N 885-1242-[37] CP/M Spreadsheet Contest Disk IV

Introduction: These two disks contain two SuperCalc spreadsheet templates that were submitted as contest entries.

Requirements: Both programs require an H/Z-89 or H-8 with H/Z-19 terminal. ACOUSTIC requires 48k of memory, while PAYROLL needs a full 64k system.

SuperCalc are also required.

The following programs and files are contained on the HUG P/N 885-1242-[37] CP/M Spreadsheet Contest Disks IV:

Table listing programs and files: Disk 1 (PAYROLL.CAL, PAYROLL.DOC, PAYROLL.BAK, PAYFORM.CAL, README.DOC) and Disk 2 (ACOUSTIC.CAL, ACOUSTIC.DOC, ROOM1.CAL, ROOM2.CAL, README.DOC)

Authors:

- PAYROLL -Christopher P. Pitonza
ACOUSTIC -Don Daugherty

Spreadsheet Descriptions:

PAYROLL is a SuperCalc template which allows a manager of a small department to control the most expensive portion of his business, mainly salaries of employees. It also keeps tabs on all time taken off by an employee.

ACOUSTIC is a SuperCalc template used to determine the acoustic characteristics of any room. Changes then can be made to the room for the best reproduction of sound. This program would be useful to anyone interested in the best reproduction of sound from their stereo or for a room that is used as a recording studio.

Comments: None

TABLE C Rating: (9)

P/N 885-1243-[37] CP/M Spreadsheet Contest Disk V

Introduction: These two disks contain a SuperCalc spreadsheet template that was submitted as a contest entry.

Requirements: This program requires an H/Z89 or H8 with an H/Z-19 terminal. A total of 64k of memory is needed, as well as CP/M and SuperCalc. Two disk drives are also required.

The following programs and files are contained on the HUG P/N 885-1243-[37] CP/M Spreadsheet Contest Disks V:

Table listing programs and files: Disk 1 (ENTERLOG.CAL, YEARLOG.CAL, FLITELOG.DOC, DOYEAR.CAL, README.DOC) and Disk 2 (PLANES.CAL, MTHLOG.CAL, JULYIN.CAL, README.DOC)

Author:

- FLITELOG -Jennifer T. McGraw

Spreadsheet Description:

FLIGHT LOG is a series of overlay spreadsheets for maintaining a pilot's flight log using SuperCalc 3.0, Version 1.04. When all are completed, you will have a printout of daily flight legs, a summary of all planes flown, and a printout of monthly totals for the year thus far.

Comments: None

TABLE C Rating: (9)

P/N 885-1244-[37] CP/M Spreadsheet Contest Disk VI

Introduction: These two disks contain a SuperCalc spreadsheet template that was submitted as a contest entry.

Requirements: This program requires an H/Z89 or H8 with an H/Z-19 terminal. A total of 64k of memory is needed, as well as CP/M and SuperCalc. One disk drive is required, two are recommended.

The following programs and files are contained on the HUG P/N 885-1244-[37] CP/M Spreadsheet Contest Disks VI:

Table listing programs and files: Disk 1 (ITAXREAD.ME, F1040.CAL, BUSEX.CAL, CARE.CAL, ENERGY.CAL) and Disk 2 (INCTAX84.DOC, FOREIGN.CAL, MOVEX.CAL, README.DOC)

Disk 2

SCHA	.CAL	SCHG	.CAL
SCHB	.CAL	SCHR	.CAL
SCHC	.CAL	SCHW	.CAL
SCHD	.CAL	SCHSE	.CAL
SCH E	.CAL	SALE	.CAL
SCHF	.CAL	README	.DOC

Author:

INCTX84 -Robert F. Hassard

Spreadsheet Description:

INCTX84 is a set of seventeen SuperCalc templates for use next year in preparing an individual 1984 income tax return. Provision is made for the most frequently used schedules and ancillary forms.

Comments: None

TABLE C Rating: (9)

885-3009-37 ZDOS ZBASIC Dungeons & Dragons (DND)

Introduction: DND is the HUG version of the popular game "Dungeons and Dragons", played in real-time. This version displays graphic representation on the screen of the rooms, halls, and doors in the area which the player is in. The object of DND is to find the lord master of the Dungeon.

Requirements: This game requires the ZDOS operating system on an H/Z-100 computer. DND requires the ZBASIC interpreter. Only one drive is required.

These programs have been compiled with the ZBASIC compiler. To use the compiled version, the timing loops in the program will need to be increased.

The following programs and files are included on the HUG P/N 885-3009-37 ZDOS DND disk:

README	.DOC	DNDBW	.BAS
MENUBW	.BAS	DNDC	.BAS
MENUC	.BAS	DND	.DAT
STARTBW	.BAS	DND	.DOC
STARTC	.BAS	INSTALL	.BAT

Note: The BW files indicate the programs are written for Black and White monitors versus the C files which are for Color monitors. Details are contained in the README.DOC file.

Author: Robert E. Wild
Modified for ZDOS ZBASIC by Richard Evers

Program Content: The search for the lord master of the Dungeon is made by exploring the 50 level dungeon, with the search beginning on level 1. DND is played in real-time, which means the program waits only a short time for a response and will continue playing, without a response.

At the starting point there is a roadside tavern with many other taverns located on level one. It is at these taverns that treasures are cashed in for experience points. An accumulation of experience points will allow the player to become a higher level character, which will increase the chance of survival as the user moves deeper into the dungeon.

During the quest for the lord master, many obstacles will be encountered. The obstacles will include monsters which may try to steal any treasures which the player may have. Sometimes the monster may attack, first. The player may fight, cast a spell, or evade. The player must watch his Hit Points and Spell Units to determine which option is best. These units can be refreshed by returning to a tavern or worshipping at an altar.

The user will find objects along the way which may be of help with the search. As easily as the objects appear, they may disappear.

The lord of the dungeon will be found in a HEATHKIT VAULT. As the game progresses, the combination to the safe will be given. The lord master may not be in that vault as there are many vaults throughout the dungeon.

The DND.DOC file contains information on some of the areas of the game. It is recommended that a hardcopy of the documentation be made for future reference. There are useful tables that will be nice to reference while playing the game.

There are many aspects of the game that must be learned while exploring the dungeon in DND.

Comments: DND is an excellent adventure game with the added

feature of the graphic display with real-time mode. A "Dungeons and Dragons" master player informed HUG that this version is the best computer implementation of the game he has seen.

TABLE C Rating: (1),(2),(5),(7),(10)

885-3010-37 Z-DOS KEYMAP Function Key Mapper

Introduction: Z-DOS KEYMAP is a program that lets you designate the responses produced by your computer's function keys. It works like the KEY command in ZBASIC except that more keys can be defined, and the defined keys are part of the "system" and can be used with any program, not just with ZBASIC.

Requirements: Z-DOS KEYMAP requires the Z-DOS operating system on an H/Z-100 series computer or an ET-100/ETA-100 computer and at least 128K of user memory.

This disk contains the following files:

README	.DOC	UNMAP	.COM
KEYMAP	.DOC	KEYMAP	.ASM
KEYMAP	.COM	KEYCON	.ASM
KEYCON	.COM	UNMAP	.ASM
KEYWS	.COM	ASM	BAT
KEYWS	.DOC		
KEYBAS	.COM		
KEYBAS	.DOC		
KEYSYS	.COM		
KEYSYS	.DOC		
DATETIME	.COM		

Author: Patrick Swayne, HUG

KEYMAP - This is the executable KEYMAP program, provided in unconfigured form so that you can set up the keys the way you want to. It allows you to define a response of up to 20 characters for each of the following keys: F0 through F12, SHIFT-F0 through SHIFT-F11, I CHR, D CHR, INS LINE, DEL LINE, HOME, the Arrow keys, and the HELP key. If the keypad is shifted, the 1 through 9 keys can also be defined. You can designate one of the keys as an alternate response key, which gives all of the other keys 20 responses of up to 20 characters each. A total of 35 different responses can be produced without an alternate response key, or 69 responses with one. In addition to the ability to define keys, Z-DOS KEYMAP offers these other features:

**** Off/on toggle.** A control code (normally CTRL-SHIFT-6) is provided to toggle KEYMAP on or off, so that it can be temporarily disabled to allow the other programs to control the function keys.

**** Off line toggle.** A control code (normally CTRL-\) is provided to allow the terminal section of your computer to be taken "off line" so that you can enter escape sequences to set terminal characteristics, etc. This function duplicates the badly missed OFF LINE key found on earlier Heath/Zenith computers.

**** Coexistence with other programs.** Not all of the keys must be configured with KEYMAP. Some can be left "unconfigured" so that KEYMAP can coexist with programs such as Z-BASIC. For example, if you configure only the shifted function keys, the ZBASIC KEY command will still work properly with the unshifted function keys.

KEYCON - This program is used to configure the KEYMAP program, and allows you to designate the response of each mappable key.

KEYWS - This is a pre-configured KEYMAP for use with WordStar. The requirement to use hard-to-remember control codes is practically eliminated. Cursor and text movement, indenting, centering, underlining, and many other functions are available at the touch of function or keypad keys. Even if you use the new version of WordStar with programmable keys, you will find that KEYWS gives you more programmed keys in an easier-to-use layout.

KEYBAS - This is a pre-configured KEYMAP for use with ZBASIC. 33 BASIC keywords are "programmed" into your keys without interfering with the ZBASIC KEY command or the editing keys.

KEYSYS - This is a pre-configured KEYMAP for use with the operating system. Commands such as DIR, DATE, TIME, etc. are available at the press of a key. One of the keys runs the DATETIME program that was published in REMark. DATETIME is included on the disk.

UNMAP.COM - A program that disables KEYMAP. It lets you change from one KEYMAP to another without re-booting.

Comments: Ever since Pat wrote the CP/M KEYMAP program, we have had many requests for a version under ZDOS. Well, here it is! ZDOS KEYMAP is a program that every H/Z-100 ZDOS user should have.

TABLE C Rating: (1),(3),(10)

885-3011-37 ZDOS ZBASIC Games Disk

Introduction: This ZDOS disk contains a few graphic games which will bring hours of entertainment to the young and old. Spend a few hours on the job as an Air Traffic Controller, then relax while playing a few games of Blackjack. Practice your typing speed and accuracy or shoot it out with other tanks on the battlefield.

Requirements: These games require the ZDOS operating system on a Z-110 or Z-120 computer. The programs are written in and require the ZBASIC interpreter. The programs are written using the color commands.

Note: You will need to have color memory chips in your Z100 in order to view the games as written. Without the color chips, the games may not be playable.

The following files are included on the HUG P/N 885-3011-37 ZDOS ZBASIC Games Disk:

README	.DOC	STOREWD	.BAS
BLACKJCK	.BAS	WORD	.DAT
ATC	.BAS	TYPING	.DOC
ATC	.TXT	BATTLE	.BAS
ATC	.DOC	BMENU	.BAS
TYPING	.BAS	HISCORES	.DAT

Authors:

BLACKJCK -- John Kappers
ATC -- Del Tapparo
TYPING -- Diana Hsu
BATTLE -- Nathan Vedder

BLACKJCK - This version of Blackjack uses the full capability of the Z-100 graphics to display the playing cards. A maximum of three players is allowed.

ATC - This program was inspired from the "Air Traffic Controller" game by David Mannerling, distributed by Creative Computing Software. Although similar in design, the program is the original work of Del Tapparo.

In this real time simulation, you are an air traffic controller responsible for directing the flow of air traffic over a city containing two major airports. You are given a 20 minute shift to direct 6 to 26 aircraft safely to their destinations. You choose the number of aircraft according to your ability as a controller.

Air Traffic Controller is a realistic simulation demonstrating the stress involved with the job. The major difference being, in the event of a tragedy, you simply "press return" for another game.

TYPING - A game designed to help you improve your typing speed and accuracy. The computer will randomly choose one word (from WORD.DAT) to descend down the screen. You must type the word as fast as possible before the word reaches the line. If you misspell the word, you receive no points. The score is based on the player's speed of spelling the word correctly.

STOREWD is a program which will allow you to store your own vocabulary of words in the random file WORD.DAT. You can edit or add your own words to the file. The new WORD.DAT file can then be used with TYPING.

BATTLE - This Battlefield game sets your tank against a host of enemy tanks. You are to move your sites onto the enemy tanks and shoot. The enemy tanks are continually moving, therefore you may have to shoot in front of the tank to destroy it. The tanks also may shoot back, so you must move in hurry.

Note to ZBASIC programmers: This program has some real potential for any of you game writing enthusiasts. The program could be enhanced to include many other features, such as aircraft to fight, more tanks, different tank positions, etc. See what you can come up with.

Comments: This games disk offers a variety of graphic games for the game enthusiasts.

TABLE C Rating: (2),(9)

885-3012-[37] ZDOS 885-5002-[37] CP/M-86 HUG Editor

Introduction: The HUG Editor is a fast command mode character editor originally derived from a public domain CP/M Users' Group

editor. It resembles the CP/M ED editor somewhat in operation, but more closely resembles the Intel ISIS-II editor. It is not a "screen" editor, and uses no function or arrow keys. It is designed mainly for writing source code for assemblers and compilers.

Requirements: The HUG Editor requires the Z-DOS or MS-DOS (for 885-3012-37) or CP/M-86 (for 885-5002-37) operating system, and will run on any computer compatible with those operating systems (it is not machine dependant).

The following files are included on the HUG Editor disks:

885-3012-37		885-5002-37	
README	.DOC	README	.DOC
EDIT	.COM	EDIT	.CMD
SPEDIT	.COM	SPEDIT	.CMD
EDIT	.DOC	EDIT	.DOC
EDIT	.ASM	EDIT	.A86

Authors:
Z-DOS Version -- Patrick Swayne, from CP/M-86 version
CP/M-86 Version -- Jim Buszkeiwicz, modified by P. Swayne

These versions were translated from the HUG CP/M version, which originated from a CP/M Users' Group program.

EDIT.COM or EDIT.CMD -- This is the HUG Editor program. It is a command mode editor, which means that all text manipulation is done via commands, and none is done directly on the screen. All commands consist of only one letter each, and are easy to memorize. Command iteration is supported with nesting so that complex operations can be carried out with a single command line entry.

In translating this version from the CP/M version, text movement sections were optimized using 8088 string instructions with the result that this version is approximately three times faster when doing multiple search-and-replace commands (both versions running on a Z-100). For such operations, it is one of the fastest editors available.

The HUG Editor automatically creates a back up of the file you are editing. Files can be any size up to the size of one disk, and input and output can be on separate drives.

The HUG Editor supports true backspace, and backspaces correctly through tabs, and even through carriage returns to the previous line while you are inserting text.

SPEDIT.COM or SPEDIT.CMD -- This is a modified version of EDIT that works a little differently from the regular version if you backspace through a carriage return.

EDIT.DOC -- These are the instructions for using EDIT.

EDIT.ASM or EDIT.A86 -- This is the assembly source code for EDIT.

Comments: This editor has been around in some form or other for some time, and is popular with "old timers" in the microcomputer community. It is not easy to use as some screen editors, but all of the commands are logical and easy to remember. The HUG Editor is an excellent replacement for EDLIN for use with Z-DOS.

Note: This editor is public domain and its use is not restricted by copyright or other legal hinderances.

TABLE C Rating: (10)

=====
885-3013-37 Z-DOS
Checkbook Manager
=====

Introduction: Checkbook Manager is a ZBASIC program that has the capability of displaying your checkbook register with as many as nine entries at a time. Items can be individually entered and/or edited, and after entering transactions, checks are printed in a format suitable for window mailing envelopes. There is a reconciliation routine which is used at the end of the month which marks cleared transactions, inputs bank statement data (ending balance, bank charges, etc.), then prints a reconciliation statement.

Checkbook Manager is easier to use than other accountant programs because of the on-screen display of multiple transactions, the ability to search and edit individual entries, and the use of H/Z-100 graphics to display the register.

Requirements: This program requires an H/Z-100, color or monochrome, 128K of RAM, ZBASIC, and a printer if check printing is desired.

The following files are included on the HUG P/N 885-3013-37 Checkbook Manager Disk:

README	.DOC
--------	------

AUTOEXEC	.DOC
CM	.BAS

Author: Stephen Ruks

Program Content: With Checkbook Manager, you can essentially discard your checkbook ledger. All normal checkbook functions are performed by this program. The following is the main menu extracted directly from Checkbook Manager:

1. Enter Transactions In Checkbook
2. Search For Transactions
3. Edit Transactions
4. Print Checks
5. Reconcile Bank Statement
6. Start New Disk File
7. Change Account Disk
8. Reconfigure (Color/Mono)
9. End Program

The SEARCH and EDIT features are particularly useful. Transactions can be searched for by check number, date, payee, or amount. Once the proper transaction is found, you are then given the option of editing it. The balance is calculated after each entry is made thus maintaining the correct figures on screen at all times.

Comment: The program is self-prompting and no problems encountered the first time through.

TABLE C Rating: (0),(9)

=====
885-3014-37 Z-DOS /MS-DOS
UTILITIES II
=====

Introduction: This disk contains several useful Z-DOS utilities. Most of them will also run under MS-DOS on a Z-150.

Requirements: An H/Z-100 type computer with Z-DOS, or a Z-150 or Z-160 or IBM PC with MS-DOS (PC-DOS) (except as noted).

This disk contains the following files:

README	.DOC	CLOCK	.ASM
FONTE	.EXE	DATETIME	.COM
FONTE	.BAS	DATETIME	.ASM
IBM	.CHR	SEE	.COM
H19	.CHR	SEE	.ASM
DIR150	.COM	ONECOPY	.COM
DIR150	.ASM	ONECOPY	.ASM
PDIR	.COM	SWAP	.EXE
PDIR25	.COM	SWAP	.ASM
PDIR	.ASM	ERA	.COM
DISKID	.COM	ERA	.ASM
DISKID	.ASM	ZBREF	.COM
SCRNCLK	.WHT	ZBREF	.ASM
SCRNCLK	.RED	BRNCHREF	.COM
SCRNCLK	.ASM	BRNCHREF	.ASM
CLOCK	.COM	ASM	.BAT

Authors:

FONTE, SWAP - Mark Aagenas, Heath Co.
DATETIME - Frank Clark, ZDS
DIR150, PDIR, DISKID, SCRNCLK, CLOCK, SEE, ONECOPY, ERA - Patrick Swayne, HUG Software Engineer
ZBREF, BRNCHREF - Original program by Rudi Daniel Z-DOS versions by P. Swayne

FONTE - This is a compiled version of the character font editor presented in REMark magazine. It allows you to easily create new character fonts or modify the keyboard response on your H/Z-100 type computer. This program will not run on Z-150's.

IBM.CHR - This is a replacement for ALTCHAR.SYS, created with FONTE, that provides IBM-like characters. These characters are bolder than normal and some may find them easier to read, especially on color monitors. H/Z-19 graphic characters are supported. For H/Z-100 only.

H19.CHR - This character set provides true H/Z-19 style characters, with full descenders on p, y, etc. for your H/Z-100. Since the H/Z-100 has only 9 scan lines per character instead of 10 like the H/Z-19, the catch is that the tops of the characters are on the top line, with the result that reverse video does not look as good as normal. For H/Z-100 only.

DIR150 - This program is like the DIR100 program released on the first HUG Z-DOS Utilities disk except that this version will run on H/Z-100's or Z-150's (and IBM PC'S). It provides an easy-to-read alphabetized directory with graphic lines separating columns of files. If a label was created on the disk by DISKED (below), it is displayed at the top of the screen. Disk space usage information is

presented at the bottom of the screen. Up to 80 files can be displayed on the screen, and if there are more, the program will prompt you to hit RETURN before displaying a new screen of files. DIR150 can handle up to 1024 file names.

PDIRb1 - This program is similar to DIR150 except that its output goes to a printer. PDIR25 is for H/Z-25 and H/Z-125 printers, and uses graphic lines to separate file columns. PDIR is for other printers.

DISKID - This program lets you write a volume number and label to a disk, which are displayed at the top of the screen or page by DIR150 and PDIR.

SCRNCLK - This is the screen clock program that was presented in the May 1984 issue of REMARK. It provides a digital clock display at the upper right corner of your screen that runs while you are running other programs. This version is improved over the published version, and does not "mess up" the top line of text on the screen like the other version occasionally did. SCRCLK.WHT produces a white clock display, and SCRCLK.RED produces a red display. For H/Z-100 only.

CLOCK - This program can turn the screen clock off and on after SCRCLK is loaded. For H/Z-100 only.

DATETIME - This is the program presented in REMark that maintains the latest time and date in a directory entry called DATETIME.TMP. If you create an AUTOEXEC file that runs DATETIME at cold boot, your date and time will always be set to the latest date and time on your disk when you boot up.

SEE - This is a replacement for the TYPE command, for examining text files. It allows you to scroll forward and backward through a file, to search for text strings in the file, and to print screens of the file on a printer. It can scroll sideways to show lines up to 132 characters long.

ONECOPY - This is a single drive file copy utility. It is useful in situations where one drive of a two drive system is bad, and the "system" still thinks there are two drives. Files up to the maximum allowable size in Z-DOS may be copied.

SWAP - This is the console swapper program that was presented in REMark magazine. It allows you to use an external terminal on your computer, and to switch back and forth between the main keyboard/screen and the other terminal.

ERA - For CP/M users who have switched to Z-DOS/MS-DOS, this program allows you to erase files by typing ERA instead of DEL or ERASE.

ZBREF - This is a variable cross reference utility for ZBASIC or GWBASIC. It lists all of the variables in a program in alphabetical order followed by the line numbers on which the variable can be found. Output can be sent to a printer or the screen. It can quickly process large BASIC programs.

BRHCNREF - This utility lists all of the branch statements (GOTO, GOSUB, etc.) in a program along with the line numbers they reference.

ASM.BAT - This is a batch file that lets you assemble programs from start to .COM file in one command line entry. Not for use with .EXE programs.

Comments: none.

TABLE C Rating: (0-4),(10)

=====
885-3015-37 ZDOS
SKYVIEWS
=====

Introduction: SKYVIEWS is a Z-BASIC program for plotting the positions on the observers horizon of sun, moon, planets, and selected stars, with constellations marked. Using graphics, the observers horizon is plotted on the Z-100 screen.

Requirements: The program requires an H/Z-100 with 192Kb of system RAM, Z-DOS Version 1.25, one disk, and a color monitor, although the displays will work on a monochrome monitor.

The following programs are included on the HUG P/N 885-3015-37 SKYVIEWS disk:

SKYVIEWS	.EXE
PLANET	.BAS
CSTNM	.BAS
BRIGHTST	.BAS
SKYVIEWS	.BAS
SKYVIEWS	.DOC

Author: Eugene L. Davis

Program Content: SKYVIEWS.EXE is compiled Z-BASIC program

for calculating and plotting the positions of sun, moon, major planets, and stars brighter than 4.0 Magnitude on the observer's horizon and the observer's zenith (overhead). The phases of the moon are shown in the plots. The major constellations in the northern and southern hemispheres can be marked for viewing on the screen. For aid in telescope viewing, the azimuth and elevation angles, as well as the right ascension and declination of the major planets are displayed at the time and for the place selected for the viewer. The data input requirements are simple: date, local standard time, latitude and longitude, and time zone of the observer. The program is menu driven and all data inputs have default values for ease of data entry and demonstration purposes. The algorithms and equations used in this program were taken directly from the ASTRONOMICAL ALMANAC for 1984, and references are commented into the source.

The source program is included and can be executed directly under the Z-BASIC interpreter. New default values can be added by creating a new default value file.

Comments: Extensive documentation is included with SKYVIEWS making this an ideal program for beginning Astronomers as well as seasoned ones.

TABLE C Rating: (0),(7),(9)

P/N 885-3016-37 Z-DOS Adventure Disk

Introduction: Adventure is one of the most well known and best liked computer games. It is an adventure through a giant cave to search out and find treasures. Many dangers, as well as puzzles to solve, are instore for the user who ventures into its midst.

Requirements: This game requires the Z-DOS operating system on an H/Z-100 computer. This game will also work properly with the MS-DOS operating system on an H/Z-150/160. In either case, this program requires around 75k of memory. Only one 5.25" drive is required.

The following is a list of the files on the HUG P/N 885-3016-37 Z-DOS Adventure Game disk.

ADVENT	.EXE
AINDX	.DAT
ATAB	.DAT
README	.DOC

Authors: This program was originally developed by Willie Crowther. Most of the features of the current program were added by Don Woods (Don SU-AI). This microprocessor version was done by Brian Barnes and Dave Sandage of Zenith.

Preparation: To run ADVENTURE under Z-DOS or MS-DOS, simply copy the three adventure files, ADVENT, AINDX, and ATAB to a bootable disk and type ADVENT at the system prompt.

Program Content: Somewhere nearby is a colossal cave, where others have found fortunes in treasure and gold, though it is rumored that some who enter are never seen again. Magic is said to work in the cave. I will be your eyes and hands. Direct me with commands of one or two words. I should warn you that I look at only the first four letters of each word, so you'll have to enter 'northeast' as NE to distinguish it from 'north', 'dnstream' for 'downstream', etc. Should you get stuck, type 'help' and 'info' for some general hints.

Help: I know of places, actions, and things. Most of my vocabulary describes places and is used to move you there. To move, try words like forest, building, dnstream, enter, east, west, north, south, up, or down. I know about a few special objects, like a black rod hidden in the cave. These objects can be manipulated using some of the action words that I know. Usually you will need to give both the object and actionwords (in either order), but sometimes I can infer the object from the verb alone. Some objects also imply verbs; in particular, 'inventory' implies 'take inventory', which causes me to give you a list of what you're carrying. The objects have side effects; for instance, the rod scares the bird. Usually people trying unsuccessfully to manipulate an object are attempting something beyond their (or my!) capabilities and should try a completely different tack. To speed the game, you can sometimes move long distances with a single word. For example, 'building' usually gets you to the building from anywhere above ground except when lost in the forest. Also, note that cave passages turn alot, and that leaving a room to the north does not guarantee entering the next from the south.

Suggestions: Try 'ENTER BUILDING'. When you see an object, pick it up. Go 'DNST' (downstream) if you want to find the cave.

Helpful Words:

INVENTORY	List items you are carrying
SCORE	Show your current score
LOOK	Long description of current location
BACK	Go back the way you came
QUIT	Stop the game and give final score

Command Style: Remember, ADVENTURE takes one or two word commands only. Make them straight forward like:

```
ATTACK DRAGON
EAT BIRD
THROW AXE
GET GOLD
WEST or W
UNLOCK GRATE
DOWN or D
etc.
```

Info: If you want to end your adventure early, say 'QUIT'. To see how well you're doing, say 'SCORE'. To get full credit for treasure, you must have left it safely in the building, though you get partial credit just for locating it. You lose points for getting killed, or for quitting, though the former costs you more. There are also points based on how much (if any) of the cave you've managed to explore; in particular, there is a large bonus just for getting in (to distinguish the beginners from the rest of the pack). I may occasionally offer hints if you seem to be having trouble.

***** GOOD LUCK *****

Comments: Adventure will provide many months and even years of fun trying to reach the 366 point goal.

TABLE C Rating: (10)

P/N 885-3017[-37] ZDOS Games Contest Package (2 Disks)

Introduction: These two disks contain color graphic games that were sent in as entries to our game contest. All of these programs use the color graphic capabilities of the H/Z-100 system. Some are real time, fast action, like Worm and NYAG. Others use passive input like Bowling and Blackjack. Young and old will enjoy these disks full of fun.

Requirements: These games use the ZDOS operating system. Some of them use ZBASIC and others are compiled. The H/Z-100 with color memory and a color monitor is also needed.

The following programs are included on the HUG P/N 885-3017-37 Contest Games Disks.

Disk 1

ELEVATOR	.EXE	PLAYER1	.DGM
ELEVATOR	.BAS	MAN-WB	.DGM
ELEVATOR	.DOC	PLAYER2	.DGM
WORM	.BAS	PLAYER4	.DGM
WORM	.DOC	SIMPLE	.DGM
WORM	.EXE	TITLE-PG	.DGM
WORM	.SCR	MAIN-M	.DGM
REF	.BAS	PLAYER3	.DGM
REFINST	.BAS	THE-NW	.DGM
REF	.EXE	Z-150	.DGM
REFINST	.EXE	STILL	.DGM
REF	.DOC	SKIER	.DGM
BLKJAK	.BAS	ILUSADY	.DGM
BLKJAK	.DOC	MOUSCN	.DGM
BOWLING	.BST	NYAG	.BAS
BOWLING	.DOC	NYAG	.DOC
BOWLING	.BAS	DOODLES	.BAS
PINS	.DAT	DOODLES1	.DOC
README	.DOC	DOODLES2	.DOC
		RDATLANT	.BST
		RDATLANT	.BAS
		CARS	.DAT
		TRACK G	.
		RDATLANT	.DOC
		README	.DOC

Disk 2:

DRAW-ME	.EXE	TRACK G	.
DRAW-ME	.BAS	RDATLANT	.DOC
DRAW-ME	.DOC	README	.DOC

Authors:

ELEVATOR	- Wojtek Bok
DOODLES	- Arleigh E. Luckett
BLKJAK	- Rober Sully
REF	- Michael Osborne
WORM	- Morris Proctor
NYAG	- Matt Newell
DRAW-ME	- Phil Winninghoff

BOWLING	- Joseph T. Frank
RDATLANT	- Joseph T. Frank

ELEVATOR: This is basically a two player game. The object is to move your player between different floor levels by moving according to dice rolls. Watch out however, landing on one of the many elevators can move you from the top floor to the bottom. This game can be quite frustrating.

DOODLES: This program can be used by the younger crowd to draw or "doodle" simple shapes using circles and lines. These shapes can then be painted in with different colors.

BLKJAK: This version of Blackjack uses liberal Las Vegas Strip casino rules and displays the cards using brilliant color graphics.

REF: Reflections is a logic game for one person. The object of the game is to guess the positions of the balls hidden in a square grid using a minimum number of 'probes.' This game comes with an extensive 'doc' program and playing it doesn't appear to be a 'push over.'

WORM: Actually, you start with what looks like a multi-bodied snake. The object is to eat all the apples on the screen by directing the movement of the snake with the keypad keys. The problem is, every time your snake eats an apple, it grows some new body parts making it longer. Needless to say, after a couple of screens of apples, 'snaking' your way around becomes difficult. This is an addictive fast action game.

NYAG: "Not Your Average Game" is the only way this one can be described. It appears that the object of this game is to move around a playing board and, in doing so, perform different randomly selected tasks. One of these tasks is to catch falling bricks on your head by moving your man across the video screen. As previously said, "not your average game!"

DRAW-ME: The object of this game is to recreate a line drawing which appears on the screen. A cursor is moved, by pressing the arrow keys to points in a playing area which correspond to the end points of lines making up the displayed figure. Up to four players can participate at the same time. Scoring is kept track of by the amount of moves needed to complete the drawing. In addition, there is a full screen creator mode where individuals can create their own line drawings and save them in a disk file.

BOWLING: Watch your bowling ball travel down the alley to meet the pins in this exciting version of the ever popular sport of Bowling. Throw curves, hooks, put spin on the ball. All you'll miss is the sound of the pins crashing.

RDATLANT: This game takes advantage of the color graphics capability of the H/Z-100 computer to simulate a sports car road race at the Road Atlanta race track. You may race against a live opponent, or you may select a car for the computer to race against you. You control the speed of the car by entering acceleration values, or braking values.

Comments: None

TABLE C Rating: (0), (1), (2), (3), (7), (9)

P/N 885-3018-37 ZDOS Spreadsheet Contest Package

Introduction: This ZDOS Spreadsheet Contest disk contains five different spreadsheets which were sent in as entries to our contest. Four of these programs are for Lotus 123 and one is for Peachtext 5000.

Requirements: Each of these spreadsheets require an H/Z-100 system with the Z-DOS operating system. The program, PERSONAL EXPENSE TRACKING requires Peachtext 5000. The other four, TAXPRO, PAYROLL, REAL ESTATE INVESTMENT, and CRYSTAL BALL need Lotus 123. All of these spreadsheets will work with a minimum of 128k of memory, except for CRYSTAL BALL, which requires a full 192k of RAM.

This package is a three disk set. Since most of the files had the same extension, they were renamed to show which files belong to which spreadsheet system. The documentation explains how to rename the files back to their original names. The following files are contained on the HUG P/N 885-3018-37 ZDOS Spreadsheet Contest disks:

Disk 1

SCHEDYJ	.WK1	OHIOTAX	.WK1
SCHEDX	.WK1	TAXPRO	.WK1
SCHEDY	.WK1	INCOME	.WK1
SCHEDYS	.WK1	README	.DO1
FEDTAX	.WK1	SUBMITTA	.DO1

PAYROLL	.WK2	P192	.XQT
README	.WK2	P256	.XQT
WORK	.WK2	FINYR	.KY1
LETTER	.WK3	FINYR	.KY2
README	.WK3	FINYR	.KY3
REALEST	.WK3	FINYR	.DAT
INSTRUCT	.DOC	FINYR	.MLB
P128	.XQT	README	.DOC

Disk 2

FIN128	.BAT
FIN192	.BAT
FIN256	.BAT
FIN128	.CAL
FIN192	.CAL
FIN256	.CAL

Disk 3

CRYSTAL	.B&W	EXPENSES	.PIC
REPORT	.PRN	INCOME1	.PIC
CRYSTAL	.WKS	BALANCE	.PIC
EXPENSE1	.PIC	INCOME2	.PIC
CRYSTAL	.DOC	INCOME3	.PIC
EXPENSE2	.PIC	TABLE1	.PRN
EXPENSE3	.PIC	TABLE2	.PRN
EXPENSE4	.PIC	TABLE3	.PRN

Authors:

TAXPRO	- George P. Elwood
REAL ESTATE INVESTMENT	- Joel Schulman
PAYROLL	- Charles McClain
PERSONAL EXPENSE TRACKING	- Richard Donaldson
CRYSTAL BALL	- Terry Robert Groff

Program Content: The following information was taken from the authors description of each spreadsheet.

TAXPRO: This is an interactive worksheet that permits the user to input data on income, withheld taxes, interest received, dividends, donations, and interest paid to project the taxes for the current year. The program projects the Federal and Ohio State Income taxes based on the 1983 tax forms. Four of the seven modules are combined to provide the entire worksheet.

REAL ESTATE INVESTMENT: This worksheet program uses the what-if capabilities of Lotus 123 to analyze the potential for profit in a real estate investment purchase. By entering only data regarding price, proposed financing, estimated appreciation rate, and marginal tax rate, the economic viability of an investment can be determined.

PAYROLL: This template is a full service payroll module, capable of handling up to 2000 employees on a weekly payroll system under maximum RAM in Lotus 123. It is fully flexible in terms of employee information, capable of accommodating temporary or regular employees, on salary, hourly, or piecework basis. It accounts for married or single, variable dependent count, and personal deductions/advances. PAYROLL calculates FICA, SDI (State Disability Insurance), Federal and State (California) income tax for both married and single employees, working from computed gross and taxable income to yield weekly net.

PERSONAL EXPENSE TRACKING: A total of 120 classifications are provided, including two autos and a professional section. Tax deductible items are covered where they cross over into your personal life. The area for income has room for multiple incomes such as interest, husband and wife, stock, etc. Dining out is graded A thru D to study eating out habits carefully. List Manager also keeps address, telephone, and account number information for all expenses. It will also produce reports from that information for such things as applying for new credit. Tax time is made much easier with all of your expense information on the spreadsheet.

CRYSTAL BALL: This worksheet forecasts annual household financial management and cash reserve. It is entirely menu driven, and can be useful as a budgeting and financial forecasting tool.

Comments: None.

TABLE C Rating: (0), (9)

=====

885-4004 REMark Volume 4

=====

REMark Volume 4 is a compilation of all of 1983's issues of REMark magazine. It is comprised of Issues 36 through 47.

=====

885-4700 HUG Bulletin Board Handbook

=====

Introduction: This handbook is intended to give the new user a helping hand in using the HUG Bulletin Board (BB) or Special Interest Group (SIG). The HUG SIG is a service provided by CompuServe Inc. of Columbus, Ohio.

Requirements: The handbook may be of use to anyone who has an account (User ID) with CompuServe and has been added to the HUG SIG as a member. It also may be of use to non-users of CompuServe, who would like to pick up some insight into the use of the HUG SIG.

Content: The content of the handbook is a mixture of some information files of the SIG, sprinkled with some new advice and suggestions for learning to use the SIG quickly and efficiently.

Note: CompuServe is continually making changes to the services they provide. These changes may directly or indirectly affect or alter the operation of the SIG. Therefore, SIG options stated in the handbook may become obsolete or altered without notice to HUG and/or the user. The user is responsible for noting changes to the CompuServe service. SIG changes are normally posted within the SIG option "NEW".

Comments: This handbook may be of practical help to users not familiar with the commands and options of the CompuServe SIG service.

TABLE C Rating: (9)

=====

885-5001-37 CP /M-86 KEYMAP Function Key Mapper

=====

Introduction: CP/M-86 KEYMAP is a program that lets you designate the responses produced by your computer's function keys. Up to 20 characters, including control characters and RETURNS can be programmed into a single keystroke. When loaded, KEYMAP becomes part of the "system", so that the expanded key responses are available to any program.

Requirements: CP/M-86 KEYMAP requires the Heath/Zenith version of the CP/M-86 operating system on an H/Z-100 series computer or an ET-100/ETA-100 computer and at least 128k of user memory.

This disk contains the following files:

README	.DOC	KEYBAS	.DOC
KEYMAP	.DOC	KEYSYS	.CMD
KEYMAP	.CMD	KEYSYS	.DOC
KEYCON	.CMD	UNMAP	.CMD
KEYWS	.CMD	KEYMAP	.AB6
KEYWS	.DOC	KEYCON	.AB6
KEYBAS	.CMD	UNMAP	.AB6

Author: Patrick Swayne, HUG

KEYMAP - This is the executable KEYMAP program, provided in unconfigured form so that you can set up the keys the way you want to. It allows you to define a response of up to 20 characters for each of the following keys: F0 through F12, SHIFT-F0 through SHIFT-F11, I CHR, D CHR, INS LINE, DEL LINE, HOME, the Arrow keys, and the HELP key. If the keypad is shifted, the 1 through 9 keys can also be defined. You can designate one of the keys as an alternate response key, which gives all of the other keys two responses of up to 20 characters each. A total of 35 different responses can be produced without an alternate response key, or 69 responses with one. In addition to the ability to define keys, CP/M-86 KEYMAP offers these other features:

**** Off/on toggle.** A control code (normally CTRL-SHIFT-6) is provided to toggle KEYMAP on or off, so that it can be temporarily disabled to allow other programs to control the function keys.

**** Off line toggle.** A control code (normally CTRL-\) is provided to allow the terminal section of your computer to be taken "off line" so that you can enter escape sequences to set terminal characteristics, etc. This function duplicates the badly missed OFF LINE key found on earlier Heath/Zenith computers.

**** Coexistence with other programs.** Not all of the keys must be configured with KEYMAP. Some can be left "unconfigured" so that KEYMAP can coexist with programs that must use the original key responses. For example, if you configure only the shifted function

keys, unshifted function keys will continue to function normally.

KEYCON - This program is used to configure the KEYMAP program, and allows you to designate the response of each mappable key.

KEYWS - This is a pre-configured KEYMAP for use with WordStar. The requirement to use hard-to-remember control codes is practically eliminated. Cursor and text movement, indenting, centering, underlining, and many other functions are available at the touch of function or keypad keys.

KEYBAS - This is a pre-configured KEYMAP for use with BASIC. 34 BASIC keywords are "programmed" into your keys to make developing BASIC programs easier.

KEYSYS - This is a pre-configured KEYMAP for use with the operating system. Commands such as DIR, STAT, FORMAT, etc. are available at the press of a key.

UNMAP - A program that disables KEYMAP. It lets you change from one KEYMAP to another without re-booting.

Note: If you would like to program your function keys under 8-bit CP/M-80 or CP/M-85, order the original KEYMAP program (HUG part no. 885-1230[-37]).

Comments: This version of KEYMAP will give you complete control of your H/Z-100 computer's function keys under CP/M-86.

TABLE C Rating: (1),(3),(10)

=====

885-5003-37 CP /M-86 UTILITIES BY PS:

=====

Introduction: This disk is a useful collection of utilities for the H/Z-100 CP/M-86 user.

Requirements: An H/Z-100 type computer (including the expanded ET-100) and CP/M-86. The HXSUB, TIME, DATETIME, PDIR, DISKID, ONECOPY, and PSET program will run on a Z-150.

This disk contains the following files:

README	.DOC	DISKID	.AB6
HXSUB	.CMD	SEE	.CMD
HXSUB	.AB6	SEE	.AB6
SCRNCLK	.WHT	SCR	.CMD
SCRNCLK	.RED	SCR	.AB6
SCRNCLK	.AB6	UNSCR	.CMD
CLOCK	.CMD	UNSCR	.AB6
CLOCK	.AB6	ONECOPY	.CMD
TIME	.CMD	ONECOPY	.AB6
TIME	.AB6	COLOR	.CMD
DATETIME	.CMD	COLOR	.AB6
DATETIME	.AB6	PSETMX	.CMD
DIR86	.CMD	PSETMX	.AB6
DIR86	.AB6	PSET25	.CMD
PDIR	.CMD	PSET25	.AB6
PDIR25	.CMD	SWAP	.CMD
PDIR	.AB6	SWAP	.AB6
DISKID	.CMD	ASM	.SUB

Author: Patrick Swayne, HUG Software Engineer

HXSUB - This program is a CP/M-86 version of the XSUB program that is supplied with 8-bit CP/M 2.2. It allows you to pass SUBMIT batch command lines to running programs. Operation is identical to the 8-bit XSUB program except that it properly process a Control-C (entered as "+C") in a submit file so that you can use Control-C to exit from a batch process involving DDT86 or a similar program.

SCRNCLK - This is a CP/M-86 version of the screen clock program presented in the May 1984 REMark. It maintains a clock in the upper right hand corner of your screen all the time regardless of what programs you are running. This program uses the clock interrupt vector as set up by the Heath/Zenith version of CP/M-86, and may not work with other versions. SCRNCLK.RED produces a red clock, and SCRNCLK.WHT produces a white clock (rename one of them to SCRNCLK.CMD). The source file, SCRNCLK.AB6, may be edited and re-assembled to produce other colors.

CLOCK - This is a program for turning off and on the screen clock after SCRNCLK is loaded.

TIME - This program works like the TOD program supplied with CP/M-86 except that it sets only the time, not the date. It is easier to use than TOD when you are not concerned with the date.

DATETIME - This program maintains the latest time and date in a file called DATETIME.TMP. If you CONFIGURE your CP/M to run

DATETIME on cold boot, the date and time will automatically be set to the values that were in effect the last time you ran DATETIME, even if the computer was turned off.

DIR86 - This is a CP/M-86 version of the directory program previously released as DIR19 for 8-bit CP/M and DIR100 for Z-DOS. It lists the files on your disk in an easy-to-read format using graphic lines to separate columns of files. Files can be alphabetized or listed in their "natural" order. DIR86 can list up to 80 files on the screen at a time, and if there are more than 80 files, it will pause for you to hit RETURN to see more files. DIR86 can handle up to 1024 files.

PDIR - This program is like DIR86 except that its output goes to a printer. PDIR25 is for H/Z-25 and H/Z-125 printers, and uses graphic lines to separate file columns. PDIR is for other printers.

DISKID - This program allows you to assign a volume number and label to a CP/M disk that can be read by DIR86 or PDIR. If the volume number and label are present, they are displayed at the top of the screen or page by DIR86 or PDIR.

SEE - This program is a fancy replacement for the CP/M TYPE command. It allows you to scroll forward or backward through a file, to search for strings within the file, and to print screens of the file to a printer. It can also scroll sideways to allow you to view files up to 132 characters wide.

SCR - This is a textual (not graphic) screen dump program. While it is loaded, anything on the screen is dumped to your printer when you type Control-D. SCR becomes part of the system when it is loaded so that any program can be run, and screens of it "dumped". SCR requires the Heath/Zenith version of CP/M-86, and is not compatible with KEYMAP (885-5001-37), which must be unloaded before SCR can be loaded.

UNSCR - This program unloads SCR from your system.

ONECOPY - This is a single drive file copy utility that is useful in situations where you have one bad drive in a two drive system, and the operating system "thinks" that you still have two drives.

COLOR - This program lets you set the foreground and background color on your screen. It is a translation of the Z-DOS COLOR program by Robert Metz.

PSETMX - This program lets you set up the print format on your Epson MX-80 or compatible printer prior to use. You can set Normal, Double strike, or Emphasized printing, Normal or Compressed width, and the lines per inch setting.

PSET25 - This program lets you set up the print format on your H/Z-25 or H/Z-125 printer prior to use. You can set the character spacing and line spacing.

SWAP - This is a CP/M-86 version of the SWAP program published in REMark magazine, which allows you to use an external terminal on your computer, and switch back and forth between the normal keyboard/screen and the other terminal. This program may run on a Z-150, but has not been tested on one.

IBM.CHR - This is a replacement for your ALTCHAR.SYS file that provides an IBM-like character font. The characters are bolder, and some may find them easier to read, especially on color monitors. The normal H/Z-19 graphic characters are supported.

ASM.SUB - This is a SUBMIT file that lets you assemble a program from start to .CMD file with one command line. Parameters for GENCMD are entered after the file name, as in

```
A>SUBMIT ASM FILE DATA[X400]
```

Comments: none.

TABLE C Rating: (0-4),(10)

P/N 885-5004-37 CP/M-86 TERM86 & DSKED

Introduction: This disk contains two utility programs. One allows the user to communicate with an external device or computer using a modem. The other program allows you to directly edit data on any size disk drive, including a winchester.

Requirements: DSKED will work on ANY computer running the CP/M-86 operating system. TERM86 also requires the CP/M-86 operating system, as well as, the following hardware. Some sort of modem, including interconnect cable, an H/Z-100 or H/Z-100 with any Godbout serial interface, or TMSI's H1000 with a standard Heath H89 serial interface, or any S-100 computer system using a Godbout serial interface and H19 or H29.

The following files are included on the HUG P/N 885-5004-37 CP/M-86 TERM86 & DSKED disk.

HZTERM86	.CMD	DSKED	.A86
TMTERM86	.CMD	ASCII2	.LIB
TERM86	.A86	JMPVEC	.LIB
TERM86	.DOC	BDOSCALL	.LIB
DSKED	.CMD	README	.DOC

Authors:

TERM86 -- Jim Buszkiewicz
DSKED -- Frank O'Neal

TERM86: TERM86 is a modem communications package, written in assembly language under the CP/M-86 operating system. In addition to being able to communicate with a host computer via modem and phone line, TERM86 is capable of transferring files either to or from itself, using two types of protocol. The two types of protocol used are: simple capture buffer (ALL available memory is used, up to 1Mb) with XON-XOFF, and XMODEM protocol with checksum verification. XMODEM protocol was chosen because of its popularity with microcomputer users, bulletin boards, RCPM systems, and CompuServe. This protocol was thoroughly defined by Ward Christensen, the author of CBBS in Chicago, and has become the hobbyists' pseudo-standard.

Another feature is the ability of TERM86 to automatically log onto CompuServe with two initial keystrokes. Permanently stored messages can also be sent to the host computer (or modem) with two keystrokes. These messages can be dialing information for smart modems or can be single line log-ons for different time-share systems. These "canned" messages can be changed from within TERM86 and these changes can be temporary or permanent. The baud rate can be modified from the keyboard when running TERM86, and also, can be a temporary or permanent change. Disks can be changed under TERM86 with a single "Reset Disk System" keystroke. Full and half duplex mode is also supported. The following is the command list available under TERM86.

TERM86, Version 1.0Z
Storage Buffer = 125365 Bytes
TERM86 Commands

HELP	ESC-`	Print This List
F0	ESC-J	Print This List
	ESC-E	Clear Screen
F1	ESC-S	Miscellaneous Functions
F2	ESC-T	Reset Disk System
F3	ESC-U	Store Mode Toggle
F4	ESC-V	Save Data To A Disk File
F5	ESC-W	Transmit A Disk File
F6	ESC-P	Duplex Mode Toggle
F7	ESC-Q	Clear Storage Buffer
F8	ESC-R	Return To CP/M-86

Even though the commands may look like the CP/M version of TERM, TERM86 is a complete re-write and not a translation. A brief version of the command list is maintained on the 25th line, as well as, the duplex status and capture buffer status. The source code is very well commented, making modifications or additions easy.

DSKED: DSKED is a disk editor that allows you to directly modify any track, sector, or byte, on any disk drive you may have. This program is written entirely in assembly language and includes all commented source code, as well as, required library files. DSKED is recommended for the advanced user, for it is possible to actually edit your disk to "death" with this program. DSKED has the following commands available:

DSKED was written using all proper system calls and is not hardware or version dependent.

Comments: Aside from a directory program, I have found these two programs the most useful in my library of utilities. TERM86 manages to get the job done with the least amount of effort and learning. Being entirely menu driven, one could use this program even if the documentation was lost. DSKED has already twice help me find obscure bugs in the operating system, BIOS, which I wrote. It only lacks the track and sector data when displaying a file.

TABLE C Rating: (10), (5), (3), (1), (0)

885-6001-37 MS-DOS Z-150 KEYMAP Function Key Mapper

Introduction: Z-150 KEYMAP is a program that lets you designate the responses produced by your computer's function keys. It works like the KEY command in GW-BASIC (BASIC) except that more keys can be defined, and the defined keys are part of the "system" and can be used with any program or the operating system, not just with BASIC. For example, you could have the F1 key produce the

command DIR A: (including the RETURN), so that a single press of that key would give you a list of the files on your disk.

Requirements: Z-150 KEYMAP requires the MS-DOS or PC-DOS operating system (version 1.25 or higher) on an H/Z-150, H/Z-160, or any PC-compatible computer, and at least 128k of memory.

This disk contains the following files:

README	.DOC	KEYCON	.ASM
KEYMAP	.DOC	UNMAP	.ASM
KEYMAP	.COM		
KEYCON	.COM		
KEYSYS	.COM		
KEYSYS	.DOC		
KEYBAS	.COM		
KEYBAS	.DOC		
KEYWS	.COM		
KEYWS	.DOC		
UNMAP	.COM		
KEYMAP	.ASM		

Author: Patrick Swayne, HUG

KEYMAP -- This is the executable KEYMAP program, provided in unconfigured form so that you can set up the keys the way you want to. It allows you to define a response of up to 20 characters for each of the following keys: the Arrow keys, Home, PgUp, PgDn, End, Ins, Del, F1 through F10, SHIFT-F1 through SHIFT-F10, CTRL-F1 through CTRL-F10, and ALT-F1 through ALT-F10. You can designate any one of those keys as an alternate response key, which gives all of the other definable keys two responses of up to 20 characters each. A total of 50 different responses can be produced without an alternate response key, or 99 responses with one. In addition to the ability to define keys, Z-150 KEYMAP offers these other features:

** On/Off toggle. A control code (normally CTRL-SHIFT-6) is provided to toggle KEYMAP on or off, so that it can be temporarily disabled to allow other programs to control the function keys.

** Coexistence with other programs. Not all of the keys must be configured with KEYMAP. Some can be left "unconfigured" so that KEYMAP can coexist with programs such as GW-BASIC. For example, if you configure only the shifted function keys, the GW-BASIC key command will still work properly with the unshifted function keys.

** Optional 25th line prompt. If you wish, you can have KEYMAP display a prompt on the 25th screen line designating the response of the keys F1 through F10, like KEY ON in GW-BASIC. While the prompt is on, output to the screen appears on the first 24 screen lines, and the 25th line remains under the control of KEYMAP, until a program accesses it directly.

** "Scan code" mapping. A key can be mapped to its own or any other "scan code." ("Scan codes" are the codes normally produced by function or keypad keys when KEYMAP is not in use.) For example, you could reverse the functions of the left and right arrow keys, and have each one produce the other's code.

KEYCON -- This program is used to configure the KEYMAP program, and allows you to designate the response of each mappable key. It is self prompting, and makes setting up custom key responses easy.

KEYSYS -- This is a pre-configured KEYMAP for use with the operating system. Commands such as DIR, DATE, TIME, etc. are available at the press of a key.

KEYBAS -- This is a pre-configured KEYMAP for use with GW-BASIC. 30 BASIC commands are "programmed" into your keys, without interfering with the KEY command or the editing keys.

KEYWS -- This is a pre-configured KEYMAP for use with WordStar. It provides more control via the function and keypad keys than you get without KEYMAP, and is similar to the configuration used in other releases of KEYMAP. Use it as it is, or use it as a guide to setting up WordStar to your own preferences.

UNMAP -- This program disables KEYMAP, and lets you install a differently configured KEYMAP without re-booting.

TABLE C Rating: (1), (3), (10)

NOTE: For use on other Heath/Zenith computers, HUG offers the following KEYMAP programs:

885-1230(-37) -- CP/M KEYMAP, for use on an H8 (with Heath/Zenith terminal), H/Z-89,90, or Z-100 and 8-bit CP/M.

885-3010-37 -- Z-DOS KEYMAP, for use on a Z-100 series computer under Z-DOS or MS-DOS.

885-5001-37 -- CP/M-86 KEYMAP, for use on a Z-100 series computer under the Heath/Zenith release of CP/M-86.

885-6002-37 MS-DOS CP/EMulator II And ZEMulator

Introduction: CP/EMulator II is a program that lets you run standard 8-bit (8080) CP/M programs under MS-DOS on any MS-DOS compatible computer, and does not require an 8-bit processor. ZEMulator is a program that provides most of the Z-100's keyboard functions, escape code functions, and block graphic (H19) characters on any IBM-PC compatible computer, including the Z-150 and Z-160, and does not require the Z-319 video card. Together these programs add greatly to the number of programs that you can run on your Z-150 or other PC compatible computer.

Requirements: CP/EMulator II requires any version of ZDOS or MS-DOS 1.25 or higher on any Heath/Zenith or other MS-DOS compatible computer. The computer should have at least 128K of RAM. ZEMulator requires an H/Z-150, H/Z-160, or any IBM-PC compatible computer, 128k (min) of RAM, and MS-DOS/PC-DOS 2.x or 1.25.

The following files are included on the CP/EMulator II disk:

README	.DOC	ZEMI	.COM
CPM2	.COM	ZEM	.DOC
CPM2	.DOC	ZEM	.ASM
CPM2	.ASM	SETZEM1	.COM
COMD	.SYS	SETZEM2	.COM
COMD	.ASM	SETZEM1	.COM
ZEM1	.COM	SETZEM	.ASM
ZEM2	.COM	ZTEST	

Program Authors:

CPM2 -- P. Swayne, HUG. Developed from the first CP/EMulator by Robert A. Metz.

COMD -- Developed from ZCPR by P. Swayne, HUG

ZEM -- Original program by Robert Metz. Enhanced and modified by P. Swayne, HUG.

SETZEM -- P. SWAYNE, HUG

CPM2 -- This is the CP/EMulator II program. It supports nearly all BDOS calls of real CP/M version 2.2 and non-disk BIOS calls. The Set DMA and Select Disk BIOS calls are also supported. It will run most CP/M programs including MBASIC and editors. It can be used in two modes: a direct mode that allows you to run a CP/M program directly from the MS-DOS prompt, and a command mode that provides a CP/M-like environment with the regular CP/M commands such as DIR, SAVE, etc.

CP/EMulator II interprets the 8080 code in the CP/M program and runs everything using the 16-bit processor. It, therefore, allows you to run 8-bit programs on Z-150 or ET-100 computers which have no 8-bit processor. It offers Z-150 owners an alternative to purchasing an expensive CP/M board from a non-Heath manufacturer in order to run CP/M programs. Note: H/Z-100 owners should use the original CP/EMulator program (885-3007-37), instead of this program to run CP/M programs under Z-DOS/MS-DOS.

CP/EMulator II offers the following advantages:

1. You can put your favorite programs, whether they are CP/M or MS-DOS, on a single disk.
2. CP/EMulator II provides a very large 63.5k TPA. Your programs will have all the memory space they need.
3. CP/EMulator II allows you to use CP/M editors on MS-DOS files.

Some disadvantages of CP/EMulator II are:

1. Because the 8080 code in the CP/M program is interpreted, it will run slower than under a real 8-bit processor. Some programs, such as CP/M WordStar, are slowed down so much as to be impractical. With others, the slow-down is hardly noticed.
2. Extension programs, such as DESPOOL or the CP/M version of KEYMAP, will not work except under rare circumstances.
3. Programs that use BIOS disk routines (except set DMA and select disk) will not work.
4. No TIC counter is supported. Game programs that require the TIC counter provided on some Heath/Zenith computers will not work.

COMD -- This program is a system command processor for CP/EMulator II that provides the usual CP/M commands such as DIR, ERA, SAVE, etc.

ZEM1, ZEM2, ZEMI -- These are versions of the ZEMulator prog-

ram. ZEM1 and ZEM2 are for H/Z-150 and H/Z-160 computers only, and provide the full H19 graphic character set along with Z-100 escape codes and key codes. The two versions cover variances in video configurations that have been encountered. ZEMI is for use with any PC-compatible computer, and provides a partial H19 graphic character set. That is, some of the characters are not the correct shape, and all of them are derived from the IBM-PC block graphic character set. ZEMI provides the same keyboard and escape code capability as the other versions.

Zemulator allows you to run many programs that were written for the H/Z-100 on your H/Z-150 or IBM-PC. These programs include editors such as HUG's Fast Eddy or Z-100 WordStar version 3.21 (note: Z-100 WordStar version 3.3 requires a Z-319 card), and any CP/M program you might want to run under CP/EMulator II that requires H19 graphics or the function keys. ZEMulator supports both expanded output (escape codes) and the non-expanded mode (8-bit codes) of the Z-100 keyboard. Note: ZEMulator does not require the installation of a Z-319 video card to operate. However, Z-100 programs that utilize video memory directly, whether for graphics or text, will not work without the Z-319 card.

SETZEM1, SETZEM2, SETZEMI -- This program is used to disable and re-enable ZEMulator once it has been installed. SETZEM1 and SETZEM2 are for the H/Z-150 versions, and SETZEMI is for the PC-compatible version.

ZTEST -- This is a text file that lets you determine which of ZEM1 or ZEM2 is correct for your H/Z-150 or H/Z-160.

TABLE C Rating: (0), (3), (9)

885-8025-37 CP /M-85 /86 FAST EDDY Text Editor and BIG EDDY

Introduction: FAST EDDY is a text file screen editor that was written for everybody. It was written using the basic commands and keypad keys, so that anyone, even with no experience with an editor, can learn to use it while reading the instructions.

For those files that are too large for your computers memory, BIG EDDY will handle the breaking up of the text for editing with FAST EDDY.

Requirements: This disk requires the CP/M-85 or CP/M-86 operating systems on an H/Z-100 computer. A printer is not required, but both FAST EDDY and BIG EDDY have printer options. Only one disk drive is required.

BIG EDDY can be used with large files. A second drive (or high density drives) may be required to break up large files which cannot fit into memory. The original file is not changed or deleted.

The following files are included on the HUG P/N 885-8025-37 CP/M-85/86 FAST EDDY Text Editor and BIG EDDY File Handling Utility:

EDITOR	.COM	TUTOR1	.DOC
BIGED	.COM	TUTOR2	.DOC
BIGED	.DOC	TUTOR3	.DOC
INSTRUCT	.DOC	RETURN	.COM

Author: Hubert L. Reeder

FAST EDDY -- This text file screen editor and its documentation have been designed for anyone not familiar with using an editor. The program uses commands and keys that are easy to remember and use.

The editor contains a limited number of commands, however, the commands are designed to provide a useful, easy to use editor. It does not have complex options that require time and effort to use. The editor contains a command mode and edit mode. The following are a brief list of the options:

COMMAND MODE

Typed Commands:

LOAD filename.ext	(load file)
SAVE filename.ext	(save file)
SAVE XX filename.ext	(save XX number of lines)
MERGE filename.ext	(merge two files)
PRINT	(print enter file, NN lines per page)
PRINT NN	(print double spaced)
FIND anyword	(find the first occurrence of a word)
MARGIN nn xx	(set left margin, nn, right margin, xx)

COMPRESS	(replace spaces with tabs in new text)
EXPAND	(cancel the COMPRESS command)
BYE	(exit to CP/M)

Key Commands:

Up arrow -- enter EDIT mode at first line of text
Down arrow -- enter EDIT mode at last line of text
HOME -- enter EDIT mode at pointer (last cursor location)
DELETE -- cancel partial commands or stop printer
F0 -- erase all text

EDIT MODE

Key Commands:

Up arrow -- move cursor up one line
Down arrow -- move cursor down one line
Right arrow -- move cursor to the right one character
Left arrow -- move cursor to the left one character
HOME -- return to COMMAND mode
IL -- insert line
DL -- delete line
IC -- insert character
DC -- delete character
f0 -- block erase
f1 -- align paragraph within left and right margins
f2 -- justify right
f3 -- indent on/off
f4 -- margin off
f5 -- split line
f6 -- find next occurrence of word, after FIND of COMMAND mode
f7 -- move backward in text
f8 -- move forward in text
f9 -- center line
f10 -- tab set/release
f11 -- jump left
f12 -- jump right

These are most of the basic commands of FAST EDDY. Please note that it has the ability to align paragraphs to wide margin settings and then the option of right justifying the paragraph text.

Details of how to use these options are contained in the documentation. The TUTOR1, TUTOR2, and TUTOR3 documentation files are included with the disk to give the user experience in using FAST EDDY while reading the doc files.

BIG EDDY -- This program is a utility to work with text files which are too large to be edited by FAST EDDY directly because of memory limitations. BIG EDDY can be used to browse a file of any size of which the user can break the large file into smaller parts for editing with FAST EDDY.

BIG EDDY asks for the input filename and an output filename. It keeps track of the subfiles and names them accordingly.

BIG EDDY has some useful options to aid the user in preparing the text for smaller files. The BROWSE mode is similar to the EDIT mode of FAST EDDY, except that no editing can be done to the file.

The following are a list of the commands of BIG EDDY:

SAVEALL -- save the entire text in memory to the disk
SAVEPART -- save part of the text in memory to disk
NOSAVE -- discard part of text
PRINT -- same as FAST EDDY's print commands
BYE -- exit to CP/M

With the SAVEPART command, the user can save the text by subject or modules of his choice. Using the CP/M PIP program, the subfiles can assemble the files into any order.

Comments: This version of FAST EDDY, with the editing features e.g. align paragraph and right justify, allow formatting features that make it a powerful, easy to use editor.

TABLE C Rating: (1),(3),(10)

885-8026 HDOS Space Drop

Introduction: Space Drop is a video action game for Heath/Zenith microcomputers. The game uses the H/Z-19 graphic capabilities. The game itself involves an attack by hostile aliens. You are to stop the aliens while trying to avoid being hit.

Requirements: Space Drop is a game which runs under the HDOS 2.0 operating system. The program makes use of either the

H8/H17/H/Z-19 or the H/Z-89 with 16K of memory. Only one disk is required.

The game is an executable program, ready to play.

Note: The game makes extensive use of the feature available in the H/Z-19 graphics terminal.

The following are included on the HUG Disk P/N 885-8026:

```

README      .DOC
SPACDROP    .DOC
SPACDROP    .ABS
SPACDROP    .ASM

```

Note: The source code is included.

Author: Bruce W. Markell

SPACDROP: This graphic game gives the player three "Artillery Ships" to engage in a battle with hostile aliens. The player uses the keypad to move the ship right or left in an effort to get a shot at destroying the enemy which increase in numbers as the game progresses. The four (4) key moves the player's ship to the left. The five (5) key stops the player's ship. And, the six (6) key moves the player's ship to the right. Firing at the aliens is accomplished by using the "A" key.

Other special functions include the space key and the ESCape key on the terminal. The space bar is used to "freeze" the action. The ESC key is used to terminate the game in process and return to HDOS.

SPACDROP.ASM: The source code for the SPACDROP program is included on the disk. This code can be used by the experienced programmer to modify the existing SPACDROP program.

Comments: Space Drop is similar to other video action games with horizontal movement of the player's ship and a combination of horizontal and vertical movement from the attacking aliens. A larger attack alien appears randomly to keep the pace of the game moving. This larger enemy must be destroyed as it appears or the alien will destroy the player's ship.

TABLE C Rating: (0), (1), (2), (9)

```

=====
                        885-8027 HDOS
                        885-8028-37 ZDOS
SCICALC Scientific Calculator
=====

```

Introduction: SCICALC is a program designed to turn the H/Z-89 or H/Z-100 computer into an extremely powerful and easy to use 14 digit scientific calculator. Besides providing six arithmetic operators, SCICALC supports a large variety of transcendental functions, trigonometric functions, statistics functions, U.S. to metric and metric to U.S. conversion formulae, and key mathematical and physical constants. It has also been pre-programmed to solve problems related to geometry (both plane and solid) and statistics (including linear regression and percentile calculations), and can perform arithmetic in base 8 and base 16.

Requirements: SCICALC will run under HDOS and ZDOS.

HDOS: This version of SCICALC requires the HDOS operating system version 2.0 on an H/Z-89 or H8/H17/H19 with 56K of memory. Only one hard-sectored disk drive is required. No printer is required.

The Microsoft BASIC (MBASIC) interpreter version 4.82 is required.

Note: To H8 users, the H19 terminal is required.

ZDOS: This version SCICALC requires the ZDOS operation system. Only one drive is required. A printer is not required.

This version requires the ZBASIC interpreter release 1, version 1.25.

The following files are contained on the P/N 885-8027 HDOS and P/N 885-8028-37 ZDOS SCICALC disks:

HDOS	ZDOS
SCICALC.BAS	SCICALC.BAS
HDOS	ZDOS
SCICALC.BAS	SCICALC.BAS

Hardcopy documentation is included with the both versions.

Author: Brian Downs

Program Content: SCICALC utilizes a four-level stack for arithmetic operations, along with nine registers for saving intermediate results, and a "Last X" storage location for remembering the argu-

ment to single parameter functions. Complex arithmetic expressions can be easily and quickly entered without the use of parentheses since SCICALC employs the "Reverse Polish" expression entry technique (also employed by Hewlett-Packard calculators).

All registers, stack and Last X storage locations are continuously updated and displayed by SCICALC and in the format designated by the user. The informative display especially makes this powerful calculator easy to learn and use. The current "state" of the calculator (i.e., the values of all stack and register locations) can be saved for use at a later time.

The following is a partial list of the common functions of SCICALC's MAIN menu:

```

X to the Y power
1/X (inverse)
ln(X)
log(X)
e to the X power
Square Root of X
Cube Root of X
X squared
sin(X)
cos(X)
tan(X)
cot(X)
sec(X)
csc(X)
Degree/Radian conversion
Arcsin(X)
Arccos(X)
Arctan(X)
X! (X factorial)
Change percent
%+
%-
logY(X)
Base 10
Base 8
Base 16
Change sign
sum X
ln(X)
Frac(X)
Round(X)

```

The following is a list of the conversion functions:

in to cm	cm to in
ft to m	m to ft
mi to km	km to mi
lb to kg	kg to lb
oz to g	g to oz
qt to l	l to qt
deg to rad	rad to deg
floz to ml	ml to floz
lb/in to atm	atm to lb/in
atm to mmHg	mmHg to atm
BTU to cal	cal to BTU
J to cal	cal to J
Fahr to Celc	Celc to Fahr
Kelv to Celc	Celc to Kelv
km to light yr	light yr to km
ft+2 to acres	acres to ft+2
hectares to acres	acres to hectares
hp to watts	watts to hp

The following is a list of the constants from the CONSTANTS Menu:

```

Pi
e
Velocity of light
Velocity of sound
Acceleration due to gravity
Radius of the earth
Circumference of the earth
Distance to the moon
Distance to the sun
Density of water
Heat of fusion of water
Heat of vaporization of water
Volume of one mole of gas
Gas constant
Mechanical equivalent of heat
Charge of one electron
Charge/mass ratio
Atomic mass unit
Mass of electron
Mass of neutron

```

```

Mass of proton
Avagadro's number
Bohr radius
Boltzman's constant
Euler's constant
Faraday's constant
Planck's constant
Rydberg's constant
Golden Ratio
Angstrom
Micron
Multiplication factor for milli-
Multiplication factor for micro-
Multiplication factor for nano-
Multiplication factor for pico-

```

The following are a list of calculations of some of the advanced functions of the MATH Menu:

```

Circumference of a circle with a given radius.
Area of a circle with a given radius.
Surface area of a sphere with a given radius.
Volume of a sphere with a given radius.
Area of a cylinder of a given radius and height.
Volume of a cylinder of a given radius and height.
Area of a cone of given height and radius of base.
Volume of a cone of a given height and radius of base.
Approximate the circumference of an ellipse.
Area of an ellipse.
Length of the third side of a triangle.
Length of the second side of a right triangle.
Area of a triangle given all three sides.
Area of a triangle given the base and height.
Distance between two Cartesian coordinates.
Equation of a line given two points on the line.
Equation of a line given one point and the slope of the line.
Intersection of two lines given the line equations.
Prime of X.
Hyperbolic sine, cosine, and tangent.

```

Convert split octal to base 10 and base 10 to split octal.
Convert Cartesian coordinates to polar coordinates.
Convert polar coordinates to Cartesian coordinates.

Calculate the accumulation of a money market funds, given number of months, yearly interest, initial principal, and monthly deposit.

The following are statistical functions of SCICALC:

Calculate the probability that a normally distributed random variable of a given mean and standard deviation will equal X.

Calculate the probability that a Poisson distributed random variable with a given mean will equal X.

Calculate the probability of observing x occurrences out of n trials of some event that has probability p of occurring.

Calculate the number of combinations of m things can be chosen out of n (different) things (without replacement).

Calculate the number of permutations of m things can be chosen out of n (different) things.

SCICALC performs all internal arithmetic using double precision variables. This affords approximately 16 digits of accuracy. However, math functions provided by most BASIC interpreters, including MBASIC 4.82 and ZBASIC 1.0, return only single precision values. These functions are what are used directly to provide many of the MAIN menu functions, and indirectly, to provide many of the ADV MATH menu functions.

SCICALC provides for error checking, if the user try's either an illegal programming option or mathematical function.

Comments: This is an excellent package, well done! The documentation leads the user through simple arithmetic functions to familiarize the reader with how SCICALC works. Then the user is introduced to the other functions and options.

TABLE C Rating: (0),(1),(3),(10)

```

=====
                        885-8029-37 ZDOS
FAST EDDY Text Editor
and BIG EDDY
=====

```

Introduction: FAST EDDY is a text file screen editor that was written for everybody. It was written using the basic commands and keypad keys, so that anyone, even with no experience with an editor, can learn to use it while reading the instructions.

For those files that are too large for your computer's memory, BIG EDDY will handle the breaking up of the text for editing with FAST EDDY.

Requirements: This disk requires the ZDOS operating system on an H/Z-100 computer. A printer is not required, but both FAST EDDY and BIG EDDY have printer options. Only one disk drive is required.

BIG EDDY can be used with large files. A second drive (or high density drives) may be required to break up large files which cannot fit into memory. The original file is not changed or deleted.

The following files are included on the HUG P/N 885-8029-37 ZDOS FAST EDDY Text Editor and BIG EDDY File Handling Utility:

EDITOR	.COM	TUTOR1	.DOC
BIGED	.COM	TUTOR2	.DOC
BIGED	.DOC	TUTOR3	.DOC
INSTRUCT	.DOC	RETURN	.COM

Author: Hubert L. Reeder

FAST EDDY - This text file screen editor and its documentation have been designed for anyone not familiar with using an editor. The program uses commands and keys that are easy to remember and use.

The editor contains a limited number of commands, however, the commands are designed to provide a useful, easy-to-use editor. It does not have complex options that require time and effort to use. The editor contains a command mode and edit mode. The following are a brief list of the options:

COMMAND MODE

Typed Commands:

LOAD filename.ext	(load file)
SAVE filename.ext	(save file)
SAVE XX filename.ext	(save XX number of lines)
MERGE filename.ext	(merge two files)
PRINT	(print enter file, NN lines per page)
PRINT NN	(print double spaced)
FIND anyword	(find the first occurrence of a word)
MARGIN nn xx	(set left margin, nn, right margin, xx)
CMPRESS	(replace spaces with tabs in new text)
EXPAND	(cancel the CMPRES command)
BYE	(exit to CP/M)

Key Commands:

- Up arrow - enter EDIT mode at first line of text
- Down arrow - enter EDIT mode at last line of text
- HOME - enter EDIT mode at pointer (last cursor location)
- DELETE - cancel partial commands or stop printer
- F0 - erase all text

EDIT MODE

Key Commands:

- Up arrow - move cursor up one line
- Down arrow - move cursor down one line
- Right arrow - move cursor to the right one character
- Left arrow - move cursor to the left one character
- HOME - return to COMMAND mode
- IL - insert line
- DL - delete line
- IC - insert character
- DC - delete character
- f0 - block erase
- f1 - align paragraph within left and right margins
- f2 - justify right
- f3 - indent on/off
- f4 - margin off
- f5 - split line
- f6 - find next occurrence of word, after FIND of COMMAND mode
- f7 - move backward in text
- f8 - move forward in text
- f9 - center line
- f10 - tab set/release
- f11 - jump left
- f12 - jump right

These are most of the basic commands of FAST EDDY. Please note that it has the ability to align paragraphs to new margin settings and then the option of right justifying the paragraph text.

Details of how to use these options are contained in the documentation. The TUTOR1, TUTOR2, and TUTOR3 documentation files are included with the disk to give the user experience in using FAST

EDDY while reading the doc files.

BIG EDDY - This program is a utility to work with text files which are too large to be edited by FAST EDDY directly because of memory limitations. BIG EDDY can be used to browse a file of any size of which the user can break the large file into smaller parts for editing with FAST EDDY.

BIG EDDY asks for the input filename and an output filename. It keeps track of the subfiles and names them accordingly.

BIG EDDY has some useful options to aid the user in preparing the text for smaller files. The BROWSE mode is similar to the EDIT mode of FAST EDDY, except that no editing can be done to the file.

The following are a list of the commands of BIG EDDY:

- SAVEALL - save the entire text in memory to the disk
- SAVEPART - save part of the text in memory to disk
- NOSAVE - discard part of text
- PRINT - same as FAST EDDY's print commands
- BYE - exit to CP/M

With the SAVEPART command, the user can save the text by subject or modules of his choice. Using the CP/M PIP program, the subfiles can assemble the files into any order.

Comments: This version of FAST EDDY, with the editing features, e.g. align paragraph and right justify, allow formatting features that make it a powerful, easy-to-use editor.

TABLE C Rating: (1),(3),(10)

885-8030-37 ZDOS
MATHFLASH

Introduction: MATHFLASH is an H/Z-100 color educational program designed for use by children who are learning the basic mathematical operations of addition, subtraction, multiplication, and division. It emulates the traditional "flash card" method of learning.

Requirements: MATHFLASH requires the Z-DOS operating system on an H/Z-100 computer, 128Kb of RAM, one disk drive, and a video monitor (either color or monochrome, though color is recommended).

The following files are included on the HUG P/N 885-8030-37 MATHFLASH disk:

README	.DOC
MATHFLAS	.EXE

Author: Mark C. Morrow

Program Content: MATHFLASH offers the following features:

- * MATHFLASH allows complete user control of the colors used for each character on the monitor screen.
- * MATHFLASH remembers which problems are answered incorrectly and repeats them occasionally, interspersed among other problems, until the child answers them correctly.
- * MATHFLASH works with true random sequences of exercises which do not repeat; i.e., answers can not be "memorized" by successive program sessions.
- * MATHFLASH will perform any user-selected combination of addition, subtraction, multiplication, and/or division. For example, "+" and "/" may be selected for drill, excluding "-" and "X"; "+" and "-" may be selected, excluding "X" and "/"; "+" may be selected, excluding the other three operations, etc.
- * MATHFLASH allows you to specify the operands used for specific operations. For example, the "+2's" may be requested, or the "X7's" and "/7's" interspersed, or any other conceivable combination of operands (0,1,2,...,9) and operators (+,-,X,/).
- * MATHFLASH entertains children while they practice in the areas you have specified.
- * MATHFLASH statistics are available at any time in the program showing:
 - 1) Number of problems worked.
 - 2) Percent of total answered correctly.
 - 3) Average elapsed time required by child to answer the problems.
 - 4) Exactly which problems were missed and have not yet been answered correctly. This feature allows you to review your child's progress and to emphasize the areas he/she may be having difficulty in.

These statistics are saved on disk for review after the program has finished.

Comments: From all appearances, this program is child-proof, so to speak. Wrong entries will do no harm to the program itself or its data file. Typing CTL-C is the only way to exit the program. An excellent child education addition to your software library.

TABLE C Rating: (0),(1),(9)

P/N 885-8031-[37] CP/M
Morse Code Transceiver Ver 2.0

Introduction: Morse Code Transceiver Ver 2.0 is an 8080 assembly language program, which provides the operator with the ability to send or receive morse code over a wide range of code speeds, dot/dash ratios, interference, and noise conditions. In addition, the precision speed feature is intended to be used whenever extreme transmit code speed accuracy is required.

The precision morse code speed algorithms used in this program were originally developed as part of a set of custom H89 programs for the American Radio Relay League's Maxim Memorial Station 'W1AW' at A.R.R.L. Headquarters in Newington, CT.

Requirements: This program requires the CP/M operating system version 2.0 on the H19/H8/H17 or H/Z89 with 48k of memory. Only one drive is required, however, two are recommended.

All I/O is at RS232C levels via the DTE port. External equipment is required to interface the RS232C level I/O signals to the amateur station equipment. Design details were published in REMark Issue 33, October 1982, Page 17.

Note: The algorithms used for morse code decoding depend on timing from the internal clock. Therefore, this program will perform properly only on a standard machine running at 2.048 MHz.

The following files are included on the HUG P/N 885-8031-[37] Morse Code Transceiver disk:

CW	.COM	U8250	.MAC
CW	.MAC	VARTBL	.MAC
CW	.DOC	RXINT	.MAC
CWDATA	.DAT	CODETBL	.MAC
DISPLAY	.MAC	TXSPEED	.MAC
STATDPY	.MAC	TXLOP	.MAC
SPKEY	.MAC	SAVMSG	.DAT
KBIN	.MAC	RMP	.COM
RXLOP	.MAC	README	.DOC

Author: Robert R. Anderson K2BJG

Program Content: Morse Code Transceiver can receive and transmit standard morse characters, as well as special morse characters, such as (AR), (SK), (BK), (KN), (BT), and (AS). Both upper and lower case key input and screen display is allowable.

The CWDATA.DAT disk file contains eleven multi-character groups, which can at any time be read to the currently selected buffer and display screen. This file contains commonly used abbreviations and space for the station call sign and station location.

Two transmit buffers selected by the 'f2' key will transmit up to 254 characters. Ten message buffers can be loaded or cleared under control of the 'f1' key. Any selected message buffer can be transferred to the transmit buffer. These 10 buffers are saved in SAVMSG.DAT.

Disks can be changed and ASCII disk files can be loaded without leaving the program. The memory buffer extends from the end of the program to the top of available memory.

The receive program operates in three modes: LOCK, TRACK, and HOLD. The transmit program operates in two modes: NORMAL and DISK FILE. The modes can be manually switched to any of the modes.

The available precision fixed Tx speeds are: 5SP, 05, 7.5, 10, 13, 15, 18 WPM, and 20 through 70 WPM in 5 WPM steps. The morse code speed standard used in fixed speed mode is in accordance with amateur practice of one word being defined as consisting of 50 elements.

The screen display is split into three areas for viewing the receive or transmit data, the selected transmit pre-type data, and the selected message buffer data. The screen is also used as the command screen and for display of error messages. The program will not allow for improper keyboard commands to take place.

Printed documentation comes with the disk and does an excellent job of helping the beginner learn how to use Morse Code Transceiver.

Comments: The author has done an outstanding job with this

CP/M version.

TABLE C Rating: (0), (1), (3), (5), (10)

885-8032-[37] HDOS CASTLE

Introduction: Now, play a version of Dungeons And Dragons (tm) in real-time! CASTLE is a real-time graphics action game for the H-89 and H-8/H-19 computers. It's cousins, CASTLE4, MCASTLE, and MCASTLE4 are designed to be used with an H-89 having the modifications for music and/or 4 MHz CPU speed. The object of the game is to travel through the rooms of a castle and take its treasures, all while avoiding the creatures which inhabit each room.

Requirements: CASTLE requires an H-89 or H-8 with an H-19, 16k of memory, HDOS 2.0, and one disk drive. An H-89 with 4 MHz and music conversions are necessary to benefit from CASTLE4, MCASTLE, and MCASTLE4.

The following is a list of files on the HUG P/N 885-8032-[37] HDOS CASTLE disk:

CASTLE	.ABS	MCASTLE4	.ABS
MCASTLE	.ABS	INSTRUCT	.DAT
CASTLE4	.ABS	MCASTLE	.ASM

MUSGEN	.ACM
MUSGEN4	.ACM
README	.DOC

Author: Vincent H. Lee

Program Content:

The Castle:

The castle consists of three floors of ten rooms each. The bottom floor is the "easiest" in which to play. The second and third floors have lava pools which cannot be touched. The third floor features one-way doors.

The Player:

The player may move his man up, down, left, right, or diagonally using the keypad of the H-19 (H-89). When he touches a door, he exits the room. When he touches a treasure, he captures it. When he touches a creature or lava pool, however, he turns into a skeleton and dies. The player may fire any arrows he may have in the direction he is moving. Two arrows may be on the screen at any one time.

Treasures:

In the rooms are four kinds of treasures for the player to take.

- Pots Of Gold Worth 500 points each
- Silver Chalice Worth 250 points each
- Sheaths Of Arrows Worth 100 points each plus 10 extra arrows for defense

- Pass Keys Worth 100 points and unlocks doors

When the player enters a room with a key, he must capture it in order to leave that room.

Creatures:

Four kinds of creatures inhabit the rooms:

- Gimmlings Gimmlings are large creatures which move only vertically and horizontally
- Archods Archods resemble large spiders and can move vertically, horizontally, or diagonally
- Snakes Snakes are smaller creatures which move only diagonally
- Fireballs Fireballs, like snakes, move only diagonally, but are much smaller

Summary: The object of CASTLE is to take all the treasures from the castle while avoiding and shooting the creatures.

Comments: Here's a real-time action game that will keep you busy for hours!

TABLE C Rating: (0), (1), (2), (10)

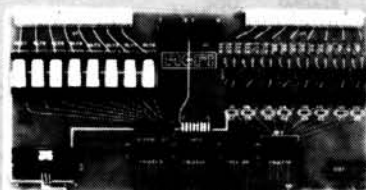
Ordering Information

For Visa and MasterCard phone orders; telephone Heath Company Parts Department at (616) 982-3571. Have the part number(s), description(s), and quantity ready for quick processing. By mail; send order, plus 10% postage and handling (\$1.00 minimum charge, up to a maximum of \$5.00. UPS is \$1.75 minimum -- no maximum on UPS. UPS Blue Label is \$4.00 minimum), to Heath Company Parts

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MULLEN S-100: Real Time, Real World CONTROLLER

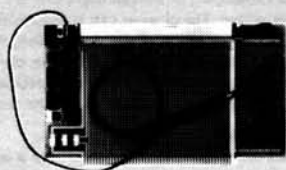


ICB-10 CONTROLLER BOARD
\$219, assembled and tested.

This 8 channel digital I/O controller can monitor inputs and control outputs. It features an easy to read manual that has schematics, component list, and programming examples as well as provocative insights on potential applications.

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1983 HUG Releases

UPDATE

P/N 885-1110 HDOS AUTOFILE Data Base (Z80 only)

This is an announcement that AUTOFILE has been updated to version 3.0. AUTOFILE is a data base management system (DBMS) for organizing, filing, and retrieving information.

The functional description in the HUG Software Catalog is still accurate. No function has been removed. This version has significant new features, two of which are:

- 1) The ability to search multiple data bases with one definition or a search argument. A dismount/mount feature makes it possible to search as many data bases as the user wishes.
- 2) A significant feature for unloading and deleting items, controlled from the hit list display. This feature makes it much easier to modify data base content.

This version OF AUTOFILE is completely compatible with version 2.0. The documentation has been enhanced to clarify program function for the benefit of users having little prior experience with data base systems.

AUTOFILE requires HDOS 2.0 on an H/Z-89 with 48K of memory. It makes extensive use of the Z80 instruction set, and therefore will run on H/Z-89s or H8 Z-80 based systems only.

Note: The programs are written using the Zilog mnemonics. The source files and .ACM files are included.

To anyone wishing to update from AUTOFILE version 2.0 to 3.0, send your original two disks and \$10.00 to Nancy Strunk, HUG, Hilltop Road, St. Joseph, MI 49085.

TABLEC Rating: (0),(1),(2),(3),(5),(10)

P/N 885-1121 HDOS Hard Sector Support Package

Introduction: The HUG Hard Sector Support Package is a collection of software designed to help users get the best use from a hard sector 5.25 inch disk system. It features the HSY.DVD device driver, an enhanced version of the original HUG.SY: device driver written by Dean Gibson of UlmiMeth Corporation. Several support programs are included to help the user test, duplicate, and modify disks.

Requirements: This two disk set requires the HDOS operating system, version 2.0, on an H8/H17 or H89 with 32K of memory. Only one disk drive is required, however two are recommended. A line printer is not required but is recommended due to the large amount of documentation files, which could be printed.

Note: The H8 requires the extended configuration option or the Heath Z80 board to used double sided drives. The H19 terminal is not required.

This package is a two disk set. Disk B contains the assembly source code for the files on Disk A.

Disk A

README	.DOC	DUMP	.ABS
HSY	.DOC	DUMP	.DOC
HSY	.DVD	SDUP	.ABS
HSY3	.DVD	SDUP	.DOC
HSY4	.DVD	TEST40	.ABS
SETDSK	.ABS	TEST80	.ABS
INITAUTO	.ABS	TINIT	.ABS
PRINIT	.ABS	COMBINE	.ABS

Disk B

README	.DOC	SETDSK	.ASM
HSYDVD	.ASM	DUMP	.ASM
HSYINIT	.ASM	SDUP	.ASM
MFREADY	.ACM	TINIT	.ASM
MFDVD	.ACM	COMBINE	.ASM
MFINIT	.ACM	ROMSUBS	.ACM

Authors:

HSY.DVD — Dean K. Gibson, modified by Patrick Swayne
SETDSK, SDUP, TINIT, COMBINE — Patrick Swayne
DUMP — HUG/Heath Staff, modifications by Patrick Swayne
INITAUTO, PRINIT, TEST40, TEST80 — Modifications of Heath/Zenith software. INITAUTO modifications by Dean Gibson.

HSY — The HSY.DVD device driver is a replacement for the standard 5.25 inch hard sector device driver provided by Heath, and offers many additional features. The features are supported under HDOS 2.0 without any changes except replacement of the existing hard sector device driver, and the disk drives, if higher capacity drives are to be used.

Some of the features are as follows:

A 35 percent reduction in time to load large single block files, such as MBASIC, ABS, and when copying such files with PIP.

The ability to SET the step rate, motor on time, and head delay time for each unit. A long head unload delay time allows the head to remain loaded during rapid multiple disk accesses, reducing head and media wear.

The step time is recorded in the boot track, resulting in faster booting for fast drives.

A media check can be performed during INIT, eliminating the need to run TEST17 just for that purpose.

Support for double sided and/or double track density (80 track, or 96 tracks per inch) drives, such as the H17-4. Single sided disks can be read and written in double sided drives, and 40 track disks can be read but not written in 80 track drives.

Note: The H-8 requires the extended configuration option or the Heath Z80 board to use double sided drives.

Improved error recovery, which temporarily increases the seek step time during error retries.

This new version is fully compatible with the Heath and other soft sector 5.25 inch disk device drivers.

HSY3 and HSY — These are 3 and 4 MHz versions of the device driver, for the programmable 3 and 4 MHz modifications presented in REMark. They will also work with conventional 3 and 4 MHz modifications, providing that the H17 ROM is also modified.

SETDSK — This program allows the user to change the boot configuration on a disk, so that he can make changes in the hardware without having to re-initialize the disks.

The current configuration of the drives is written into the boot track of any disk that is initialized with HSY.DVD. For example, if SY0: and SY1: are each 40 track drives, and SY2: is an 80 track drive, that information is written into the boot tracks of the disks. If the drives are changed, either by changing the programming jumpers or by replacing a drive with another type, the information in the boot track will have to be modified to the new system. The program SETDSK is provided for this purpose.

INITAUTO — This program is a modification of the standard INIT program. A disk initialized by it, when SYSGENED, will boot without prompting with the ACTION <BOOT> message.

PRINIT — This is another modification of INIT that allows the user to make his own boot code patches, and then transfer them to another disk when INITIALIZING. PRINIT will work even if the target disk is of another type.

DUMP — This program allows the user to patch any file or area on a disk by track and sector. It is a modification of the DUMP program which was released on the HUG P/N 885-1062. This version recognizes 80 track and/or double sided disks.

SDUP — This is a disk duplication utility. It can duplicate any size disk supported by HSY.DVD, and can duplicate in one drive, if necessary.

The source disk can be placed in any drive capable of reading the disk (for example, a 40 track single sided disk in an 80 track double sided drive). The destination must be placed in a write compatible drive.

SDUP uses the device driver for all disk reading and writing, and has its own initialization routine for formatting the destination disk. Rather than copying a disk one track at a time as some DUP programs do, it reads as much as will fit in memory, and then writes it to the destination disk. To verify disks, it calculates a checksum of all data read on each pass, then reads the destination disk and calculates a checksum on its data and compares the two.

TEST40 and TEST80 — These are modified version of TEST17 that

allow the user to test any kind of disk supported by HSY.DVD. TEST40 is for 40 track disks, and TEST80 is for 80 track disks. The improvements are outlined in the documentation.

TINIT — This is a special disk initialization program for preparing disks for TEST40 and TEST80. It initializes double sided disks with the same track numbers on each side so that each side can be tested independently. TINIT must be used if the user wants to test double sided disks/drives.

COMBINE — This program is required when the user re-assembles the device driver. Instructions are including in the re-assembling documentation.

Comments: This package is a must for any HDOS user who has high capacity disk drives. Some of the features will be of practical use to H17 type drives also.

TABLEC Rating: (5),(10)

P/N 885-1122 HDOS MicroNET Connection

Introduction: This package provides the user with a User Identification number to access the CompuServe timeshare system. The package includes a modem utility package, a CompuServe User ID and secret password to get on the system, plus some limited documentation to help the user get started using the system.

Requirements: This package contains a diskette that requires the HDOS operating system version 2.0 on an H19/H8/H17 with a four port serial card or H/Z-89 or Z90 with 32k of memory.

To use the software package, a modem capable of originate mode with FULL duplex at 300 baud operation will be needed. (This is a standard and minimum feature on most modems.) There are acoustic and direct modems. The user is responsible for choosing a modem which fits his particular needs.

The following files are released on the HUG P/N 885-1122 HDOS disk:

README	.DOC
HTERM	.ABS
HTERM	.DOC
FIRSTIME	.NET

Refer to P/N 885-1089 in the new HUG Software Catalog for a description of the modem program HTERM.

Package Description: This package has been put together to allow any member of HUG to get on the CompuServe timeshare system as soon as he/she receives the package, provided he/she has a modem as explained above.

The CompuServe User ID and secret password are sealed in an enclosed envelope in the package. The user is responsible for filling out and mailing the "Service Continuation/Request and Agreement" form to CompuServe.

CompuServe is a large timeshare data base system that has many areas of service, information, interest and fun. The HUG Special Interest Group (SIG) or Bulletin Board (BB) is a part of the CompuServe system. The member can leave, retrieve, search, scan, and reply to messages on the BB. In addition, the HUGBB has a large data base of programs on CompuServe, of which the HUGBB member can download from the host. The HUGBB also has the facility for the member to upload files to the system for others to download.

To access CompuServe the user must have a telephone number that links to CompuServe. There are direct numbers, TYMNET, and TELENET numbers that access CompuServe. TYMNET and TELENET are two telephone services that link to remote systems. For their services, they have a surcharge per hour over the cost of CompuServe.

Note: To find out if you have a telephone link in your area, call the CompuServe Customer Service Toll Free number 800-848-8990 or 614-457-8650. For general information about CompuServe call 800-848-8199.

There is documentation included with the package that shows step by step what the user will see the first time on CompuServe (the host computer). This file could be studied before going on Com-

puServe to help in understanding what the host timeshare system is doing. The sample link will show how to get to the HUG BB as well as some other options, which are significant to HUG members.

Documentation about the system is available from CompuServe for an additional charge:

- 1) CIS (CompuServe) User Guide
- 2) Personal Computing Guide
- 3) Special Interest Group (SIG) Manual

Refer to FIRSTIME.NET for help in ordering documentation and prices while on the system or contact CompuServe directly.

Special Note: CompuServe charges are around \$6.00 an hour for regular hours and open areas. (The rates are subject to change.) Parts of CompuServe have additional charges. Any member of the HUG Bulletin Board (or SIG) receives a \$.50 an hour discount for the time spent while on the HUG Bulletin Board.

The user may already have a modem package. HTERM is supplied for the new users convenience. The source code is not included, but is available on the part number 885-1089[-37].

Comments: This package will introduce a user to the timeshare system of CompuServe and access to the features of the HUG Bulletin Board.

TABLE C Rating: (0),(1),(5),(10)

P/N 885-1123 HDOS XMET Robot and ET-3400 Cross Assembler

Introduction: XMET is a 6800 cross assembler that includes mnemonic representations of the ET-18 Robot's "Robot Language" codes, to make writing programs for the HERO 1 robot or the ET-3400 easier. It is provided in both HDOS and CP/M versions (see P/N 885-1229), and is supplied with printed documentation.

A detailed look at the cross assembler is described in the May RE-Mark Magazine, Issue #40, under the article "Teaching HERO a Thing or Two" by Pat Swayne.

Requirements: This version requires the HDOS operating system, version 2.0, on an H8/H17/H19 or H/Z89 with at least 32k of memory and one disk drive.

The ET-3400 or ET-3400A with the ETA-3400 accessory is not required but can be useful for loading programs created with the cross assembler into the HERO-1 robot. See details below.

The source code files are included.

The following files are included on the HUG P/N 885-1123 XMET Robot and ET-3400 Cross Assembler disk:

README	.DOC	HEXMIK	.ASM
XMET	.ABS	EZHEX	.ABS
XMET	.ASM	EZHEX	.ASM
ABSHX	.ABS	RSAMPLE	.XET
ABSHX	.ASM	ESAMPLE	.XET
HEXMIK	.ABS		

Author: Patrick Swayne

XMET.ABS — This is the XMET cross assembler. The XMET program is actually a translator, not a true cross assembler. It translates the source file into a list of DB statements that can be assembled by the HDOS 8080 assembler. Utility programs are provided to convert the result into MIKBUG(tm) format hex files (for downloading into the robot using the method described below) or an easy-to-read hex format for manual keying in of the program.

If there is anything in the source program that XMET cannot recognize, the line containing it is passed through unchanged. That means that you can include special directives for the 8080 assembler that will be used to assemble the translated program.

The XMET cross assembler will assemble all of the 6808 processor's instructions using standard 6800 mnemonics, and has additional mnemonics to represent all of the codes in ET-18 Robot Language. A list of the Robot Language mnemonics is included with the cross assembler or refer to page 18 of RE-Mark Issue 40.

In addition to mnemonic representations of Robot Language instructions, the XMET cross assembler also has three special pseudo opcodes that cause the inclusion of special definitions. The opcode RMOT causes motor definitions to be included, such as HEAD, which equals the bits required to select the head motor. Speed and direction definitions are also included. The opcode RRAM adds definitions of special RAM locations and ports used by the robot, including the motor position counters and the clock ports. The opcode RROM adds the definitions of the user available ROM sub-routines.

Downloading with the ET-3400 — The ET-3400 or ET-3400A Microprocessor trainer with the ETA-3400 accessory can be used to load programs developed with XMET into the HERO-1 robot. First, the assembled robot program must be converted into MIKBUG(tm) format using the utility supplied with XMET. Next, the ETA-3400 serial input must be connected to the modem output of the H8 or H/Z89 computer. A terminal program (such as HTERM) must be used to make the computer the terminal for the ETA-3400. The next step is to start the ET-3400 monitor program and enter "LO" to load a MIKBUG file. With the transmit feature of the modem program (e.g. HTERM) the MIKBUG file can then be sent to the ETA-3400. Once the program is in the ETA-3400, a cassette tape of the program can be made, which can then be read by the robot. Another option is to connect the ETA-3400 tape output directly to the robot tape input. Then by starting a tape load on the robot and a tape save on the ETA-3400, the program will be transferred directly.

XMET.ASM — The source code for XMET.

ABSHX.ABS — This program will convert an assembled .ABS file to Intel HEX format.

ABSHX.ASM — The source for ABSHX.

HEXMIK.ABS — This program converts Intel HEX files to Motorola MIKBUG(tm) format files.

HEXMIK.ASM — The source for HEXMIK.

EZHEX.ABS — This program converts Intel HEX files to a format that is easy to read (for manual entry of programs into the robot or ET-3400).

EZHEX.ASM — The source for EZHEX.

RSAMPLE.XET — A sample robot program in XMET source format.

ESAMPLE.XET — A sample ET-3400 program in XMET source format.

Comments: The XMET cross assembler not only makes it easier to write robot programs, but it makes it easier to modify them. What can you say!! This program is a must for any HERO/Heath computer user.

TABLE C Rating: (5),(6),(10)

P/N 885-1124 HDOS HUGMAN and Animated Movies

Introduction: HUGMAN is a video game similar to the popular arcade game PACMAN™. The player accumulates points while eating peanuts, power pills, fruit, and monsters, without being eaten by one of the nasty monsters. The player has the ability to design new HUGMAN boards.

Three additional programs allow the user to create animated "movies" on the screen of the H/Z-19 or H/Z-89.

Requirements: This disk requires the HDOS operating system version 2.0 on an H8/H19/H17 or H/Z-89 with a minimum of 32k of memory. Only one disk drive is required.

The programs have been written in Tiny PASCAL (HUG P/N 885-1086) and the source code is available for some of the programs. The executable (.ABS) files are included. Extensive documentation is included to aid the player in running HUGMAN and the animated package.

The following files are included on the HUG P/N 885-1124 HDOS HUGMAN and Animated Movie disk:

README	.DOC	HUGLIB	.TPI
HUGMAN	.DOC	MOVIE	.DOC
HUGMAN	.ABS	CAMERA	.ABS
HUGMAN	.TPS	CAMERA	.TPS
MAKBRD	.ABS	SPLICE	.ABS
MAKBRD	.TPS	SPLICE	.TPS
INTRO	.PIC	MOVIE	.ABS
HUGMAN1	.PIC	SING	.MOV
HUGMAN2	.PIC	CONST	.TPI
HUGMAN3	.PIC	VIDEO	.TPI
HUGVAR	.TPI	CONSOL	.TPI
HUGCNT	.TPI	INKEY	.TPI

The source is not included for MOVIE.ABS due to the lack of room on the disk.

Author: Gary Cramblitt

HUGMAN — The documentation of HUGMAN will explain how to get started playing HUGMAN. There are some brief instruc-

tions which must be followed to run HUGMAN.

Once HUGMAN has been started, the screen will display the first board for playing the game. The monsters are shown on the screen as the letters B, P, W, and M which stand for Bob, Pat, Walt, and Margaret, respectively, of the HUG Staff. Peanuts, fruit, and power pills are scattered throughout the maze. The player must eat these while evading the nasty monsters.

HUGMAN becomes "energized" whenever a power pill is eaten. This allows him to turn on the monsters and eat them. The power pill, of course, has a limited effect before HUGMAN returns to normal.

The arrows on the keyboard are used to manipulate HUGMAN around the board. The program keeps track of the score and awards an additional HUGMAN at the score of 10000.

MAKBRD.ABS — This HUGMAN program gives the player the feature of creating custom playing boards for HUGMAN. The documentation contains rules for designing custom boards.

MOVIE and ANIMATION — The movie and animation package can be used to create custom slide shows or animated "movies" on the screen.

The program CREATE is used to "paint" pictures on the screen. Reverse video and graphic characters are supported. The program has facilities for saving the pictures on disk. In addition, animated or "moving" displays can be created by making small changes to the picture, then saving the resulting "frames" one at a time.

SPLICE.ABS will join two or more animated sequences into one sequence.

The program MOVIE will show a picture of animated sequence on the screen. Projection speed can be adjusted and the sequence can be displayed over and over again in continuous mode.

SING.MOV is an example of animated sequence. The documentation contains detailed instructions on creating your own "movies".

Comments: This entire disk will provide many hours of enjoyment for those who wish to play the existing games. It will provide many more hours of enjoyment for those who wish to create their own HUGMAN and MOVIES.

TABLE C Rating: (0),(1),(2),(10)

P/N 885-1125 HDOS MAZE MADNESS

Introduction: The programs on this disk produce a number of mazes of fast action fun. One or two players must try to make their way through the mazes without being caught.

The author has provided instructions for modifying the maze games. The documentation is easy to follow.

Requirements: This disk requires the HDOS operating system version 2.0 on an H8/H19/H17 or H/Z-89 with 32k of memory. Only one disk is required.

The programs are written in assembly language and the source code is included. The author provides instructions for modifying the source for anyone not familiar with assembly language.

The following files are included on the HUG P/N 885-1125 HDOS MAZE MADNESS disk:

README	.DOC	MAZEMAD	.ABS
MAZEMAD	.DOC	H8MAZE	.ABS
MODIFY	.DOC	MAZEMAD1	.ABS
H8MODIFY	.DOC	MAZEMAD2	.ABS
MAZEMAD	.ASM	MAZEMAD3	.ABS
MAZEMAD	.ACM		

Author: John Sirera

MAZEMAD — MAZE MADNESS will generate any size maze from 1 by 1 to 39 by 11 cells. Each maze is inhabited by one to nine creatures, depending on its size. The player must work his way through the maze to only one exit point.

There are three types of creatures within the maze; KILLERS, WARPERS, and BLOCKERS. If caught by a KILLER, the player is instantly killed. To survive, the player must avoid each KILLER at all costs.

The WARTER will transport the player to another part of the maze. The new location may or may not be in a more advantageous spot in the maze.

The last creature is a BLOCKER, which if encountered will freeze the player for a brief time. While the player is unable to move, he is at the mercy of the KILLERS which are still free to move about.

Two players can play at one time. The 2, 4, 5, 6, and 8 keys on the keypad are used to move around the maze for one player. A

second player will use the A, S, D, W, and Z keys.

The program MODIFY provides detailed instructions for changing the source code to modify existing parameters which creates the mazes. H8MODIFY explains how to prepare MAZEMAD for use with the H8 computer (8080 processor).

MAZEMAD1, MAZEMAD2, and MAZEMAD3 provide additional unique features to the mazes which are created.

Comments: The random mazes which are generated from MAZEMAD will provide endless hours of "frustration" and fun!

TABLE C Rating: (0),(1),(2),(10)

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P/N 885-1126 HDOS HDOS UTILITIES by PS:

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Introduction: This disk contains a collection of HDOS utility programs for listing files on a disk, examining text files, and testing memory.

Requirements: These programs require the HDOS operating system version 1.5 to 2.0 and will run on any H8/H17 or H/Z-89, 90 with at least 32K of memory. The H/Z-19 or H/Z-29 terminal is required to use the DIR19 and SEE programs with an H8. The SEE program will also work on H/Z-100 computers under HRUN. The ALLRAM program is only for ORG-0 compatible H/Z-89, 90 computers with 64K of RAM.

The following files are included on the disk.

README	.DOC	SEE	.ABS
DIR19	.ABS	SEE	.ASM
DIR19	.ASM	PPRT	.ABS
PDIR	.ABS	PPRT	.ASM
PDIR25	.ABS	ALLRAM	.ABS
PDIR	.ASM	ALLRAM	.ASM

Author: All programs are by Patrick Swayne, HUG.

DIR19 — This is a program for displaying the files on a disk that takes advantage of Heath/Zenith terminal features to list as many files as possible on the screen in an easy-to-read format. In addition to file names, the size in sectors and the flags for each file are shown. DIR19 displays up to 80 files on the screen, and if there are more than 80 to show, it prompts the user to hit RETURN to show another "page" of files, and will continue this process for up to 255 files. Files can be listed alphabetically or in their actual directory order. DIR19 can take "wild card" arguments to allow the user to show specific groups of files or individual files.

DIR19 divides the screen into 6 sections using graphic lines. At the top of the screen, a one-line section holds the drive name (SY0:, etc.), the volume number, and the disk label. In the middle of the screen are four vertical blocks that hold up to 20 files each. DIR19 fills each block from top to bottom in turn until all files requested are displayed or the screen fills up. At the bottom of the screen, a one-line section displays the count of files shown, the total size of the files, and the free space on the disk. The user can include switches in the command line to show system files, show allocated disk usage, and/or to suppress alphabetizing.

PDIR and PDIR25 — This program works like DIR19, but its output goes to a printer. PDIR25 uses H/Z-25 graphics, while PDIR is for any printer.

SEE — This program is a replacement for the TYPE command normally used to examine text files that uses Heath/Zenith terminal features. It was inspired by a similar program called "SC" by John Stetson, but was developed independently. With SEE, the user can press function keys to scroll forward or backward in a text file by lines or 24-line pages, jump immediately to the top or bottom of a file, search for words or phrases in the file, or print individual screens on a printer. It also provides horizontal scrolling so that lines longer than 80 characters can be viewed. Files that are too large to fit in available memory can be viewed in segments. SEE counts the lines in a file and displays the number of the line that is currently at the top of the screen on the 25th line, along with key prompts and the name of the file. The line numbers are maintained sequentially when you view large files that take up more than one memory segment.

SEE automatically determines what kind of computer or terminal it is being used on and optimizes its operation for that particular computer or terminal. It also makes sure that the key prompts displayed on the 25th line match the computer or terminal's function keys. On H/Z-29 terminals and H/Z-100 computers, the prompts are labeled since the relationship between the keyboard and screen may not be fixed.

Note: SEE was written for use with both HDOS and CP/M. It will eventually be released on a HUG CP/M disk, but you can use the HDOS version on CP/M by copying the file SEE.ASM to a CP/M

disk with a utility such as HTOC (885-1207) and re-assembling it with the CP/M assembler.

PPRT — The Push-Pop RAM Test is a special memory test designed to help you find speed sensitive memory failures. It uses the processor's PUSH and POP instructions for reading and writing memory, which are more taxing on slow components than other instructions. This test may be useful if you performed one of the speed modifications detailed in REMark issues 34 and 38.

Note: Like SEE, PPRT was written for use with both HDOS and CP/M. You can copy PPRT.ASM to a CP/M disk and re-assemble it for use with CP/M.

ALLRAM — This program allows an H/Z-89 or Z90 user with 64K of RAM and ORG-0 capability to access all of his computer's memory as RAM under HDOS. It frees up a small area that can be used for such things as USR space for MBASIC, etc. It also helps in trouble shooting speed modification problems.

TABLE C Rating: (0),(1),(3),(10)

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P/N 885-1127[-37] HDOS Soft Sector Support Package

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Introduction: The HUG Soft Sector Disk Support Package is a collection of programs built around a modified version of the original DKH37 device driver for soft sector 5.25 inch (H/Z37 type) disks provided by Heath Co. on the HDOS update (HOS-5-UP). The Package includes the device driver and programs to test, modify, and duplicate disks while using the driver.

Requirements: This package requires the HDOS operating system version 2.0 on an H/Z89 or Z90 computer with the Z89-37 disk controller, or an H8 computer with the WH8-37 controller.

This package is a two disk set with printed documentation. Disk A contains all of the executable files, and Disk B contains all of the source files except those on Disk A.

Disk A		Disk B	
README	.DOC	README	.DOC
H37	.DVD	HUG37	.ASM
H37P6	.DVD	INIT37	.ASM
H37P9	.DVD	H37LIB	.ACM
SETUNIT	.ABS	H37DEF	.ACM
SETUNIT	.ASM	HROM	.ACM
INITAUTO	.ABS	SDUMP	.ASM
PRINIT	.ABS	COMBINE	.ASM
SDUP37	.ABS	LABEL	.ASM
SDUP37	.ASM		
SDUMP	.ABS		
TESTCON	.ABS		
TESTH37	.ABS		
COMBINE	.ABS		
LABEL	.ABS		

Authors:

H37.DVD, SDUP37, SETUNIT, COMBINE, SDUMP, LABEL — Patrick Swayne, HUG.

INITAUTO, PRINIT, TESTCON, TESTH37 — Modifications of Heath/Zenith software. INITAUTO modifications by Dean Gibson, Ultimeth Corp.

Program Content:

H37.DVD — The H37.DVD device driver is a replacement for the standard 5.25 inch soft sector device driver provided by Heath, and offers the following features.

**** Faster operation:** There is a 77% reduction in time to load large single block files (compared to DKH37.DVD), such as MBASIC.ABS, and when copying such files with PIP. Boot time is also reduced more than 50%. For example, to load MBASIC (from the time you press RETURN until the OK prompt appears) takes about 13 seconds under DKH37, and 3 seconds with H37.DVD (on a fast two sided drive). Boot time on a fast two sided drive goes from 31 seconds to less than 15 seconds.

**** Expanded SET options:** The step rate can be set for each unit. The head unload delay time can be set to up to 4.5 seconds to prevent "head banging" during rapid disk accesses. The motor on delay time and the number of retry attempts before a hard error can also be set. The SET HELP option shows the current value of each setting.

**** New INIT options:** The boot step rate can be specified when you run INIT to reduce boot time on fast drives. A fast media check can be performed during INIT so that you do not have to run TEST37 just for that purpose.

**** Full HDOS 2.0 compatibility:** The patches supplied with

HOS-5-UP for HDOS.SYS are not required to use this driver. It will work with standard HDOS 2.0.

**** Speed mod compatibility:** Versions of the driver are included that are compatible with the programmable 4MHz modification for the H/Z89 presented in REMark issue #34, and the 3MHz H8 modification in issue #38.

SETUNIT — The H37.DVD driver will support a maximum of 4 drives. When you boot, HDOS allocates 256 bytes of space for a table called the GRT for each unit of each disk device driver, whether the drives for those units actually exist or not. The SETUNIT program can be used to reduce the number of drives supported by the driver so that memory space is not wasted. Later, if you add more drives, SETUNIT can be used to adjust the number of units supported again. SETUNIT can also be used with other disk device drivers besides H37.DVD to match the number of units supported to the number of drives.

INITAUTO and PRINIT — These are disk initialization programs that work like the one supplied with HDOS except that INITAUTO produces an auto-boot disk that does not prompt you with the ACTION <BOOT> question when you boot. PRINIT allows you to make your own auto boot patches on one disk and pass them to other disks when you initialize, even if the target disk is of another type. The boot patches must be outside the boot driver area (first two sectors).

SDUP37 — This is a new disk duplication utility that can duplicate any kind of soft sector disk supported by H37.DVD. The source disk can be placed in any drive capable of reading the disk (for example, a 40 track single sided disk in an 80 track double sided drive). The destination must be placed in a write compatible drive.

SDUMP — This is a sector oriented patch utility that lets you alter any HDOS disk by track and sector or any file on the disk.

TESTCON — This program performs a quick check-out of your soft sector controller.

TESTH37 — This program is a modified version of the TEST37 program provided with HOS-5-UP. The Seek test has been modified so that you can enter the seek time you wish the test to start with. This means you do not have to wait for the test to go through the slow seek speeds when you are testing fast drives, such as the H17-4 drive. After the seek test is done, the fastest successful rate is used for all other tests until you use the "U" option to select another drive. If you run a test at the fastest possible rate, it provides a more accurate check of your drive's capability.

LABEL — This is the disk label utility that was originally published in REMark Issue #35. It has been modified so that the auxiliary information byte (which contains the number of sectors per track on the disk) is not overwritten by long labels.

COMBINE — This program is required to re-assemble the driver. Instructions are included in the documentation.

Comments: This package is a must for any HDOS user who has a soft sector disk controller and wants to get the best performance from it.

TABLE C Rating: (5),(10)

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P/N 885-1128[-37] HDOS DISKVIEW

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Introduction: DISKVIEW is an advanced disk catalog program that lets the user see and manipulate all of the files from two disks at the same time. It lets the user scroll back and forth through the catalogs of one or two disks, sort the catalog in order of name, extension, size, date, or flags. By placing the moveable cursor on a catalog entry, the user can list to the screen, print to a printer, or copy to a disk the file that is marked. Files can be deleted, flags changed, or disks reset.

Requirements: This disk requires the HDOS operating system on an H8/H17/H19 or H/Z89 with 48K of memory. Only one disk drive is required, however, it is written for any number and type of disk drive formats. A printer is not necessary.

The programs are written in "C" and the source files are included. The programs have been compiled and are ready to run. To recompile the programs, the Software Toolworks C80 "C" compiler version 2.0 will be required. Also needed would be the Microsoft Assembler M80 and Linker L80 to assemble and link the various files into an .ABS file.

Note: The H/Z19 terminal is required.

The following files are included on the HUG P/N 885-1128[-37] HDOS DISKVIEW disk:

README	.DOC	TERMCTL	.C
DISKVIEW	.ABS	CURSOR	.C
DSKVW	.C	GETNAM	.C
COPY	.C	SEXIT	.C
FLGFILE	.C	DSKVIEW	.CDF
DELFILE	.C	DIRLIST	.CDF
SORT	.C	DIREC	.CDF
NEWDREV	.C	DEVTBL	.CDF
READIR	.C	USDT	.CDF
DATESTR	.C	DVHELP	.MAC
DIRENT	.C	SUBSTR	.C
FMTSCR	.C	INDEX	.C
LINE25	.C	GETS	.C
FSPACE	.C	PUTS	.C
TITLE	.C	FPUTS	.C

Author: Dave Hildebrand

Program Content: This advanced disk catalog program displays two disk catalogs on the screen at the same time. If there are more than 22 files on either disk, the program will scroll back and forth through the catalog listing. There are a number of options available to the user once the program has begun.

The arrow keys of the keypad allow the user to select a desired disk and file. Once selected the user can delete, change flags, view it on the screen, transfer to another disk, copy with a new name, or send it to the printer. The catalog listing can be sorted. Each of these options are selected by depressing one of the special function keys.

In the catalog mode there are two things different than when CAT (or DIR) is entered from HDOS. First, the number of sectors shown is always the number of sectors actually allocated to the file. Second, the DATE shown in the catalog mode is the last date the file was updated.

The SORT option will sort the catalog in ascending order by name and extension. It will sort in descending order by date, size, and flags.

The COPY mode will allow the user to view ASCII (text) files or binary (absolute) files in HEX format. Files longer than 23 lines can be controlled with the SCROLL key, either advancing one line at a time or an entire screen. In addition, files may be copied to another disk, sent to the printer, or sent through any HDOS device driver.

Compiling the source code files is not recommended for anyone not familiar with the "C" compiler. The executable file should be complete for most applications.

Comments: This is a unique and helpful program for maintaining and manipulating disk files. (E.G. With this program, you can sort by date and delete only those files with a particular date.)

TABLEC Rating: (0),(1),(3),(10)

885-1129[-37] HDOS CVT Color Video Terminal

Introduction: CVT (Color Video Terminal) is a program that allows you to operate HA-8-3, HA-89-3, or similar color boards for the H8 and H89 computers as if they were a color version of an H19 terminal. It allows you to create a color display using nearly all printable H19 characters including the graphic characters. It makes creating displays with your color board as easy as creating displays on your H19 or H89. CVT is available in HDOS and CP/M (see P/N 885-1232) versions, which are virtually identical.

Requirements: You will need the HDOS operating system, at least 32K of RAM, and a color graphics board such as the HA-8-3 for the H8 or the HA-89-3 for the H89 (Z89/Z90). An H19 or H129 terminal is required for proper operation with an H8.

The following files are included on HUG P/N 885-1129[-37]:

README	.DOC	CVT	.PIC
CVT8	.ABS	GRAPH	.PIC
CVT89	.ABS	MCVT	.ABS
CVT	.DOC	MCVT	.ASM
CVT	.ASM		

Author: Pat Swayne, HUG

CVT8 and CVT89 — These are ready-to-use versions of CVT for use with the HA-8-3 and HA-8-89 and compatible color boards. CVT will work with either the TMS-9918 or TMS-9918A video processor so that it will work properly on older HA-8-3 boards. The following specifications may help you in determining the usefulness of CVT in your application.

Color Processor required: TMS-9918 or 9918A.
CVT Modes used: Text or Pattern (G1).
Characters/line: 40 (text) or 32 (pattern).
Lines/screen: 24 (H19 25th line not supported).
Colors/screen: 2 (text - foreground, background), 15 (pattern).
Character set: All normal letters, numbers, and symbols. All graphic characters except the plus/minus and divide signs. The opposite corner squares missing from the H19 set are provided. Reverse video supported.

Character matrix: 6 by 8 (text), 8 by 8 (pattern). Letters, and numbers are formed within a 5 by 7 matrix.

CVT supports most of the H19 escape codes and adds extra ones for setting modes, colors, etc. In addition, the function keys on your H19/H89 can be used to set up modes and colors while you are drawing a picture. In the pattern mode, the foreground and background colors of groups of patterns can be set to change the colors of textual or graphic characters. In the text mode, only the foreground and background colors of the entire screen can be set.

CVT can load a picture you have created directly from the HDOS or CP/M prompt, and can link to another program after loading the picture. This allows you to draw scenes with CVT and then use them in other programs. A memory map of CVT's usage of the video processor on the color board is provided in the .ASM file so that advanced users can manipulate the picture directly. CVT itself can also be utilized by other programs to take strings of ASCII text and process them into the picture.

In addition to being able to load its own files, CVT can load and display ordinary text files on the color screen. These files can contain escape codes to control not only normal H19 parameters, but also CVT modes and colors. (Files created by CVT are not text files, but are direct dumps of the video processor's memory to disk.)

CVT.PIC and GRAPH.PIC — These are sample pictures created with CVT. You can view these pictures by typing

CVT CVT

or

CVT GRAPH

MCVT — This is a program which demonstrates the ability to manipulate a picture after it is created. When you enter

CVT CVT MCVT

CVT loads in CVT.PIC and then links to MCVT.ABS (or MCVT.COM). This program causes parts of the picture to change color and creates a flashing sigh effect.

Comments: CVT adds an excellent dimension to anyone having an H/Z89 or H8 with a color monitor.

TABLEC Rating: (0),(1),(3),(5),(10)

P/N 885-1130 HDOS Star Battle: The Motion Program

Introduction: STAR BATTLE is a game which you fight against alien ships. The player must solve math problems in order to fire at an enemy or move to another quadrant.

Requirements: This program requires the HDOS operating system on an H8/H17/H19 or H/Z89 with 48K of memory. Only one disk drive is required.

The program is written in Tiny PASCAL and the source code is included. The executable file is included. It is not necessary to have Tiny PASCAL to run this program.

Note: The H19 (H/Z89) terminal is required for the graphics and use of the special function keys.

The following files are included on the HUG P/N 885-1130 HDOS Star Battle games disk:

README	.DOC
STARBATT	.ABS
MATHTREK	.PAS

Author: Paul J. Dalton

Program Content: STAR BATTLE uses the special function keys (f1 through f4) to enter commands that aid in fighting and evading the enemy ships. The options are as follows:

f1 — Warp out. This command will move you to another quadrant. Before you can warp out, you must solve a math problem that sets in your course. If you get it wrong, the enemy can take a shot at you.

f2 — Refuel from base. If you happen across a friendly starbase, you can refuel and repair damages.

f3 — Shoot Phasers. This option will shoot at the enemy ship causing damage to the ship.

f4 — Shoot Torpedoes. This command also causes damage, but is most useful for the kill. Before a torpedo can be fired, you must solve a math problem.

The math problems that must be solved in order to complete a command could be addition, subtraction, or multiplication problems.

Comments: This game interacts with the user by requiring a solution to math problems to continue.

TABLEC Rating: (0),(1),(2),(3),(9)

P/N 885-1131[-37] HDOS CHEAPCALC

Introduction: CheapCalc is a minimal but useful "spread sheet" program that can introduce you to spread sheet computing at little cost. It was developed from the program that originally appeared in the February 1983 issue of REMark (#38), and has been improved considerably and compiled. With CheapCalc, your computer screen becomes the window to a large worksheet onto which you can write mathematical problems and have them solved almost immediately.

Requirements: The HDOS version requires 56K of RAM in an H/Z-89 or 90 computer or an H8 with a Heath/Zenith terminal (H/Z-19, H/Z-29, etc.).

The following files are included on the CheapCalc disk HUG P/N 885-1131[-37]:

README	.DOC
CC	.ABS
CC	.HLP
SAMPLE	.CAL
CC	.BAS

Program Authors:
Original program by William V. R. Smith
First Heath version by Bob McFarland
Compatible version by P. Swayne, HUG

CC.ABS — This is the compiled, ready-to-use CheapCalc program. It runs by itself without BASIC or any other language required. It supports a worksheet containing 40 rows and 15 columns. Operations supported are addition (+), subtraction (-), multiplication (*), division (/), exponential (↑), and SUM. (The SUM operator lets you add up to an entire row or column of numbers.)

All calculations are done in double precision with 16 significant digits. Numbers can be displayed on the screen in 4 formats: Floating, Dollars-and-Cents, Integer, and Graphic (a line of asterisks represents each number). In the dollars-and-cents mode, rounding off to the nearest cent is done to correct possible binary floating point errors. (To illustrate this kind of error, run MBASIC and enter PRINT 100.99.99).

CheapCalc lets you enter comments as well as formulas and numbers into the worksheet, and the width of any column can be adjusted to any width from 4 to 30 characters to accommodate your entries. The contents of any "cell" on the worksheet can be copied or replicated to another part of the sheet. CheapCalc can save the data in a worksheet in a disk file, and can load previously saved files. It can print all or part of a worksheet on your printer.

CC.HLP — This is a file containing instructions for CheapCalc. When you use the Help command while running CheapCalc, this file is loaded and displayed on your worksheet (without destroying any data you have entered), so you can get help at any time while running the program.

SAMPLE.CAL — This is a sample worksheet that will help you to understand the workings of CheapCalc.

CC.BAS — This is the source code for CheapCalc. It can be run using MBASIC (HDOS), but with performance considerably degraded compared to the compiled version.

Comments: CHEAPCALC will not only introduce the user to the workings of a spreadsheet, but will provide many useful applications of a spreadsheet.

TABLEC Rating: (0),(1),(3),(10)

UPDATE

P/N 885-1211[-37] CP/M
Sea Battle

Introduction: This version of SEA BATTLE will execute on the H8, H/Z-89, and the H/Z-100 computers.

SEA BATTLE is a video action game that uses the H19 graphic features. The role of the SEA BATTLE player is to command a destroyer force in opposition to an aircraft carrier and its escort. The escort includes fighters, bombers, and submarines, all of which attack the player ship.

Requirements: SEA BATTLE requires the CP/M operating system, version 2.2.02 or later, on an H19/H8/H17 or H89 with 32K of memory. Only one disk drive is required.

For the H/Z-100 computer, SEA BATTLE requires the CP/M-85 operating system. The H/Z-100 requires the soft-sectored disk format. (Order with a "-37" suffix.)

The program is written in assembly language and the source code is included.

Note: The H19 (H89) terminal is required for the graphics codes of the game.

The following files are included on the HUG P/N 885-1211 CP/M Sea Battle graphics game disk:

```
README .DOC
SEABATTL .DOC
SEABATTL .ASM
SEABATTL .COM
```

The SEABATTL.DOC file gives detailed instructions of the game. Most players will have fun learning by trial and error.

Author: Victor Abell

Program Content: SEA BATTLE is a very interactive game which requires the entire screen of the H19 terminal. The outline of the game structure is as follows:

A) The Aircraft Carrier and its Escort

The escort consists of an endless number of fighter planes, five heavy bombers, and a number of submarines. The fighter planes are replenished from the aircraft carrier as each is shot down. Each time the aircraft carrier is hit a submarine appears on the horizon.

B) The Player Ship

The player ship has two guns which may only be fired one at a time. The ship moves back and forth across the bottom of the screen dodging the shells and bombs from the air force. The player ship can take a few hits from the fighters, but is destroyed when hit by a bomb. The player ship must flee from the submarines.

C) Scoring

The score (and other data) is displayed on the 25th line throughout the game. The following is the scoring table:

```
Down a Fighter Plane—5 points
Down a Bomber—50 points
Hit the Carrier—50 points
Sink the Carrier—250 points plus Variable Bonus
```

The Variable Bonus is determined by the success of staying within the center of the screen, where the most action takes place. The program sets a timer and the player must stay within the marks or the countdown begins.

D) Sinking the Carrier

The aircraft carrier will sink when it has been hit by fifteen shots from the player ship guns. Once the carrier has been sunk, the player can watch it sink into the sea. Then another carrier is there to replace the previous carrier. The next carrier escort, more aggressive than the previous carrier's escort, appears on the screen.

E) Sinking the Player Ship

The player ship may be sunk by 12-15 hits from the shells of the fighters, by a single hit from a bomber, or by being caught by a submarine.

F) Summary

The player must find a battle strategy which will lift him in victory over as many aircraft carriers as possible. Each successive carrier is more dangerous than it's predecessor.

Comments: SEA BATTLE is one of the finest games which has been released from HUG.

TABLE C Rating: (0),(1),(2),(10)

P/N 885-1222[-37] CP/M
Adventure Disk

Introduction: This version of ADVENTURE has been adapted for the H/Z-89 CP/M and CP/M-85 for the H/Z-100.

ADVENTURE is one of the most well known and best liked computer games. It is an adventure through a giant cave to search out and find treasures. Many dangers are in store for the user who ventures into its midst.

Requirements: This game requires the CP/M operating system, version 2.2 or later, on H8/H17, H/Z-89, OR Z-90 with a minimum of 24K of memory. Only one disk drive is required.

For the H/Z-100 computer, CP/M-85 is required. The soft-sectored disk format is required. (Order with a "-37" suffix.)

Note: The H19 terminal is not required to play this game.

The following is a list of the files on the HUG P/N 885-1222[-37] CP/M Adventure Game disk:

```
README .DOC
ADVENT .COM
ADVENTUR .DTB
NEWGAME .CAV
```

Authors: This program was originally developed by Willie Crowther. Most of the features of the current program were added by Don Woods (Don @ SU-AI). This microprocessor version was done by G. Letwin of Heath Company.

Program Content:

ADVENTURE

Somewhere nearby is a colossal cave, where others have found fortunes in treasure and gold, though it is rumored that some who enter are never seen again. Magic is said to work in the cave. I will be your eyes and hands. Direct me with commands of one or two words. I should warn you that I look at only the first four letters of each word, so you'll have to enter "northeast" as "NE" to distinguish it from "north", "dnstream" for "downstream", etc. Should you get stuck, type "help" and "info" for some general hints.

HELP

I know of places, actions, and things. Most of my vocabulary describes places and is used to move you there. To move, try words like forest, building, dnstream, enter, east, west, north, south, up, or down. I know about a few special objects, like a black rod hidden in the cave. These objects can be manipulated using some of the action words that I know. Usually you will need to give both the object and action words that I know. Usually you will need to give both the object and action words (in either order), but sometimes I can infer the object from the verb alone. Some objects also imply verbs; in particular, "inventory" implies "take inventory", which causes me to give you a list of what you're carrying. The objects have side effects; for instance, the rod scares the bird. Usually people trying unsuccessfully to manipulate an object are attempting something beyond their (or my!) capabilities and should try a completely different tack. To speed the game, you can sometimes move long distances with a single word. For example, "building" usually gets you to the building from anywhere above ground except when lost in the forest. Also, note that cave passages turn a lot, and that leaving a room to the north does not guarantee entering the next from the south.

SUGGESTIONS

Try "ENTER BUILDING".

When you see an object, pick it up.

Go "DNST" (downstream) if you want to find the cave.

HELPFUL WORDS

```
INVENTory—List items you are carrying
SCORE—Show your current score
LOOK—Type a long description of your current location
BACK—Go back the way you came
QUIT—Stop the game and give final score
```

COMMAND STYLE

Remember, ADVENTURE takes one or two word commands, only. Make them straight-forward, like:

```
ATTACK DRAGON
EAT BIRD
THROW AXE
GET GOLD
WEST
UNLOCK GRATE
DOWN
```

INFO

If you want to end your adventure early, say "QUIT". To see how well you're doing, say "SCORE". To get full credit for treasure, you must have left it safely in the building, though you get partial credit just for locating it. You lose points for getting killed, or for quitting, though the former costs you more. There are also points based on how much (if any) of the cave you've managed to explore; in particular, there is a large bonus just for getting in (to distinguish the beginners from the rest of the pack). I may occasionally offer hints if you seem to be having trouble.

***** GOOD LUCK *****

Comments: ADVENTURE will provide many months and even years of fun trying to reach the 350 points.

TABLE C Rating: (10)

P/N 885-1223 CP/M
HRUN HDOS Emulator

Introduction: HRUN is a CP/M program that emulates the Heath Disk Operating System (HDOS). It allows virtually any non-hardware dependent HDOS program to be run on a CP/M compatible computer. For a complete description of HRUN, see the article by Patrick Swayne, "HDOS For Everyone", in the February 1983, Issue 37 of REMark magazine.

Requirements: HRUN requires the CP/M operating system, version 2.0 or higher. It will run on H8, H89, Z89/Z90, and H/Z100 computers using Heath/Zenith, Magnolia, or other suitable CP/M. Since it uses no BIOS calls, it should also run on MP/M-II systems (HTOC is not MP/M compatible). At least 32K of memory is required. Two disk drives are recommended unless you have Heath/Zenith CP/M configured for one drive operation.

HRUN is distributed on three 5.25-inch disks containing the following files:

Disk A		Disk B	
README	.DOC	README	.DOC
HRUN	.COM	HRUN	.ASM
HRUNT	.COM	H17ROM	.HEX
HRUN100	.COM		
HRUN100T	.COM	Disk C	
HTOC	.COM	README	.DOC
PIP	.ABS	HTOC	.ASM
DIR	.ABS	DIR	.ASM
MAKEDIR	.ABS	MAKEDIR	.ASM
SUBMIT	.ABS	SUBMIT	.ASM
HELP	.ABS	HELP	.ASM
SET	.ABS	XFORM	.ASM
FLAGS	.ABS	HOSDEF	.ACM
MAKESYS	.SUB	HOSEQU	.ACM
ERRORS		ESVAL	.ACM
BASIC	.ABS		
EDIT	.ABS		
ASM	.ABS		
XREF	.ABS		
PATCH	.ABS		
XFORM	.ABS		

Authors: PIP, SET, FLAGS, BASIC, EDIT, ASM, XREF, and PATCH are Zenith Data Systems programs. HTOC is by Bob Mathias, William W. Moss, and P. Swayne. All others are by P. Swayne, HUG.

Program Contents: HRUN, HRUNT, HRUN100, and HRUN100T are pre-assembled versions of HRUN with various parameters set. The letter T in the program name means that tabs are expanded to spaces by HRUN's printer driver. The number 100 in the name means that HRUN is assembled for use on H/Z100 computers, or other computers that do not allow level 2 interrupts (RST 2).

All versions of the HRUN program emulate parts of HDOS. They combine the functions of HDOS.SYS, the HDOS overlays, and five (5) device drivers into one program. The following five pseudo-device drivers are included in HRUN:

SY: — The directory (disk) device. Unit numbers are mapped to corresponding CP/M drive letters. (e.g. 0=A, 1=B, etc.)

TT: — The console device. Output to the CRT screen, and input is the keyboard.

LP: — The printer device. It uses the CP/M LST: device. Provision is made to expand tabs to spaces (within HRUN) for printers that cannot handle tabs.

AT: — The alternate terminal device. It uses the CP/M TTY: device. AT: can be used to drive a second printer in some applications.

ND: — The null device. This device can be used to test the readability of a disk file by copying it to ND:, or to create an empty directory entry by copying ND: to a disk.

HDOS users will notice that there is only one disk device driver. Since HRUN works through CP/M, only one disk device driver is needed, which will "talk" to any drive that CP/M can access. That means that the drive DK0: under real HDOS might be SY3: under HRUN.

HRUN was designed to emulate HDOS in the command mode, in addition to running programs. When running HRUN.COM under CP/M, HRUN signs on normally, and prompt for entries with the standard HDOS prompt (>).

Since HRUN runs under CP/M, any HDOS program to be run under it must be copied to a CP/M disk from its HDOS disk. A new version of HUG's HTOC program is included with HRUN for accomplishing the task. The program can then be executed under HRUN, not from CP/M directly. In addition, a program that requires the Microsoft BASIC interpreter version 4.82 under HDOS, will have to have the MBASIC 4.82 interpreter transferred to CP/M through HTOC to run the MBASIC program under HRUN.

HRUN comes with several other support programs. Some of the support programs are the actual programs supplied with real HDOS. Several other utility programs are included to make HRUN more useful.

MAKEDIR.ABS — This program constructs an HDOS disk directory (DIRECT.SYS) from the CP/M disk directory. DIRECT.SYS is required to view the directory via PIP (the CAT command) or to use wild cards in PIP operations, or the FILES command in HDOS Microsoft BASIC.

DIR.ABS — With this program, the directory on a disk can be viewed without having a DIRECT.SYS file present. HRUN is set up so that the command DIR uses DIR.ABS to show the directory, and CAT uses PIP.ABS to show the files in DIRECT.SYS, in standard HDOS format.

SUBMIT.ABS — This program is a command file processor for HRUN. Its operation is nearly identical to the CP/M SUBMIT program except that it allows commands to be passed on to any HDOS program.

XFORM.ABS — This program converts text files from CP/M format (a CRLF after each line) to HDOS format (LF only after each line) and vice versa. It allows you to use CP/M editors and word processors to create text files for HRUN.

HELP.ABS — This program prints a list of built-in HRUN commands on your console when you type HELP.

MAKESYS.SUB — This is a SUBMIT file that makes it easy for you to generate new HRUN system disks by copying the files used in normal operation to a new disk.

HTOC is a program that copies files from HDOS disks to CP/M disks. Programs that are to be run with HRUN must reside on a CP/M disk.

PIP, SET, FLAGS, BASIC, EDIT, ASM, XREF, and PATCH are programs normally supplied with HDOS.

ERRORS is a list of HDOS system error messages.

HOSDEF, HOSEQU, and ESVAL are files required to assemble some of the source files on disk C.

Comments: HRUN opens most of the HUG Software Library to all CP/M users, including the H/Z-100 series.

TABLEC Rating: (10)

P/N 885-1224[-37] CP/M MicroNET Connection

Introduction: This package provides the user with a User Identification number to access the CompuServe timeshare system. The package includes a modem utility package, a CompuServe User ID and secret password to get on the system, plus some limited documentation to help the user get started using the system.

Requirements: This package contains a single sided hard-sectored diskette which requires CP/M version 2.2 or later on an H19/H8/H17 or H/Z-89 with 32k of memory. Only one drive is required.

The P/N 885-1224-37 contains a single sided, 48 tpi soft-sectored diskette which requires CP/M version 2.2.03 on an H19/H8 or H/Z-89 or Z90 with the soft-sectored controller card.

The P/N 885-1224-37 will execute on the CP/M-85 operating system of the H/Z-100 series computer.

General Requirements: To use this package the user will need a modem capable of originate mode with FULL duplex at 300 baud operation. (This is a standard and minimum feature on most modems.) There are acoustic and direct modems. The user is responsible

for choosing a modem which fits his particular system.

The following files are released on the HUG P/N 885-1224 CP/M hard and soft-sectored disk:

```
README .DOC
ZTERM8 .COM
ZTERM89 .COM
ZTERM100 .COM
ZTERM .DOC
FIRSTIME .NET
```

Refer to P/N 885-3003 in the January 1984 issue of REMark for a description of ZTERM.

Package Description: This package has been put together to allow any member of HUG to get on the CompuServe timeshare system as soon as he/she receives the package, provided he/she has a modem as explained above.

The CompuServe User ID and secret password are sealed in an enclosed envelope in the package. The user is responsible for filling out and mailing the "Service Continuation/Request and Agreement" form to CompuServe.

CompuServe is a large timeshare data base system that has many areas of service, information, interest and fun. The HUG Special Interest Group (SIG) or Bulletin Board (BB) is a part of the CompuServe system. The member can leave, retrieve, search, scan, and reply to messages on the BB. In addition, the HUGBB has a large data base of programs on CompuServe, of which the HUGBB member can download from the host. The HUGBB also has the facility for the member to upload files to the system for others to download.

To access CompuServe the user must have a telephone number that links to CompuServe. There are direct numbers, TYMNET, and TELENET numbers that access CompuServe. TYMNET and TELENET are two telephone services that link to remote systems. For their services, they have a surcharge per hour over the cost of CompuServe.

Note: To find out if you have a telephone link in your area, call the CompuServe Customer Service Toll Free number 800-848-8990 or (614) 457-8650. For general information about CompuServe call 800-848-8199.

There is documentation included with the package that shows step by step what the user will see the first time on CompuServe (the host computer). This file could be studied before going on CompuServe to help in understanding what the host timeshare system is doing. The sample link will show how to get to the HUG BB as well as some other options, which are significant to HUG members.

Documentation about the system is available from CompuServe for an additional charge:

- 1) CIS (CompuServe) User Guide
- 2) Personal Computing Guide
- 3) Special Interest Group (SIG) Manual

Refer to FIRSTIME.NET for help in ordering documentation and prices while on the system or contact CompuServe directly.

Special Note: CompuServe charges are around \$6.00 an hour for regular hours and open areas. (The rates are subject to change.) Parts of CompuServe have additional charges. Any member of the HUG Bulletin Board (or SIG) receives a \$.50 an hour discount for the time spent while on the HUG Bulletin Board.

The user may already have a modem package. ZTERM is supplied for the new users convenience. The source code is not included, but is available on the part number 885-3003[-37].

Comments: This package will introduce a user to the timeshare system of CompuServe and access to the features of the HUG Bulletin Board.

TABLEC Rating: (0),(1),(5),(10)

P/N 885-1225[-37] CP/M Disk Dump and Edit Utility (DDEU)

Introduction: DDEU is a versatile disk dump and edit utility for CP/M that is completely compatible with all Heath/Zenith disk hardware except the Z-67 Winchester. (Forthcoming versions of DDEU will be compatible with the Z-67.)

Requirements: DDEU requires the CP/M operating system version 2.2.02 or later on an H/Z19/H8 or H/Z89 with 32K of memory. Only one disk drive is required.

DDEU is compatible with the H/Z-100 computers under CP/M-85. (Order soft-sectored; i.e. 885-1225-37.)

The source code for DDEU.COM consists of five separate modules as listed below.

NOTE: DDEU requires the H/Z-19 terminal or the H/Z-100 screen display.

The following files are contained on the HUG P/N 885-1225[-37] Disk Dump and Edit Utility disk:

```
README .DOC          SKIPLIB .MAC
DDEU .COM            SYSCALL .MAC
DDEU .MAC            EQUATE .MAC
DSUB .MAC
```

DDEU.MAC — contains the main program module and all data associated with it.

DSUB.MAC — contains the functional subroutines for DDEU.

SKIPLIB.MAC — contains all of the general subroutines for DDEU. (These are terminal ESCape sequences for the most part.)

SYSCALL.MAC — contains MACROS used in DDEU.

EQUATE.MAC — contains all of the EQUate statements relating to the other modules.

DDEU Program Content: This disk dump and edit utility allows disk access in three different ways:

- 1) direct track and sector access,
- 2) sector by sector display of a filename, and
- 3) sector by sector display of a selected group number.

In all modes of operation, sectors and tracks are numbered starting at zero. Sectors are logical CP/M sectors. In the edit mode, both the cursor and bytes that have been changed are highlighted in reverse video. The sector display consists of both a hexadecimal table and an ASCII table, with editing done in either table. Any change made in either table will appear in the other, after the changes are written to the disk.

DDEU may be run from any drive and after a return to CP/M via a warm boot, it will return to the logged drive. DDEU is completely menu driven. Cursor movement in both HEX and ASCII tables is facilitated by arrow keys and the HOME key.

The main menu of DDEU is as follows:

```
f1      File Dump
f2      Track/Sector Dump
f3      Group Dump
WHITE  Exit to CP/M
```

f1 - File Dump — This option allows the user to access any legal filename on a disk. Once a file has been selected, the screen displays the first logical sector of the file. The entire filename, group number, logical file sector number, track number, sector number and last file sector number will also be displayed.

The commands available to the user in the display mode are displayed on the 25th line in reverse video and are as follows:

- f1 — advance one logical sector into the file,
- f2 — move backward one sector,
- f3 — GOTO any other legitimate file sector,
- f4 — hexadecimal edit mode,
- f5 — ASCII edit mode,

White — return to the main menu.

f2 - Track/Sector Dump — This option allows the user to access any sector on any track on a disk. The program prompts for the track number and then the sector number, while displaying the largest track and largest sector which can be accessed.

The following commands are available for the track/sector dump option:

- f1 — advance one logical sector,
- f2 — move backward one logical sector,
- f3 — GOTO any track and sector,
- f4 — hexadecimal edit mode,
- f5 — ASCII edit mode,

White — return to main menu.

f3 - Group Dump — This routine allows the user to access the sectors which comprise a selected group number. The prompt asks for the group number.

The following options are commands for the group dump routine:

- f1 — advance one sector into the group,
- f2 — move backward one sector in the group,
- f4 — hexadecimal edit mode,
- f5 — ASCII edit mode,

White — return to main menu.

White - Exit to CP/M — When exiting to CP/M, the console is reset to the power up configuration, the screen is blanked, and CP/M does a warm boot and returns control to the CCP.

Comments: This is a screen oriented, disk dump and edit routine for CP/M.

TABLEC Rating: (0),(1),(3),(10)

P/N 885-1226[-37] CP/M UTILITIES by PS:

Introduction: This disk contains a collection of CP/M utility programs for listing directory files, controlling printers, and testing disk drives.

Requirements: These programs require the CP/M operating system version 2.0 or higher on 32K of memory on an H19/H8/H17 or H/Z-89. The soft-sectored format [-37] will run on the H/Z-100 computers. Only one disk drive is required.

Note: The H19 graphics capability (H19, H/Z89,90, H/Z100) is required for DIR19.

The following files are included on the HUG P/N 885-1226[-37] CP/M utilities by PS.

README	.DOC	PSETMX	.COM
DIR19	.COM	PSETMX	.ASM
DIR19	.ASM	TYPYR	.COM
PDIR	.COM	TYPYR	.ASM
PDIR25	.COM	PWHEEL	.COM
PDIR	.ASM	PWHEEL	.ASM
DISKID	.COM	WSCON	.COM
PSET25	.COM	WSCON	.ASM
PSET25	.ASM	ROTATE	.COM
		ROTATE	.ASM

Authors: All programs are by Patrick Swayne, HUG, except DISKID.COM, which is by Marvin Fichter.

DIR19 — This is a disk directory program that takes advantage of Heath/Zenith terminal features to list as many disk files as possible on the screen in an easy-to-read format. In addition to file names, the size in K and the attributes of each file are shown. DIR19 displays up to 80 files on the screen, and if there are more than 80 to show, it prompts the user to hit RETURN to show another "page" of files, and will continue this process for up to 255 files. Files can be listed alphabetically or in their actual directory order. DIR19 takes "wild card" arguments to allow the user to show specific groups of files or individual files. A user number can be specified after the drive and/or file specifications, to show files in different user areas.

At the top of the screen, DIR19 shows the drive name. It also shows the disk volume number and label, if they have been created with DISKID (see below). At the bottom of the screen, the number of files found, the total disk space used by files, and the free space on the disk are shown.

PDIR — This program works like DIR19, but its output goes to a printer. PDIR25 uses H/Z25 graphics, while PDIR is for any printer.

DISKID — This program lets you create a volume number and label on a CP/M disk (for filing purposes). The DIR19 and PDIR programs display the volume number and label when you use them to look at the files on the disk.

DISKID was formerly released on disk 885-1213.

PSET25 — This program allows you to set options on your H/Z25 printer before use. You can set the character spacing to 10, 12, 13.2, or 16.5 characters per inch; or the line spacing to 6 or 8 lines per inch. The program is very easy to use. For example, to set 12 characters per inch, you enter PSET25 12.

PSETMX — This program allows you to set options on your MX80 printer before use. You can set compressed, double strike, emphasized, or normal printing; and you can set line spacing to 6 or 8 lines per inch, or to 7/72 inch spacing for graphics. Like PSET25, this program is easy to use.

NOTE for HRUN users: The programs DIR19, PDIR, and the two PSET programs can be re-assembled for use with HRUN. Instructions are included in README.DOC and the .ASM files for the programs.

TYPYR — This program lets you type information at your keyboard and send it to your printer. You can include any escape sequences or control codes required by the printer to set up its options.

PWHEEL — This program prints all of the characters on a daisy wheel printer's printwheel in two columns on a single page (including the two "hidden" characters on 96 character Diablo printwheels). An optional heading describing the printwheel can be entered, to be placed at the top of the page.

WSCON — With this program, you can convert ordinary text files created on any editor into the format used by WordStar for document files, so that the file can be justified or processed by WordStar.

ROTATE — This program lets you test and/or adjust the rotation speed of any 5.25 inch drive on any Heath/Zenith computer (H8, H/Z89,90, H/Z100) using a Heath/Zenith controller (H17, H88-1,

Z89-37, or H207 [H/Z100]) and Heath/Zenith CP/M. If you are having trouble with a disk drive, it could be that your rotation speed is off, and a simple adjustment will restore it to normal operation. The ability to adjust drive speed under software control was formerly available only to HDOS users.

Comments: These utilities cover a wide range of uses. The ROTATE program can be utilized by the majority of Heath/Zenith users.

Table C Rating: (0),(4),(10)

P/N 885-1227[-37] CP/M Casino Games

Introduction: This disk contains three Casino type gambling games that use the graphic features of the H/Z-19 terminal; KENO, POKER, and VEGAS.

Requirements: This disk requires the CP/M operating system version 2.2 or later on an H19/H8 or H/Z-89 with 48K of memory. Only one disk is required.

The soft-sectored format will run on the H/Z-100 computer series. KENO and POKER use the function keys which are defined for the H/Z-19 terminal. The function keys of the H/Z-100 will work but are defined differently from the H/Z-19 terminal.

The programs are compiled versions of BASIC-80. Hardcopy source code listings are included as part of the package.

Note: The H/Z-19 terminal is required. BASIC-80 is NOT required for executing these programs.

The following files are included on the HUG P/N 885-1227[-37] Casino Graphic Games disk:

README	.DOC
KENO	.COM
POKER	.COM
VEGAS	.COM

Authors:

KENO and POKER — Tom Dornback
VEGAS — Larry Wakeford

KENO — This game is a simulation of a Las Vegas KENO Slot machine. A "bowl" of 80 numbers is displayed on the screen. The player selects from 1 to 10 of the numbers. The computer will then randomly choose 20 unique numbers. If enough of the numbers that the player selects are picked by the computer, the player wins.

The player can start the game with any amount from \$5.00 to \$1,000.00, betting either Quarters or Silver Dollars. The computer keeps track of winnings (and losses). The amount the player can win (or lose), depends on how much is bet and on good luck.

The game uses the special function keys, the 25th line, and other features of the H/Z-19 terminal.

POKER — This game is a simulation of a Las Vegas POKER game. Five cards are dealt face down. After the player makes a bet the cards are shown. The player can STAND (or HOLD) or draw any number of new cards up to the five cards. The player can start the game with any amount from \$5.00 to \$1,000.00. The computer keeps track of winnings and losses.

The game uses the special function keys and other features of the H/Z-19 terminal.

VEGAS — This program is a simulated BLACKJACK card game. Seven players can place their bets against the dealer (computer). The computer keeps track of winnings and losses.

Comments: No comments.

Table C Rating: (0),(1),(3),(10)

P/N 885-1228[-37] CP/M Fast Action Games

Introduction: This disk contains disks that will test the users reaction speed. The games are modifications to games already available in HDOS.

Requirements: This disk requires the CP/M operating system version 2.0 or later on an H19/H8/H17 or H/Z89,90 or H/Z100 with at least 48K of memory.

All the programs are in executable form and do not need any language to run the programs. The source codes for all but one pro-

gram are included. Refer to the documentation for details on the languages used.

Note: The H/Z19 terminal graphics are used.

The following programs are included on the HUG P/N 885-1228[-37] Action Games disk:

README	.DOC
BREAK19	.COM
BREAK19	.PAS
SNAKE	.COM
SNAKE	.ASM
BOB	.SNK
ACKACK	.COM
ACKACK	.ASM
SKI	.COM

Authors:

BREAK19 - Lyle E. Wilkinson
SNAKE - Michael Paabo
ACKACK - Frank Bielsik II
SKI - P. J. O'Connor

BREAK19 — This is a variation of the "Breakout" TV game. The player is served a "ball", which he must hit with a "paddle". The ball strikes a barrier, breaking out part of it, then it returns for the player to hit again. The object of the game is to break out as many blocks in the barriers before all the balls are used up.

This program was written in HUG Tiny Pascal (885-1085), and translated into SuperSoft Tiny Pascal for the CP/M version (P.O. Box 1628, Champaign, IL 61820). SuperSoft Tiny Pascal is not needed unless the player wants to make changes and re-compile the program.

SNAKE — In this game, the player controls the movements of a "snake" as it crawls around the screen. The player guides the snake to a block of "food" without hitting the barrier wall or looping back on the growing snake. Each time the food is hit, it jumps to a new place on the screen. The object of the game is to hit the food as many times as possible.

This version of SNAKE has the ability to save games which have been played on a disk for re-loading and reviewing at a later date. The file BOB.SNK is a game that was actually played by HUG manager Bob Ellerton.

ACKACK — This is an anti-aircraft artillery game. The object is to shoot down the airplanes before they bomb the players gun emplacements. Additional guns are awarded for each hundred points of score achieved.

SKI — This game simulates a slalom ski race. The object of the game is to stay within the slalom course.

Comments: No comments.

Table C Rating: (0),(1),(2),(3),(10)

P/N 885-1229[-37] CP/M XMET Robot and ET-3400 Cross Assembler

Introduction: XMET is a 6800 cross assembler that includes mnemonic representations of the ET-18 Robot's "Robot Language" codes, to make writing programs for the HERO 1 robot or the ET-3400 easier. It is provided in both HDOS (see P/N 885-1123) and CP/M versions, and is supplied with printed documentation.

A detailed look at the cross assembler is described in the May RE-Mark Issue #40 under the article "Teaching HERO a Thing or Two" by Pat Swayne.

Requirements: This version requires the CP/M operating system, version 2.2 or later on an H8/H17/H19, H/Z89 or Z90 with 32k of memory and one disk drive.

The ET-3400 or ET-3400A with the ETA-3400 accessory is not required but can be useful for loading programs created with the cross assembler into the HERO-1 robot. See details below.

The source code files are included.

The following files are included on the HUG P/N 885-1229[-37] XMET Robot and ET-3400 Cross Assembler disk:

README	.DOC	EZHEX	.COM
XMET	.COM	EZHEX	.ASM
XMET	.ASM	RSAMPLE	.XET
HEXMIK	.COM	ESAMPLE	.XET
HEXMIK	.ASM		

Author: Patrick Swanne

XMET.COM — This is the XMET cross assembler. The XMET program is actually a translator, not a true cross assembler. It translates the source file into a list of DB statements that can be assembled by the CP/M 8080 assembler. Utility programs are provided to convert the result into MIKBUG(tm) format hex files (for downloading into the robot using the method described below) or an easy-to-read hex format for manual keying in of the program.

If there is anything in the source program that XMET cannot recognize, the line containing it is passed through unchanged. That means that you can include special directives for the 8080 assembler that will be used to assemble the translated program.

The XMET cross assembler will assemble all of the 6808 processor's instructions using standard 6800 mnemonics, and has additional mnemonics to represent all of the codes in ET-18 Robot Language. A list of the Robot Language mnemonics is included with the cross assembler or refer to page 18 of REMark Issue 40.

In addition to mnemonic representations of Robot Language instructions, the XMET cross assembler also has three special pseudo opcodes that cause the inclusion of special definitions. The opcode RMOT causes motor definitions to be included, such as HEAD, which equals the bits required to select the head motor. SPEED and direction definitions are also included. The opcode RRAM adds definitions of special RAM locations and ports used by the robot, including the motor position counters and the clock ports. The opcode RROM adds the definitions of the user available ROM sub-routines.

Downloading with the ET-3400 — The ET-3400 or ET-3400A Microprocessor trainer with the ETA-3400 accessory can be used to load programs developed with XMET into the HERO-I robot. First, the assembled robot program must be converted into MIKBUG(tm) format using the utility supplied with XMET. Next, the ETA-3400 serial input must be connected to the modem output of the H8, H/Z89 or Z90 computer. A terminal program (such as ZTERM) must be used to make the computer the terminal for the ETA-3400. The next step is to start the ETA-3400 monitor program and enter "LO" to load a MIKBUG file. With the transmit feature of the modem program (e.g. ZTERM) the MIKBUG file can then be sent to the ETA-3400. Once the program is in the ETA-3400, a cassette tape of the program can be made, which can then be read by the robot. Another option is to connect the ETA-3400 tape output directly to the robot tape input. Then by starting a tape load on the robot and a tape save on the ETA-3400, the program will be transferred directly.

XMET.ASM — The source code for XMET.

HEXMIK.COM — This program converts Intel HEX files to Motorola MIKBUG(tm) format files.

HEXMIK.ASM — The source for HEXMIK.

EZHEX.COM — This program converts Intel HEX files to a format that is easy to read (for manual entry of programs into the robot or ET-3400).

EZHEX.ASM — The source for EZHEX.

RSAMPLE.XET — A sample robot program in XMET source format.

ESAMPLE.XET — A sample ET-3400 program in XMET source format.

Comments: The XMET cross assembler not only makes it easier to write robot programs, but it makes it easier to modify them. What can you say!! This program is a must for any HERO/Heath computer user.

TABLEC Rating: (5),(6),(10)

P/N 885-1230[-37] CP/M KEYMAP Function Key Mapper

Introduction: KEYMAP is a program that lets the user define the computer's function keys and keypad keys. Once defined, the keys will send the sequence of characters the same as if the characters were typed from the keyboard. Versions are included for using KEYMAP with BASIC and Wordstar.

Requirements: KEYMAP requires the CP/M operating system and runs on any Heath or Zenith desk top computer that can run standard CP/M, including the H/Z-89, 90 and H/Z-100. An H/Z-19 or H/Z-29 terminal is required for use with an H8/H17 computer.

Instructions are included for implementing KEYMAP with your computer system.

The following files are included on the HUG P/N 885-1230[-37] KEYMAP disk.

README	.DOC	KEYMAP	.DOC
KEYMAP	.COM	STATLIN	.COM
KEYMAP	.ASM	STATLIN	.ASM

KEYBAS	.COM	KEYWS	.100
KEYBAS	.DOC	KEYWS	.29
KEYBAS	.89	KEYSYS	.COM
KEYBAS	.100	KEYSYS	.DOC
KEYBAS	.29	KEYSYS	.89
KEYWS	.COM	KEYSYS	.100
KEYWS	.DOC	KEYSYS	.29
KEYWS	.89		

Author: All programs are by P. Swayne, HUG.

Program Content: KEYMAP is a program that lets you define the characters that are produced by your computer's function and keypad keys. Up to ten characters can be produced by each mappable key, including control characters. The keys that can be mapped are the ERASE (or F0) key, the F1 through F8 keys, the keypad 1 through 8 keys, and also the separate arrow and HOME keys if you have an H/Z-100 or H/Z-29. You can define any one of these keys as a "function shift" key, which allows every other mapped key to produce two responses each. If you wish, KEYMAP can place a message on the status line (25th line) of your screen indicating the responses of the function keys. KEYMAP becomes part of "the system" when it is loaded so that you can run any program with it to take advantage of the mapped keys. Provision is made to temporarily disable mapping and even to run more than one KEYMAP at a time to provide special responses for different programs.

KEYMAP has a special set up mode that makes it easy to define your own responses for each mapped key. Pre-configured versions are included for use with BASIC and WordStar, along with a version for general CP/M use.

KEYMAP.COM — The KEYMAP program in unconfigured form (key responses are not altered).

KEYMAP.ASM — The source code for KEYMAP.COM

KEYMAP.DOC — Instructions for configuring and using KEYMAP.

STATLIN.COM — A program to generate status line (25th line) messages that can be used by KEYMAP.

STATLIN.ASM — The source for STATLIN.COM.

KEYBAS.COM — A pre-configured version of KEYMAP that produces BASIC keywords (PRINT, GOTO, etc.) when function and keypad keys are pressed. 37 different keywords are instantly available to simplify entry of BASIC programs.

KEYBAS.DOC — Instructions for using KEYBAS.

KEYBAS.89, KEYBAS.100, KEYBAS.29 — Status line messages for use with KEYBAS.COM. KEYBAS.DOC explains which one to use for your system.

KEYWS.COM — A pre-configured version of KEYMAP that produces WordStar control characters to allow cursor movement with the arrow keys and easy use of many WordStar features. Indenting, centering, paragraph reform, and file scrolling are only a few of the functions mapped to function and keypad keys.

KEYWS.DOC — Instructions for using KEYWS.

KEYWS.89, KEYWS.100, KEYWS.29 — Status line messages for use with KEYWS.COM.

KEYSYS.COM — A pre-configured version of KEYMAP that produces CP/M system commands (DIR A:, PIP, etc.) when function keys are pressed. The RETURN code is included in each response so that the functions are acted upon immediately when you press the appropriate key.

KEYSYS.DOC — Instructions for using KEYSYS.

KEYSYS.89, KEYSYS.100, KEYSYS.29 — Status line messages for use with KEYSYS.COM.

Comments: The pre-configured KEYMAP programs are only a sample of what you can do with KEYMAP. It brings the power of programmable function keys to every Heath/Zenith CP/M user.

TABLEC Rating: (0),(1),(3),(10)

885-1231[-37] CP/M Cross Reference Utilities for MBASIC

Introduction: This disk contains two programs which will provide the Microsoft BASIC programmer with tools for aiding in the development of their programs. The first is a VARIABLE cross reference utility, and the second is a BRANCH statement cross reference utility.

Requirements: The programs require the CP/M operating system version 2.2 or later on an H8/H19 or H/Z-89 or Z90 with a minimum of 32K of memory. A printer is not necessary but is recom-

mended for a hardcopy listing of the output. Only one disk drive is required.

The programs will also run under CP/M-85 on the H/Z-100 unit with one drive.

The BASIC source file must be saved on the disk in ASCII form for XREF or BRNCHREF to process. Both utilities utilize the amount of memory available.

Note: The source code is included. The programs have only been tested on MBASIC versions 5.2 or greater.

The following programs are contained on the HUG P/N 885-1231[-37] CP/M Cross Reference Utilities for MBASIC:

README	.DOC
XREF	.COM
XREF	.ASM
BRNCHREF	.COM
BRNCHREF	.ASM

Author: Rudi Daniel

Additions and modifications by Pat Swayne
Output modified by Terry Jensen

Program Contents: The following descriptions will provide an explanation of the program options:

XREF - This program will scan a BASIC program for variables used and will print all the line numbers the variable is referenced in. The listing is in alphabetical order with the line numbers referenced in sequential order.

Variables to a length of 14 characters may be processed to allow for the latest version of BASIC-80. The maximum number of variables is dependent on the amount of memory.

The BASIC file must be stored in ASCII form before XREF or BRNCHREF can process it.

BRNCHREF - This program will scan a BASIC program for branch statements and will print all the line numbers the branch references. Branch statements included are GOTO, GOSUB, THEN, ELSE, and RESUME.

The source file must be in ASCII form.

Comments: This program is a must for CP/M BASIC programmers. The output listings contain paging for long source files that contain a large number of variables and branch statements.

TABLEC Rating: (0),(4),(10)

885-1232[-37] CP/M CVT Color Video Terminal

Introduction: CVT (Color Video Terminal) is a program that allows you to operate HA-8-3, HA-89-3, or similar color boards for the H8 and H89 computers as if they were a color version of an H19 terminal. It allows you to create a color display using nearly all printable H19 characters including the graphic characters. It makes creating displays with your color board as easy as creating displays on your H19 or H89. CVT is available in HDOS (see P/N 885-1129) and CP/M versions, which are virtually identical.

Requirements: You will need the CP/M operating system, at least 32K of RAM, and a color graphics board such as the HA-8-3 for the H8 or the HA-89-3 for the H89 (Z89/Z90). An H19 or H29 terminal is required for proper operation with an H8.

The following files are included on HUG P/N 885-1232[-37]:

CP/M	
885-1232[-37]	
README	.DOC
CVT8	.COM
CVT89	.COM
CVT	.DOC
CVT	.ASM
CVT	.PIC
GRAPH	.PIC
MCVT	.COM
MCVT	.ASM

Author: Pat Swayne, HUG

CVT8 and CVT89 — These are ready-to-use versions of CVT for use with the HA-8-3 and HA-8-89 and compatible color boards. CVT will work with either the TMS-9918 or TMS-9918A video processor so that it will work properly on older HA-8-3 boards. The following specifications may help you in determining the usefulness of CVT in your application.

Color Processor required: TMS-9918 or 9918A.
 CVT Modes used: Text or Pattern (G1).
 Characters/line: 40 (text) or 32 (pattern).
 Lines/screen: 24 (H19 25th line not supported).
 Colors/screen: 2 (text - foreground, background), 15 (pattern).
 Character set: All normal letters, numbers, and symbols. All graphic characters except the plus/minus and divide signs. The opposite corner squares missing from the H19 set are provided. Reverse video supported.
 Character matrix: 6 by 8 (text), 8 by 8 (pattern). Letters, and numbers are formed within a 5 by 7 matrix.

CVT supports most of the H19 escape codes and adds extra ones for setting modes, colors, etc. In addition, the function keys on your H19/H89 can be used to set up modes and colors while you are drawing a picture. In the pattern mode, the foreground and background colors of groups of patterns can be set to change the colors of textual or graphic characters. In the text mode, only the foreground and background colors of the entire screen can be set.

CVT can load a picture you have created directly from the HDOS or CP/M prompt, and can link to another program after loading the picture. This allows you to draw scenes with CVT and then use them in other programs. A memory map of CVT's usage of the video processor on the color board is provided in the .ASM file so that advanced users can manipulate the picture directly. CVT itself can also be utilized by other programs to take strings of ASCII text and process them into the picture.

In addition to being able to load its own files, CVT can load and display ordinary text files on the color screen. These files can contain escape codes to control not only normal H19 parameters, but also CVT modes and colors. (Files created by CVT are not text files, but are direct dumps of the video processor's memory to disk.)

CVT.PIC and GRAPH.PIC — These are sample pictures created with CVT. You can view these pictures by typing

CVT CVT
 or
 CVT GRAPH

MVCT — This is a program which demonstrates the ability to manipulate a picture after it is created. When you enter

CVT CVT MCVT
 CVT loads in CVT.PIC and then links to MCVT.ABS (or MCVT.COM). This program causes parts of the picture to change color and creates a flashing sigh effect.

Comments: CVT adds an excellent dimension to anyone having an H/Z89 or H8 with a color monitor.

TABLE C Rating: (0),(1),(3),(5),(10)

=====
P/N 885-1233[-37] CP/M
CHEAPCALC
 =====

Introduction: CheapCalc is a minimal but useful "spread sheet" program that can introduce you to spread sheet computing at little cost. It was developed from the program that originally appeared in the February 1983 issue of REMark (#38), and has been improved considerably and compiled. With CheapCalc, your computer screen becomes the window to a large worksheet onto which you can write mathematical problems and have them solved almost immediately.

Requirements: The CP/M version requires 64K of RAM in an H/Z-89 or 90 computer or an H8 with a Heath/Zenith terminal (H/Z-19, H/Z-29, etc.), and will also work on an H/Z-100 with CP/M-85.

The following files are included on the CheapCalc disk HUG P/N 885-1233[-37]:

```

README .DOC
CC .COM
CC .HLP
SAMPLE .CAL
CC .BAS
    
```

Program Authors:

Original program by William V. R. Smith
 First Heath version by Bob McFarland
 Compilable version by P. Swayne, HUG

CC.COM — This is the compiled, ready-to-use CheapCalc program. It runs by itself without BASIC or any other language required. It supports a worksheet containing 40 rows and 15 columns. Operations supported are addition (+), subtraction (-), multiplication (*), division (/), exponential (^), and SUM. (The SUM operator lets you add up to an entire row or column of numbers.)

All calculations are done in double precision with 16 significant digits. Numbers can be displayed on the screen in 4 formats: Float-

ing, Dollars-and-Cents, Integer, and Graphic (a line of asterisks represents each number). In the dollars-and-cents mode, rounding off to the nearest cent is done to correct possible binary floating point errors. (To illustrate this kind of error, run MBASIC and enter PRINT 100.99.99).

CheapCalc lets you enter comments as well as formulas and numbers into the worksheet, and the width of any column can be adjusted to any width from 4 to 30 characters to accommodate your entries. The contents of any "cell" on the worksheet can be copied or replicated to another part of the sheet. CheapCalc can save the data in a worksheet in a disk file, and can load previously saved files. It can print all or part of a worksheet on your printer.

CC.HLP — This is a file containing instructions for CheapCalc. When you use the Help command while running CheapCalc, this file is loaded and displayed on your worksheet (without destroying any data you have entered), so you can get help at any time while running the program.

SAMPLE.CAL — This is a sample worksheet that will help you to understand the workings of CheapCalc.

CC.BAS — This is the source code for CheapCalc. It can be run using MBASIC (CP/M), but with performance considerably degraded compared to the compiled version.

Comments: CHEAPCALC will not only introduce the user to the workings of a spreadsheet, but will provide many useful applications of a spreadsheet.

TABLE C Rating: (0),(1),(3),(10)

=====
P/N 885-3003[-37] CP/M
ZTERM
 =====

Introduction: This disk contains a modem package for the H/Z-100 series computers, which enables a user's computer to communicate with another computer. Versions for the H/Z89, Z90, and H8 computers are also included. ZTERM is a modification of the popular CP/M TERM package for the H/Z89/H8 computers.

Requirements: This disk requires the CP/M-85 operating system for use with the H/Z-100 series. CP/M version 2.2.03 is required for the H8/H19, H/Z89, or Z90 with 32K of memory. The H8 computer must be equipped with either the H8-4 serial interface board or the WH8-47 board. Only one disk drive is required for ZTERM.

The disk contains assembled, ready to use, versions for the H/Z-100 and H/Z89/H8 computers. The programs are written in assembly language and the source codes are included. The user may modify ZTERM to execute on most any terminal.

ZTERM100.COM — for use on the H/Z-100 version.
 ZTERM89.COM — for use on an H/Z-89, Z90 or H8 using port 330Q.
 ZTERM340.COM — for use on the H8 using port 340Q.

Note: The H/Z19 terminal is **NOT** required for ZTERM with the H8 computer, but is highly recommended.

Author: Jim Buszkiewicz

Program Content: This modem communication package allows the user to "talk" or communicate to another Heath/Zenith computer or to some other host computer system, e.g. CompuServe and the SOURCE. The package allows the user to change the port used, the baud rate, plus other parameters.

Editor's Note: CompuServe and the SOURCE are two timeshare systems (mainframes) that allow hundreds of individuals to access the host computers at a single time. They provide services for these members, e.g. the HUG Bulletin Board.

ZTERM allows the user to download a file from the host and it will let the user transmit a disk file to the host. The modem package will enable the user to communicate, in the normal fashion with a host, from the main console keyboard. The direct type communication can be either half or full duplex.

For anyone who uses TYMNET and/or MicroNET, ZTERM will automatically sign on to both systems by entering one simple escape character sequence. The same is true for those using TYMNET and the SOURCE.

General System Requirements: In order to use ZTERM, the computer must have a standard serial RS-232 I/O port. Either an unused or line printer port will suffice. Normally on a Heath/Zenith computer, the user would use the DTE port on the back of the computer.

For systems other than the H/Z-100 series, an H19 terminal is advantageous but not necessary. The main console must be capable of accepting lower case characters correctly, even though it may convert them to upper case.

Aside from the standard computer system, the only other hardware that is needed is an interconnecting cable, a host computer, and modem.

Configuring ZTERM: ZTERM includes an auto log-on feature, which configures ZTERM to send the User ID number and password. This may be done for MicroNET and/or the SOURCE. Selecting the baud rate is also software selectable. A menu will display the possible baud rates.

If there are other hardware or use requirements that are not met by the pre-assembled versions of ZTERM, the user can alter the assembly source code to meet the requirements. ZTERM was designed to run on just about any computer that can run CP/M, and there are several assembly options that make it easy to configure it to a particular system. The following are some of the possible source code changes:

- 1) Set for non-Heath system,
- 2) Set pause character,
- 3) Set abort character,
- 4) Set for a control-H (010Q) in place of delete (07h),
- 5) Set for ZTERM to strip the high order parity bit,
- 6) Set for type and length of data word,
- 7) Set port value, and
- 8) Set baud rate.

Using ZTERM: ZTERM is not a fancy program that uses graphics or the computer horn, but it does get the necessities done in the most efficient manner. When ZTERM signs on, it displays the size of the storage buffer in decimal bytes. This buffer is used to store characters when down-loading data from the host computer.

While in direct communications mode, ZTERM has nine basic commands available. These commands are executed by entering the appropriate function key across the top row of the H/Z-100 or H19 keyboard. The command summary is as follows:

Note: The function key columns refer to the H19 and H/Z-100 terminals respectively.

H/Z-19 H/Z-100

```

f1      f1—auto-log-on to MicroNET
f2      f2—auto-log-on to the SOURCE
f3      f3—Duplex toggle - half or full
f4      f4—Store all terminal display in buffer
f5      f5—Transmit disk file to host
ERASE   f0—Display Command Summary
BLUE    f6—Save the buffer to a disk file
RED     f7—Clear the buffer
WHITE   f8—Warm boot CP/M
    
```

When downloading files, no type of handshaking is needed. Characters are immediately stuffed into memory eliminating this need. When uploading files to a host, ZTERM will pause when it encounters a pause character.

Comments: ZTERM provides the H/Z-100 CP/M-85 user (or anyone else) with a useful modem communication package.

TABLE C Rating: (1),(2),(3),(5),(10)

=====
P/N 885-3004-37 ZDOS
ZBASIC Graphic Games Disk
 =====

Introduction: This ZBASIC graphic games disk has a number of games which have been modified to use the special commands of the powerful ZBASIC graphics.

Requirements: This disk requires the ZDOS operating system on an H/Z-100 series computer with a minimum of one disk drive. The programs require ZBASIC.

Note: When ordering this disk, you must include the "-37" in the part number.

The following programs are included on the HUG P/N 885-3004-37 ZBASIC Graphic Games disk:

```

README .DOC          HANOI .BAS
AUTOEXEC .BAT        TICTAC .BAS
MENU .BAS            QUBIC .BAS
HNIM .BAS            HUGDICE .BAS
SINK .BAS            BATTLE .BAS
HOTHELLO .BAS       HSLOTS .BAS
HANGMAN .BAS
    
```

Program Authors:

HNIM (NIM) and HOTHELLO (OTHELLO) — Richard Musgrave
 HANOI and SINK — William C. Zurney
 HANGMAN — Dale Grundon

TICTAC — Daniel Schlichtig
 QUBIC — originally the idea of Sam Cox and was adapted for MBASIC and H19 graphic features by Bill Phillips.
 HUGDICE (DORNBACK) — Thomas F. Dornback
 BATTLE — originally the idea of Frank R. Newcomer with graphics added by Bill Phillips
 SLOTS — Perry S. Phipp

These programs have been adapted from the HUG P/N 885-1068. All modifications to ZBASIC have been done by Gerry Kabelman.

AUTOEXEC.BAT — This program when copied to a system disk will automatically load ZBASIC and run the MENU.BAS program.

MENU — This is a menu driven program to select all of the games on the disk. All the programs must be copied to the system disk.

HNIM — This game is adapted from the robot NIM game. The game displays three rows of HERO-I Robots. The computer takes turns with the player on destroying any number of robots from one row. The object is to remove the last robot from the screen.

The graphics for his game are superb. The computer is very difficult to beat.

SINK — The object of this game is to sink the ships that cross the screen. The CRT is intended to simulate a torpedo screen. The program has five skill levels and uses the keypad to aim and fire the torpedo guns.

HOTHELLO — This game is played on an 8 X 8 checker board, with the rows numbered 1 to 8 and the columns A to H. The initial board is all blank, except the center four squares.

The object is for the player to try to place his piece so that it "out-flanks" the computer, creating a horizontal, vertical or diagonal run of the computers pieces bounded at each end by at least one of the players pieces. This move will flip the computers pieces, turning them into the players.

The OTHELLO game has five skill levels, of which even the first level is difficult to beat the computer.

HANGMAN — This program is a graphic version of the familiar game of HANGMAN, which most everyone has played while in grade school. It has three skill levels.

The opponent chooses a word and the computer places spaces on the screen for each letter of the word. For each incorrect guess, the program displays a new member of a body.

HANOI — In this game, the player is given three pegs (on the screen). On the first peg are two to 12 (user selectable) disks of different sizes stacked in descending order (smallest at the top to the largest at the bottom). The object of the game is to move the disks from the first peg to the third peg in as few moves as possible, following these rules:

- 1) Only one disk may be moved at a time.
- 2) A disk can only be placed on another one if it (the top one) is smaller than the bottom disk.
- 3) The middle peg is a temporary place to put disks. Rule two applies here as well.

The user may choose to have the computer play the game. The program prints the number of moves it takes and the minimum moves possible.

TICTAC — This is a computer version of TIC-TAC-TOE game for two players.

QUBIC — This game is a computer implementation of a three dimensional TIC-TAC-TOE. It is played on a 4 X 4 X 4 playing cube. The object is to place four markers in a row in any direction.

The program will allow one player to play against the computer or another player. When playing against the computer, the computer is very defensive and difficult to beat.

HUGDICE — This program simulates a version of the popular game YATZEE™. Two players can play, with the program maintaining and displaying the scores of each player.

BATTLE — This game of BATTLESHIP is played on a 9 X 9 grid, with the object of the game to locate and sink the ships hidden on the grid. The grid is identified with letters and numbers for coordinates.

There will be from four to eight ships hidden on the grid, with each ship from one to six units long. One version of the game requires that each unit (or part) of a ship be hit in order to sink it. The other version requires a single hit to sink the ship.

HSLOTS — This program is a simulated game of a slot machine using the computer to spin the wheels. This shows the excellent graphic capabilities of the H/Z100 computer. The player may bet from one to five dollars per "pull".

Comments: These programs show the features of ZBASIC and should spark interest in updating or writing of new software in ZBASIC.

TABLE C Rating: (0),(1),(2),(3),(10)

P/N 885-3005-37 ZDOS ETCHDUMP

Introduction: The ETCHDUMP programs, Etch-a-Sketch and Screen Dump, are paired into a complete graphics package for the Z-100 (ZDOS) and the MX-80. The ETCH program facilitates the quick and easy drawing of all types of complex designs on the screen of the Z-100, which can then be saved to a disk file. The SCREEN program reads a disk file created by the ETCH program and transfers the contents to an MX-80 printer, with GrafTrax, allowing very precise and detailed hardcopy records.

Requirements: ETCHDUMP require the ZDOS operating system for the H/Z-100 computers. Etch-a-Sketch is written in ZBASIC, while Screen Dump is written in assembly language. Only one drive is required.

The following files are contained on the HUG P/N 885-3005-37 ZDOS ETCHDUMP programs:

```
README .DOC
ETCHDUMP .DOC
ETCH .BAS
SCREEN .COM
SCREEN .ASM
CONVERT .BAS
READ .BAS
WRITE .BAS
PIC .SCN
```

Authors:

ETCH, CONVERT, READ, WRITE - Frank T. Clark
 SCREEN - Scott Cutshall

ETCH — With simple one-letter commands the ETCH program uses the graphics of ZBASIC to construct and combine detailed drawings. The screen contents of any video plane can be saved to a file and restored for later editing or for printing with the SCREEN program.

The program has an alphanumeric and graphics mode and three types of commands. The following is a list of the mode commands:

Graphic Commands

NUMERIC KEYPAD — entering a number moves the cursor one pixel in one of the 8 possible directions relative to the "5" key as the center.

Alphanumeric — enter the alphanumeric mode.

Box — draw a box

Circle — draw a circle

Dot — place a dot at the current position

Ellipse — draw an ellipse

Fill — fill an area

Hidden — toggle hidden cursor mode

Index — change the horizontal motion index (pitch)

Kolor — change the default foreground and background color

Line — draw a line

Mark — remember the current cursor position for subsequent commands

Point — remember the current cursor position for subsequent commands

Quit — clear the screen and quit

Read — read the contents of a file into a video plane

Size — input the aspect ratio for drawing circles and ellipses

Track — toggle tracking mode

Write — write the contents of a video plane into a file

X/Y-addressing — input a specific x-y coordinate for new cursor location

Alphanumeric mode

LINE FEED — return to the graphics mode

RETURN — move the cursor to the beginning of the next row

DEL or BS — erase the previous character

CONVERT, READ and WRITE — These three subroutines may be merged into a ZBASIC program for working with a screen file created with ETCH.

PIC.SRN — an example screen file created with ETCH.

SCREEN — The SCREEN program can take a file image of a video plane and print it to the MX-80 printer using GrafTrax with very high resolution matching that of the Z-100 monitor. A pseudo gray scale even simulates the color monitor or monochrome gray scale.

The command line can contain up to three file names which will be merged into one picture. The three files can be either separate video planes or the same file to make a darker picture.

Command line arguments or switches allow the user to select a border to appear around the picture plus the type of border.

Another option allows for multiple drawings to be combined on a single page.

The aspect ratio for the MX-80 is different than that of the monitor. A circle that appears visually correct on the monitor will appear oblong on the printer. Changing the aspect ratio will produce circles that appear visually correct on the MX-80 but oblong on the monitor.

Comments: This ETCHDUMP utility can be a versatile program even if the user does not have an MX-80 printer.

TABLE C Rating: (4),(5),(10)

P/N 885-3007-37 ZDOS CP/EMulator

Introduction: CP/EMulator is a program that lets you run standard 8-bit CP/M programs under Z-DOS. Nearly every program that runs under CP/M-85 will work under CP/EMulator including MBASIC, word processors, assemblers, debuggers, etc. It offers the convenience of having your most used programs, whether CP/M or Z-DOS, on the same disk, and lets you do such things as editing Z-DOS files with CP/M editors, etc.

Requirements: CP/EMulator requires Z-DOS on an H/Z-100 series computer and 128K of RAM. (CP/EMulator will not work on the ET-100.)

The following files are included on the HUG CP/EMulator disk:

```
README .DOC HD5COPY .EXE
CPM .COM HD5COPY .ASM
CPM .DOC EDIT .COM
CPM .ASM EDIT .ASM
CMD .SYS EDIT .DOC
CMD .ASM
```

Program Authors:

CPM - Robert A. Metz, Modified by P. Swayne, HUG
 CMD - Developed from ZCPR by P. Swayne, HUG
 HD5COPY - Carl H. Eaton
 EDIT - HUG Staff

Program Content:

CPM — This is the CP/EMulator program. It supports nearly all BDOS calls of real CP/M and the I/O-related BIOS calls. It also supports a CP/M-85 style Tic counter, which allows you to run HUG action games designed for CP/M-85. It can be used in two modes: the direct mode and the command mode. In the direct mode, it runs a single CP/M program and returns to Z-DOS when the program is finished. In the command mode, it loads in the file CMD.SYS, which provides a CP/M-like environment with the regular CP/M commands such as DIR, SAVE, etc. available, and you can run any number of CP/M programs. The command BYE returns you to Z-DOS when you are through running CP/M programs.

CP/EMulator has certain advantages and disadvantages over real CP/M. Some of the advantages are:

1. You can put your favorite programs, whether Z-DOS or CP/M, on the same disks.
2. CP/EMulator provides a very large 63K TPA. This means that programs have more memory space than under CP/M-85.
3. CP/EMulator allows you to use CP/M editors and word processors on Z-DOS files.

Some disadvantages of CP/EMulator are:

1. Extension programs such as DESPOOL or HUG's KEYMAP may only work while you are running programs that use BIOS calls for I/O, such as MBASIC. Use of such programs with CP/EMulator is, therefore, very limited.
2. Programs that use non-I/O BIOS calls (including disk calls) will not work at all. This includes many utility programs and some directory programs. However, HUG's DIR19 program works because CP/EMulator constructs simulated disk parameter and allocation tables. Other programs requiring these tables may or may not work.

CMD — This program is a system command processor for CP/EMulator that provides the usual CP/M command such as DIR, ERA, SAVE, etc. It was developed from the public domain program ZCPR, and has many of its advanced features. Because it uses no Z-80 code, it could possibly be used as a replacement for the CCP of CP/M-85, but no development has been done in that direction.

HD5COPY — This program is similar to RDCPM except that it copies files from HDOS disks instead of CP/M disks. It is included on this disk because HUG's HRUN HDOS emulator will run under CP/EMulator, and it provides a way to get HDOS programs to your

Z-DOS disks. However, it is somewhat limited in that it can only read 5.25-inch soft sector double density, single or double sided HDOS disks.

EDIT.COM — The standard CP/M editor ED will not work properly under CP/Emulator, and since we have not been able to determine why, we have included HUG's EDIT program on this disk.

Comments: CP/Emulator is a program to add greater flexibility to the serious ZDOS and CP/M-85 user.

TABLE C Rating: (10)

=====
**P/N 885-3008-37 Z-DOS
 Z-DOS UTILITIES**
 =====

Introduction: This disk contains several utilities to aid the Z-DOS user, including two Modem communication programs, a Menu executive, printer control programs, a directory program, and a screen dump program for IDS Prism color printers.

Requirements: These programs will run on any H/Z-100 computer with Z-DOS and standard equipment. The printer programs require the specific printer they were intended for use with.

The following files are included on the Z-DOS Utilities Disk:

README	.DOC	XA	.BAT
TERMZ100	.COM	XM	.BAT
TERMZ100	.ASM	AUTOEXEC	.BAT
KTBL	.ASM	BUILD	.BAS
TERMZ100	.DOC	SDUMP	.COM
DTERM	.COM	SDUMP	.ASM
DTERM	.ASM	MENU	.BAS
MENU	.COM	B	.BAS
MENU	.ASM	D	.BAS
LODR	.ASM	F	.BAS
MENU	.DOC	L	.BAS
MENU	.DAT	P	.BAS
MENU	.TBL	PSET25	.COM
X	.BAT	PSET25	.ASM
S	.BAS	PSETMX	.COM
T	.BAS	PSETMX	.ASM
PRISM	.COM	DIR100	.COM
PRISM	.ASM	DIR100	.ASM
PRINTEK	.COM	COLOR	.COM
PRINTEK	.ASM	COLOR	.ASM

Program Authors:

TERMZ100, DTERM, MENU, SDUMP,
 PRISM, PRINTEK, COLOR — Robert A. Metz
 PSET25, PSETMX, DIR100 — P. Wayne, HUG

TERMZ100 — This is a modem control program patterned after the Heath/Zenith CPS program. Features include function key control of operating commands, emulation of different terminals via a user alterable table, user selectable baud rate, ASCII file upload and download, and binary file upload and download with other computers using TERMZ100.

DTERM — This is a "dumb terminal" modem program, provided for those who want a modem program that does not intercept control characters, escape sequences, etc. This program intercepts only Control-E, which is used to return control to Z-DOS.

MENU — This program provides the ability to run other programs from a screen menu. Once installed, you only need to move an indicator to the name of the function you want to perform with the arrow keys, and press the RETURN or ENTER key. This program could be of help to your friends who are new users and are unfamiliar with computers. However, a knowledgeable person will be required to set the program up for the user. The .BAT files on this disk are for use with MENU, and MENU.BAS is for creating menus.

SDUMP — This is a screen dump utility for IDS Prism color printers. Included with the program are modified versions of the Zenith demonstration programs that will dump their displays to the printer when the F10 key is pressed.

PRISM — This is a program that allows you to set up several parameters on an IDS Prism printer before using it. Some of the selectable parameters are ribbon select, ribbon advance, normal or enhanced characters, fixed or proportional spacing, draft or quality mode, justify mode, character size, and lines per inch.

PRINTEK — This is a program that allows you to set up parameters on a PRINTEK printer. Selectable parameters include normal or enhanced characters, draft or quality mode, character size, fixed or proportional spacing, and lines per inch.

PSET25 — This is a Z-DOS translation of the PSET25 CP/M program previously released by HUG. It allows you to set up character size and lines per inch on an H/Z-25 or H/Z-125 printer.

PSETMX — This is a Z-DOS translation of HUG's PSETMX CP/M

program. With it, you can set compressed, emphasized, double strike, or normal characters, and lines per inch on an MX-80 printer.

DIR100 — This is a Z-DOS translation of the DIR19 disk directory program from HUG. It can display up to 80 files on the screen, and allows you to "page" through screens of files for disks with more than 80 files. It can alphabetize files, or present them in their "natural" order, and can show hidden files. File size information is shown for each file, and for the whole disk. Graphic lines are used to make the display more readable.

Comments: This ZDOS utilities disk brings many useful utilities to the ZDOS user.

TABLE C Rating: (1),(3),(4),(5),(10)

=====
**P/N 885-4600
 Watzman/HUG ROM**
 =====

Introduction: This product contains the integrated circuits (IC'S) to the Watzman/HUG ROM. The two (2) IC ROM set is the replacement parts for the code and keyboard encoder ROMs in the H19, H19A, or Z19 terminal, or the Terminal Logic board in the H89, H89A, Z89, or Z90. It can greatly add to the capabilities and usefulness of the terminal.

Requirements: The ROMs can be replaced in an H19, H19A, or Z19 terminal, or in the H89, H89A, Z89, or Z90. The documentation contains complete instructions for the installation of the ROMs.

Program Content: The WATZMAN/HUG H19 adds several new features to the H19 terminal. These include:

- 1) Greater baud rate selection.** Rates from 75 to 38400 may be selected by software or switch settings, including 134.5.
- 2) On screen digital clock.** A digital time display is maintained on the 25th line which does not interfere with terminal operation or use of the 25th line. The clock is controlled by escape codes and can be set and read. The display can be turned on or off.
- 3) Native mode keyboard operation.** With this mode, each key produces a unique 8-bit code instead of the 2-code escape sequences produced by some keys.
- 4) Added transmit features.** In addition to the ability to transmit a page and transmit the 25th line, the WATZMAN/HUG H19 ROM can transmit the current (cursor) line and transmit the character at the cursor. The single character transmit feature sends the character as an 8-bit code that allows the user to determine whether it is a graphic and/or reverse video character.
- 5) Cursor operation.** Software selectable blinking or steady cursor, in underline or block format.
- 6) Duplex selection.** Software selectable half or full duplex operation. This makes the H19 more useful in certain remote communication applications.
- 7) Software selectable handshaking.** The user can select either the normal Xon/Xoff handshaking or hardware handshaking via RTS (pin 4).
- 8) Word length.** Switch selectable 7 or 8 bit word length.
- 9) Transparent mode.** In this mode, each 8-bit code from 0 to 255 produces a unique visible character.
- 10) Upward compatibility.** The escape codes for all of the new features (except 134.5 baud select, handshaking select, and transparent mode) are in accordance with Heath/Zenith standards, so most of the features are compatible with similar features on newer Heath/Zenith products, including the ZT-1 and Z100 series computers.

The documentation contains a Configuration Chart for the S401 switch on the Terminal Logic Board. The instructions also include a complete summary of the WATZMAN/HUG H19 ROM escape codes.

Comments: The WATZMAN/HUG H19 ROM will greatly increase the usefulness of the H19 terminal line for those who are intrigued with the new features.

TABLE C Rating: (0),(3),(5),(10)

=====
**885-8012[-37] CP/M
 Maple
 (Modem Applications Effector)**
 =====

Introduction: MAPLE is a modem program designed to allow the H8/H19 or H/Z89 computer to communicate effectively with

another computer, over the telephone or by direct connection.

Requirements: MAPLE requires the CP/M operating system, version 2.2 or later, on the H19/H8/H17 or H/Z-89 or 90 with 32K of memory. When transferring files, 48K or more of memory is recommended. Only one disk drive is required. A line printer device is not required but is recommended for downloading files from the host computer.

This version of MAPLE will not run on the H/Z-100 computer. See P/N 885-8023-37 for the H/Z-100 CP/M-85 version of MAPLE. The [-37] is required for soft-sectored drives on the H/Z-89 or Z90.

To use MAPLE, a modem and appropriate connector will be required to communicate to another system. MAPLE can be set to run on interrupt 3, 4, or 5 of the DTE connector, port 330Q.

The program is written in assembly language and the source code is NOT included. The instructions are contained in a hardcopy documentation manual.

Note: The H19 terminal is required due to the use of the function keys and other escape codes.

The following file is included on the HUG P/N 885-8012[-37] MAPLE disk:

MAPLE.COM

Author: Dr. William C. Parke

Program Content: MAPLE is a modem communications package, which can be used to connect the users Heath computer system to another Heath system or to a time-share host system, e.g. CompuServe or the SOURCE, via the telephone lines. (Time-share host systems can have several hundred users on-line at a single time.)

MAPLE, when executed, enters the communications mode, with full file send and receive control. The mode and options are displayed on the 25th line of the terminal and are invoked by depressing the appropriate function key. The main communication "menu" function keys displayed on the 25th line are as follows:

- f1 - **page**—Send to the printer, a disk file, or remote computer any text displayed on the screen. The user may edit the screen display before sending.
- f2 - **COPY**—Store all screen activity in memory.
- f3 - **SHOW**—Display on the screen the text which has been stored in memory with the COPY function.
- f4 - **P.PAD**—Send the text saved in memory to an output device, (generally the printer).
- f5 - **STORE**—Save the text in memory to a disk file.
- ERASE - CLEAR**—Clear the text stored in memory.
- BLUE - SEND**—Send a disk file to the host computer. The file may be sent in block, line, or segment mode.
- RED - Exit**—Exit to CP/M.
- WHITE - Set**—Set or change communication options. These options include this second level menu:
 - f1 — convert between ASCII, APL, TAPE, and HEX character sets,
 - f2 — set mode for sending a disk file,
 - f3 — set the prompt character in sending a file,
 - f4 — select line printer device,
 - f5 — select disk drive,
- ERASE** — set options selected, and return to conversation,
- BLUE** — select parity check bit,
- RED** — select baud rate,
- WHITE** — set the number of bits per byte, and
- BREAK** — echo all terminal input.

BBREAK - break—Send a hard break to the host system. This will stop any transmission by the host and return the user to the host's command prompt. (This feature may not work for all host systems.)

The following are additional notes and features of MAPLE:

- Both the file SEND and COPY functions have a "text", "absolute", "line", "block" and "wards" (for Ward Christensen's protocol) settings.
- Modem handshaking can be controlled with the "Set" mode. Handshaking options are "none", "xon/xoff", "ack/nak", "DSR" or "CTS". Thus, direct computer to computer ties, as well as remote connections, need not suffer data loss due to a high baud rate.
- The COPYPAD buffer and disk files can be displayed or reviewed page-by-page or line-by-line.
- The modem signal is constantly monitored. The 25th line and a ring of the bell indicate a change.
- Under the Ward Christensen file transfers, the user may elect to display the transferred characters.
- Remote control of MAPLE is now available, so that a remote system can send commands which will initiate file transfers. A password is required. Remote controlled exit to the CP/M operating system is allowed following a correct password. The remote

system will then have remote terminal capabilities for operating the local computer.

MAPLE uses a number of control characters and escape sequences to do a number of functions. The user can refer to the written documentation for details. Patch Instructions are included with the manual to aid the user in customizing MAPLE to his requirements.

Comments: MAPLE, one of the most complete modem packages, includes most any feature required for computer communications. The 25th line display "menu" and documentation make it a very user friendly package.

TABLE C Rating: (0),(1),(2),(3),(5),(10)

P/N 885-8015 HDOS TEXTSET Formatter

Introduction: TEXTSET is an interactive formatter that will take a text file and format it to the users specifications. It has a number of features which are explained below. TEXTSET is used with a Diablo Printer to produce high quality printing for any size file. The special features of the Diablo printer are controlled by the program. No hardware modification needs to be done.

Requirements: TEXTSET requires the HDOS operating system version 2.0 (but should run on 1.6) on an H8/H17/H19 or H/Z89 with 56K of memory. Only one disk drive is required, however, two drives are recommended.

Note: A Diablo printer 1640 ksr, 1630, or RO 630 (Heath # WH-54) is required for use with TEXTSET.

The user will also need a text editor (e.g. HUG P/N 885-1022) or a word processing system that runs under HDOS. If you are not familiar with or do not have a favorite editor, the HDOS EDIT program comes with the HDOS operating system and has instructions in the HDOS manual.

The following files are contained on the HUG P/N 885-8015 HDOS TEXTSET Formatter disk:

```
TEXTSET .ABS
TEXTSET .PSU
PICA .PSU
ELITE .PSU
PLASTIC .PSU
METAL .PSU
DEMO1 .DOC
DEMO2 .DOC
TEXTSET .REF
```

Author: Terry W. Wilk

Program Content: TEXTSET will format a text file created from an editor and print it to a Diablo printer. It will do microspace justification, proportional spacing of the characters, automatic formatting of the text within a selectable width, double striking, bold striking, underlining, centering, and right justification of lines. No special print wheels are necessary. However, the selectable proportional spacing can be used effectively with special print wheels.

TEXTSET requires interaction with the user to produce a final text format. It is designed this way to give the user flexibility in working with formatting text. The program pauses for each question and allows the user to make any of a number of selectable options. TEXTSET allows the user to select:

- 1) the PSU (Proportional Spacing Unit) Table
- 2) the WIDTH of formatted text
- 3) the OFFSET (amount of space between characters)
- 4) the SPACE (PSU for the space character)
- 5) the BLANK MAX (the maximum space between words, before adding tiny spaces between characters)
- 6) the LINES (total lines per block to be processed)
- 7) the FORCE BR (set a force break after each line)
- 8) SET VMI (change the line feed value of the Diablo)
- 9) SET LEFT MARGIN
- 10) LINE FEED (send any number of line feeds to the printer)
- 11) SEND LINE (type and send a line, e.g. a header or page no.)
- 12) EXIT, RESTART, PROCESS, OUTPUT, SKIP, and CHANGE

TEXTSET will not automatically do page numbering or auto headers/footers. These features are possible, however, through the SENDLINE command of TEXTSET.

There are other features of TEXTSET which make this package useful. TEXTSET checks for user input errors and errors in the input text file. Predefined PSU (Proportional Spacing Unit) files are included on the disk. The user can customize or create PSU Tables to any spacing unit.

Most importantly, the documentation is very user friendly and contains step by step instructions on the use of TEXTSET. Two example

files and one reference file (DEMO1.DOC, DEMO2.DOC, and TEXTSET.REF, respectively) are explained and processed through the instructions. The documentation also explains how to implement TEXTSET with one or two disk drives.

Comments: TEXTSET is a must for any user who needs a formatter that will use the special features of the Diablo printer to produce a professional formatted text file. The documentation is one of the best instructions manual that the reviewer has seen.

TABLE C Rating: (4),(5),(6),(10)

P/N 885-8016 HDOS MORSE CODE Transceiver Ver 2.0

Introduction: This is an all new major upgrade of the previously released Version 1.1 under part number 885-1016. Many new user friendly improvements and extensive features have been added. The program allows the user to change custom data (e.g. the station call sign) at any time from the keyboard. Some of the other new features are listed below.

MORSE CODE Transceiver version 2.0 is an 8080 assembly language program which provides the operator with the ability to send or receive morse code. The program is intended to be used by Amateur Radio Operators to facilitate communication by morse code over a wide range of code speeds, dot/dash ratios, interference, and noise conditions. In addition, the precision speed feature is intended to be used whenever extreme transmit code speed accuracy is required.

The precision morse code speed algorithms used in this program were originally developed as part of a set of custom H89 programs for the American Radio Relay League's Maxim Memorial Station "W1AW" at A.R.R.L. Headquarters in Newington, CT.

Requirements: This program requires the HDOS operating system version 2.0 on an H19/H8/H17 or H89 with 48K of memory. Only one drive is required, however, two are recommended.

All I/O is at RS232C levels via the DTE port. External equipment is required to interface the RS232C level I/O signals to the amateur station equipment. Design details were published in REMark Issue 33, October 1982, page 17.

Note: The algorithms used for morse code decoding depend on timing from the internal clock. Therefore, this program will perform properly only on a standard machine running at 2.048 MHz.

The following files are included on the HUG P/N 885-8016 MORSE CODE Transceiver disk:

```
README .DOC TXLOP .ACM
CW .DOC TXSPEED .ACM
CW .ASM RXINT .ACM
CW .ABS RXLOP .ACM
CWDATA .DAT DISPLAY .ACM
SAVMSG .DAT STATDPY .ACM
KBIN .ACM CODETBL .ACM
SPKEY .ACM VARTBL .ACM
```

Some additional HDOS 2.0 XTEXT files are required for assembling CW.ASM.

Author: Robert R. Anderson K2BJG

Program Content: MORSE CODE Transceiver can receive and transmit standard morse characters as well as special morse characters such as (AR), (SK), (BK), (KN), (BT), and (AS). Both upper and lower case key input and screen display is allowable.

The CWDATA.DAT disk file contains eleven multi-character groups which can at any time be read to the currently selected buffer and display screen. This file contains commonly used abbreviations and space for the station call sign and station location.

Two transmit buffers selected by the 'I2' key will transmit up to 254 characters. Ten message buffers can be loaded or cleared under control of the 'I1' key. Any selected message buffer can be transferred to the transmit buffer. These 10 buffers are saved in the SAVMSG.DAT.

Disks can be changed and ASCII disk files can be loaded without leaving the program. The memory buffer extends from the end of the program to the top of available memory.

The receive program operates in three modes: LOCK, TRACK, and HOLD. The transmit program operates in two modes: NORMAL and DISK FILE. The modes can be manually switched to any of the modes.

The available precision fixed Tx speeds are: 5SP, 05, 7.5, 10, 13, 15, 18 WPM, and 20 through 70 WPM in 5 WPM steps. The morse code speed standard used in fixed speed mode is in accordance

with amateur practice of one word being defined as consisting of 50 elements.

The screen display is split into three areas for viewing the receive or transmit data, the selected transmit pre-type data, and the selected message buffer data. The screen is also used as the command screen and for display of error messages. The program will not allow for improper keyboard commands to take place.

The documentation is contained on the disk. A listing of the instructions will be recommended for learning the MORSE CODE Transceiver program.

Comments: The author had done a superb job on the MORSE CODE package.

TABLE C Rating: (0),(1),(3),(5),(10)

P/N 885-8017 HDOS Programmers Helper

Introduction: The H89 Programmers Helper (PH.DVD) is an interrupt device driver that may be called from the command or program mode of Benton Harbor BASIC, EDIT, DEBUG, or most any other host program by typing the BREAK key. PH.DVD will perform any of its functions and then return control to the host program. The functions are listed below.

Requirements: This program requires the HDOS operating system version 2.0 with an H19/H8/H17 or H89 with a minimum amount of memory. Only one drive is required.

Note: The H/Z-19 terminal is required to run PH.

The following programs are included on the HUG P/N 885-8017 HDOS Programmers Helper disk:

```
README .DOC
PH .DVD
PH .ASM
```

Author: Richard H. Livingston

Program Content: PH.DVD will perform a number of functions to aid the programmer. It is invoked by entering the BREAK key or a CTRL-@. The functions that it will perform are as follows:

- 1) Number base conversions: convert between Binary, Octal, Split-Octal, Decimal, Hexadecimal, and ASCII
- 2) ASCII conversion: echo the value for the key depressed
- 3) Flag conversion: convert the numerical value of the Flag register to the logical state of each Flag
- 4) DCA conversion: line and column numbers are converted to the proper ASCII escape sequence for direct cursor addressing
- 5) 16 bit positive integer arithmetic: addition, subtraction, multiplication, and division
- 6) Logic functions: 1's Cmp, 2's Cmp, AND, OR, XOR
- 7) Graphic mode: displays the graphic character set and associated key characters on the 24 and 23 lines, respectively

A second BREAK key or CTRL-@ will return control to the host program. PH.DVD must be loaded before it can be used. The instructions are included on the disk.

Comments: This device driver provides the programmer with an excellent tool for doing number base conversion and other functions at the press of the BREAK key.

TABLE C Rating: (0),(1),(3),(10)

P/N 885-8018[-37] CP/M FAST EDDY Text Editor and BIG EDDY

Introduction: FAST EDDY is a text file screen editor that was written for everybody. It was written using the basic commands and keypad keys, so that anyone, even with no experience with an editor, can learn to use it while reading the instructions.

For those files that are too large for your computers memory, BIG EDDY will handle the breaking up of the text for editing with FAST EDDY.

Requirements: This disk requires the CP/M operating system version 2.2 or later, on a H8/H19/H17 or H/Z-89 or Z90 with 32K of memory. A printer is not required, but both FAST EDDY and BIG EDDY have printer options. Only one disk drive is required.

BIG EDDY can be used with large files. A second drive (or high

885-8019[-37]

density drives) may be required to break up large files which cannot fit into memory. The original file is not changed or deleted.

FAST EDDY may work on the H/Z-100 under CP/M-85, however, the options have not been documented. The user would be responsible for learning the options for use under CP/M-85.

The following files are included on the HUG P/N 885-8018[-37] CP/M FAST EDDY Text Editor and BIG EDDY File Handling Utility:

EDITOR .COM
BIGED .COM
TUTOR1 .DOC
TUTOR2 .DOC
TUTOR3 .DOC

Author: Hubert L. Reeder

FAST EDDY — This text file screen editor and its documentation have been designed for anyone not familiar with using an editor. The program uses commands and keys that are easy to remember and use.

The editor contains a limited number of commands, however, the commands are designed to provide a useful, easy to use editor. It does not have complex options that require time and effort to use. The editor contains a command mode and edit mode. The following are a brief list of the options:

COMMAND MODE

Typed Commands:

LOAD filename.ext (load file)
SAVE filename.ext (save file)
SAVE XX filename.ext (save XX number of lines)
MERGE filename.ext (merge two files)
PRINT NN (print enter file, NN lines per page)
PRINTD NN (print double spaced)
PRINT NN XX (print XX lines, NN lines per page)
FIND anyword (find the first occurrence of a word)
MARGIN nn xx (set left margin, nn, right margin, xx)
BYE (exit to CP/M)

Key Commands:

Up arrow — enter EDIT mode at first line of text
Down arrow — enter EDIT mode at last line of text
HOME — enter EDIT mode at pointer (last cursor location)

EDIT MODE

Key Commands:

Up arrow — move cursor up one line
Down arrow — move cursor down one line
Right arrow — move cursor to the right one character
Left arrow — move cursor to the left one character
HOME — return to COMMAND mode
IL — insert line
DL — delete line
IC — insert character
DC — delete character
F1 — align paragraph within left and right margins
F2 — margin on
F3 — margin off
F4 — find next occurrence of word, after FIND of COMMAND mode
F5 — MBASIC line split (insert MBASIC logical line extension)
BLUE — right justify paragraph text
LINEFEED — split line
ERASE — block erase

These are most of the basic commands of FAST EDDY. Please note that it has the ability to align paragraphs to new margin settings and then the option of right justifying the paragraph text.

Details of how to use these options are contained in the documentation. The TUTOR1, TUTOR2, and TUTOR3 documentation files are included with the disk to give the user experience in using FAST EDDY while reading the doc files.

BIG EDDY — This program is a utility to work with text files which are too large to be edited by FAST EDDY directly because of memory limitations. BIG EDDY can be used to browse a file of any size of which the user can break the large file into smaller parts for editing with FAST EDDY.

BIG EDDY asks for the input filename and an output filename. It keeps track of the subfiles and names them accordingly.

BIG EDDY has some useful options to aid the user in preparing the text for smaller files. The BROWSE mode is similar to the EDIT mode of FAST EDDY, except that no editing can be done to the file.

The following are a list of the commands of BIG EDDY:

SAVEALL — save the entire text in memory to the disk
SAVEPART — save part of the text in memory to disk
NOSAVE — discard part of text
PRINT — same as FAST EDDY's print commands
BYE — exit to CP/M

With the SAVEPART command, the user can save the text by sub-

ject or modules of his choice. Using the CP/M PIP program, the subfiles can be assembled the files into any order.

Comments: FAST EDDY, with the align paragraph and right justify, allow simple formatting, e.g. doing letters or other papers that do not require specific formatting capabilities.

TABLE C Rating: (0),(1),(3),(7),(10)

=====

885-8019[-37] CP/M DOCUMAT Formatter and DOCULIST

=====

Introduction: DOCUMAT is a word processor which formats text to specific parameters. The numerous options make this formatter one of the most powerful of its kind. DOCULIST will preview and print files that have been processed with DOCUMAT.

Requirements: These programs require the CP/M operating system version 2.2 or later on an H8/HZ-19 or HZ-89 or Z90 with a minimum of 32K of memory. A printer is not required to execute the programs, however, hardcopy printouts of the text will require having a printer. Only one disk is required, however, DOCUMAT will access any size file including multiple disk files.

The programs have not been tested on the HZ-100 but should run with no problem.

The following programs are included on the HUG P/N 885-8019[-37] CP/M DOCUMAT Formatter and DOCULIST disk:

DOCUMAT .COM
DOCULIST .COM
MACLIB .DOC
TESTFILE

Author: Neal A. and Susan Van Eck

DOCUMAT - This program is a wordprocessing system which will produce neatly formatted documents. DOCUMAT takes a file of text (which is created with an editor), including DOCUMAT commands, and formats it for final printout according to your specifications.

The program allows for a number of options including great flexibility of page layout and text control. The commands allow for margin control, paragraph indentation, soft-hyphenation, page size, use of tabs, underline, and bold facing. Sentences are automatically capitalized and separated by two spaces. New pages are started automatically or whenever you wish, and can be set for front and back paging, while maintaining a running header for each page.

The program allows for setting for right justification of text. It provides a set of ten counters (numeric and alphabetic) for use in number pages, sections, chapters, prefixes, etc. It allows up to nine (9) footnotes per page, automatically numbering them as they appear. It automatically generates a Table of Contents of the text. It has the facility to INCLUDE (or merge) a separate file anywhere in the main text. It provides for interactive sessions while processing. The most useful tool is the powerful macro facility.

DOCUMAT has Global Commands, which apply to the entire text, and Control Commands, which control the text immediately following the command. The following is a list of some of these commands available for the DOCUMAT formatter:

GLOBAL Commands:

CTRk - set numeric counter k
CTRn - set alphabetic counter n
CYCLE - cycle page numbers for facing pages
HEAD - print the running head
JUSTIFY - set for right justification
LINEs - set maximum number of lines per page
LMARGIN - set left margin
NUMBER - print page numbers
PAGE - format paging parameters
PARAGRAPH - indent paragraphs
PSPACING - line spacing between paragraphs
SHIFT - indent all text for right & left pages
SPACING - spaces between lines
TMARGIN - set top margin for first line per page
WIDTH - set the number of characters per line

CONTROL Commands:

A - all lines of text following will be copied without change
AR - align right (move the text to the right margin)
B - begin boldface text
C - center current line
Dn - set dot leaders (for example)
Hn - indent each successive line after current line

In - indent n spaces each line including current line
Jn - jump n lines
Ln - start a new line leaving n-1 blank lines
N - start a new page immediately
P - start a new paragraph
R - reset, start new line and turn off temporary options
S - justify current line and start new line
Tn - set tab, space to column n
U - begin underlining
Wn - skip to new page

The ability to define and use macros is the most powerful facility in DOCUMAT. This feature is not found in most other wordprocessors. A macro is a predefined set of text or a procedure, which can be used in the text file wherever and whenever called.

With macros, you can automatically generate numbered chapter and section headings, ensure consistency, and include predefined text and control commands - even macros of macros. You can create printer control macros to send control codes for your printer. DOCUMAT also provides for "structured" writing. (MACLIB.DOC is a file of predefined macros of general use.)

Details of all commands are contained in the instructions. The disk contains a file and the manual contains a tutorial to give the user hands-on experience using many of the commands.

DOCULIST - This program allows you to preview or type the formatted output text of DOCUMAT. The PREVIEW mode will pause after every 24 lines until you are ready to go on. You also can shift the display for lines that are longer than 80 columns.

DOCULIST can be used to display or print any text file. The PREVIEW and TYPE options can be started at any desired page number.

Comments: DOCUMAT will require some study to master its many commands. Once you have learned the commands, you will know how to use one of the most powerful formatters.

TABLE C Rating: (0),(4),(10)

=====

885-8020[-37] CP/M RF Computer-Aided-Design Package

=====

Introduction: RFCAD is a collection of 35 programs written in Microsoft BASIC which aid the user in designing many standard audio, HF, VHF, UHF, and microwave circuits and antennas. These programs are made readily accessible by use of a user-friendly menu. This package is primarily aimed at electronic engineers and Ham's who have frequent need to design circuits and antennas. It will also be of tremendous benefit to electronic students who want to experiment with circuit configuration to see what happens. Several programs are also included which will be helpful to anyone interested in setting up a satellite earth station.

Requirements: These programs require the CP/M operating system on an H8/H17/H19, HZ89 or Z90 with 40K of memory. Two 5 1/4 inch single-sided drives are required to run from the menu program. A printer device is not required.

The programs are written in Microsoft BASIC and will run on version 5.03 or newer. The only ESCape code or cursor control used for the H19 terminal is the "clear screen". At least 11K free bytes of MBASIC program memory space are required by the largest program.

These programs have not been tested on the HZ-100 but should run with no problem. Be sure to include the "-37" for soft sector.

Note: The H19 terminal is required for the clear screen control used in the program. The clear screen code can be changed so that the H19 terminal would not be required.

The following files are included on the HUG P/N 885-8020[-37] CP/M RF Computer-Aided-Design package. (This is a two disk set.)

CADMENU	BAS	LPI	BAS
AELIPT	BAS	MATCHER	BAS
AFILTER	BAS	MFILTER	BAS
AFLOT	BAS	MOD	BAS
BFILTER	BAS	MSCONV	BAS
CHORN	BAS	MSTRIP	BAS
COIL	BAS	NE555	BAS
DBCONV	BAS	NFCONV	BAS
DISH	BAS	OSC	BAS
FED	BAS	PATH	BAS
FREQWAV	BAS	PELIPT	BAS
HELIX	BAS	PFILTER	BAS
HELP	BAS	RESNET	BAS
HFILTER	BAS	RESONNCE	BAS
HORN	BAS	SATANT	BAS
LFILTER	BAS	WINDLD	BAS

TLINE .BAS
YAGE .BAS
ZCONV .BAS

Author: Gary A. Field, WA1GRC

Program Content: The subjects covered in the RFCAD program list are as follows.

- Active filters,
- Passive filters,
- Pi and Tee attenuators,
- Power dividers,
- L, Pi & Pi-L matching networks,
- NE555 circuits,
- Yagi, Horn, Helix and Dish antennas,
- Microstripline matching,
- Receiver front end design,
- Wind loading on antennas,
- Radio path loss calculator,
- Beam heading and distance to remote station,
- Oscillators, and
- Inductor design.

There are also several handy conversion utilities which convert between electrical units such as dB, dBm, dBmV, Watts, Volts, VSWR, and degrees Kelvin, as well as dimensional units like meters, centimeters, feet, and inches.

The documentation for RFCAD contains schematic diagrams which are referred to by the programs. This package has been in use in an R.F. Research and Development group for over a year and is believed to be thoroughly debugged.

TABLEC Rating: (9)

=====
885-8021 HDOS
Student's Statistics Package
=====

Introduction: This package is a collection of programs which conveniently calculate the most needed basic statistics. The programs cover the most frequently used statistical analysis covering most of the designs included in introductory statistics textbooks. The programs are menu driven.

Requirements: These programs require the HDOS operating system version 2.0 on an H8/H17, H/Z-89, or Z90 with 48K of memory. The menu program is written for a two 5 1/4 inch single-sided drive system, however, the user has the option of selecting one disk drive in the menu program. A line printer is required for hardcopy output.

The programs are written for either Benton Harbor BASIC or Microsoft BASIC.

Note: The H19 terminal is not required for these programs. An 80 character by 24 line terminal is assumed.

The following files are included on the HUG P/N 885-1021 HDOS Student's Statistics Package:

STATMENU .BAS	TTEST .BAS
BASTAT .BAS	A1 .BAS
BASALT .BAS	A1R .BAS
CORLTN .BAS	A2 .BAS
LINREG .BAS	A2R1 .BAS
CHISQR .BAS	NORRND .BAS
STDSR .BAS	

Author: Theodore J. Stolarz

Program Content: The following is a brief description of each program available in this statistics package:

BASTAT — Basic Statistics for a Single Variable - This program computes basic descriptive statistics and builds a frequency distribution and graph of the data with expected frequencies calculated from the normal curve.

BASALT — Alternate for program BASTAT - This is a less elaborate program than BASTAT and will handle data that may not run on BASTAT. It does not provide a frequency distribution or graph of the output.

CORLTN — Linear Correlation - This program provides a correlation matrix for 2 to 20 variables and provides both Fisher's Z' for each value of r and a test for the significance of each correlation coefficient.

LINREG — Linear Regression (2 variables) - This program provides both regression equations for a 2 variable correlation problem. It allows for predicting unknown values of both X and Y using the equations. It will accept raw data for input or previously calculated statistics.

CHISQR — The CHI SQUARE Statistic - This program calculates the value of Chi Square for both the Row only (1xC) and the contingency table designs. Yate's correction for discontinuity is provided as an option where appropriate.

STDSR — Standard Score Conversion Program - This program converts a set of scores to Z scores or standard scores with any base. It also provides descriptive statistics on entered scores.

TTEST — T-tests for Mean Differences - This program calculates the value of Student's t for both independent and dependent samples. It provides degrees of freedom and descriptive statistics for the samples.

A1 — Single Factor Analysis of Variance - This program provides a single factor ANOVA on any number of independent groups with any number of subjects. For unequal sample sizes, a choice of the weighted or unweighted means analysis is provided.

A1R — Single Factor within Subjects Analysis of Variance - This program provides a single factor ANOVA for the within subjects or repeated measures design.

A2 — Two Factor Analysis of Variance - This program provides a factorial ANOVA for the two factor design. The unweighted means analysis is used for unequal sample sizes.

A2R1 — Two Factor Mixed Design Analysis of Variance - This program provides an ANOVA on the "split plot" or mixed within subjects - between subjects two factor design.

NORRND — Normal Distribution of Random Numbers - This program provides pseudorandom numbers selected from a population with a specified mean and standard deviation. Also generates the usual rectangular distribution of random numbers.

The documentation contains sample sessions using the programs, as well as example output from the execution of the program.

TABLEC Rating: (10)

=====
P/N 885-8022 HDOS
SHAPES
=====

Introduction: SHAPES is an educational program for preschool children, ages two to five. The program is designed to teach basic shape recognition, while at the same time being fun for the child to play. It can also be used to teach the concepts of up, down, left, and right. This program can serve to introduce the very young to the world of computers.

Requirements: This program requires the HDOS operating system version 2.0 on an H8/H17/H19 or H/Z89, Z90 computer with a minimum 16K of memory. Only one disk drive is required.

The program is written in 8080 assembly language and the source code is included.

Note: The H/Z19 terminal graphics are used.

The following files are included on the HUG P/N 885-8022 HDOS SHAPES disk:

SHAPES .ABS
SHAPES .ASM
REFN .ACM
INTROD .ACM
MENU .ACM
INSTR .ACM
FORM .ACM
BLANK .ACM
GROUP .ACM

Author: Charles Stout, Jr.

Program Content: The SHAPES educational program for preschool children has six different shapes (or figures) arranged together to form a group at the top of the screen. Each of the six shapes is displayed one at a time at the bottom of the screen. The child must move the shape to its correct position by use of the arrow keys of the keypad.

The program has eight selections from the menu drive program. These include versions of Beginner, Intermediate, Advanced, and Random. The child can play a particular level continuously or return to the menu and choose another level.

Comments: This is a very clean KID'S DEVELOPMENT program.

TABLEC Rating: (0),(1),(10)

=====
P/N 885-8023-37 CP/M-85
MAPLE
(Modem Appl. Effector)
=====

Introduction: The popular modem package, MAPLE, is now available under CP/M-85 for the H/Z100 computers. MAPLE is a program designed to allow the H/Z100 computer to communicate effectively with another computer, over the telephone or by direct connection.

Requirements: This program requires the CP/M-85 operating system on an H/Z100 series computer. A printer device is not required but is recommended for producing a hardcopy of anything from the online time.

The user is required to have a modem capable of connecting to the DTE connector on the back of the H/Z100 for telecommunicating with another computer. The modem can be 300 or 1200 baud. (MAPLE is capable of any number of selectable baud rates for direct connect.)

The following program is included on the HUG P/N CPM-85 MAPLE disk:
MAPLE.COM

The instructions are included in a manual.

Author: Dr. William C. Parke

Program Content: MAPLE is a modem communications package, which can be used to connect an H/Z100 computer to another microcomputer or to a time-share host system, e.g. CompuServe, via the telephone lines.

MAPLE, when executed, enters the communications mode, with full file send and receive control. The mode and options are displayed on the 25th line of the terminal and are invoked by depressing the appropriate function key.

The following are the options displayed on the 25th line while in communication mode:

- f0 — toggle (on and off) outgoing communication
- f1 — type an ASCII file to the screen (the file will NOT be sent to the remote system)
- f2 — this is the COPY function, which allows the download of files or data from a remote system; MAPLE has three COPY selections:
 - text - copy ASCII characters
 - abs - copy full eight bit words (absolute files)
 - wards - copy using Ward Christensen protocol

All characters will be saved in a COPYPAD area.

- f3 — redisplay any text in the COPYPAD
- f4 — send text in COPYPAD to printer
- f5 — store to disk the text in the COPYPAD
- f6 — clear contents in COPYPAD
- f7 — send file to remote
- f8 — exit to CP/M-85
- f9 — set user options
 - KEYS - set keyboard setting; ASCII, APL, TAPE, and HEX
 - CPY - set COPY options; text, abs, wards
 - SND - set SEND options; e.g. line, block, wards, abs
 - PROMPT - set 'Line' mode prompt
 - PRINT - select current output device
 - DRIVE - select default disk drive
 - PARITY - select parity check bit
 - BAUD - set baud rate
 - WORD - set number of bits per byte and stop bits
 - ECHO - toggle terminal echo

BREAK — send hard break code to remote.

These are the main options available to the user. There are many other features of MAPLE that are helpful, e.g. the use of the keypad to send predefined messages or instructions to the remote.

MAPLE uses control characters and escape sequences to do a number of functions. A CTRL-P entered while on-line will toggle the printer output. An ESC CTRL-P will send the control-P to the remote.

Comments: MAPLE is one of the most complete modem packages to allow your computer to communicate with another computer.

TABLEC Rating: (0),(1),(3),(5),(10)

**P/N 885-8024 HDOS
BH BASIC Utilities Disk**

Introduction: This Benton Harbor BASIC Utilities disk is designed to facilitate the BASIC programmer in developing modularized BASIC programs, creating and utilizing a simple library of sub-routines, construction of CHAIN overlays, and in eliminating memory storage requirements for REM statements in executing BASIC programs.

Requirements: This package requires the HDOS operating system on an H8/117/119 or H/Z89 computer with 32K of memory. Only one disk drive is required. A printer is not required.

The program is written in Benton Harbor BASIC.

Note: The H/Z19 terminal is required.

The following files are included on the HUG P/N 885-8024 HDOS BH BASIC Utilities disk:

- BASICUTI .BAS
- TESTDATA .1
- TESTDATA .2
- TESTDATA .3
- TESTDATA .4
- TESTDATA .5
- TESTDATA .6

Author: Terence Bordelon

Program Content: This Benton Harbor BASIC utility includes commands which are selected from a command menu. The menu is as follows:

- (0) END PROGRAM
- (1) RENUMBER
- (2) REM-OUT
- (3) COMBINE
- (4) SPLIT
- (5) DIRECTORY

Options one through four require input from one or two files and output to one or two files depending on the command selected. The file names may consist of any disk device, file name, and file extension. At each input or output file prompt, the user can ask for verification that the name does or does not exist on the disk.

Each one of these commands provide the user with the option of viewing all changes. If selected, each source line is displayed with the resultant line immediately following. At the end of the command, the program issues a count of the lines processed for user notification and verification.

RENUMBER — This command rennumbers an entire BASIC program. The user provides the starting line number for the new file and the line number increment. Any warning messages may be stored to a separate file. (Note: The original file is still intact after the RENUMBER operation. A new renumbered file will have been created.)

REM-OUT — This command strips out all REM statements within a BASIC program and stores the resultant program in one file and the REM statements in another file. The COMBINE option will restore the REM statements to the BASIC file.

COMBINE — This command takes two BASIC files and combines them into one file. The lines from the two source files are written to the destination file in ascending line number order.

The COMBINE command has two operating modes. One mode combines two BASIC program files. The other combines a REM file with its corresponding BASIC program file. (See REM-OUT.)

SPLIT — This command splits one source file into two destination files. The split is based on block starting and ending line numbers. One or more blocks consisting of one or more lines may be split out. At completion, the source file will be intact.

DIRECTORY — This option allows the user to do a directory of any disk drive while in the program. The user can select to see files not flagged or all files including files flagged by the "S" flag.

Comments: The program has been written entirely in BASIC and is commented throughout.

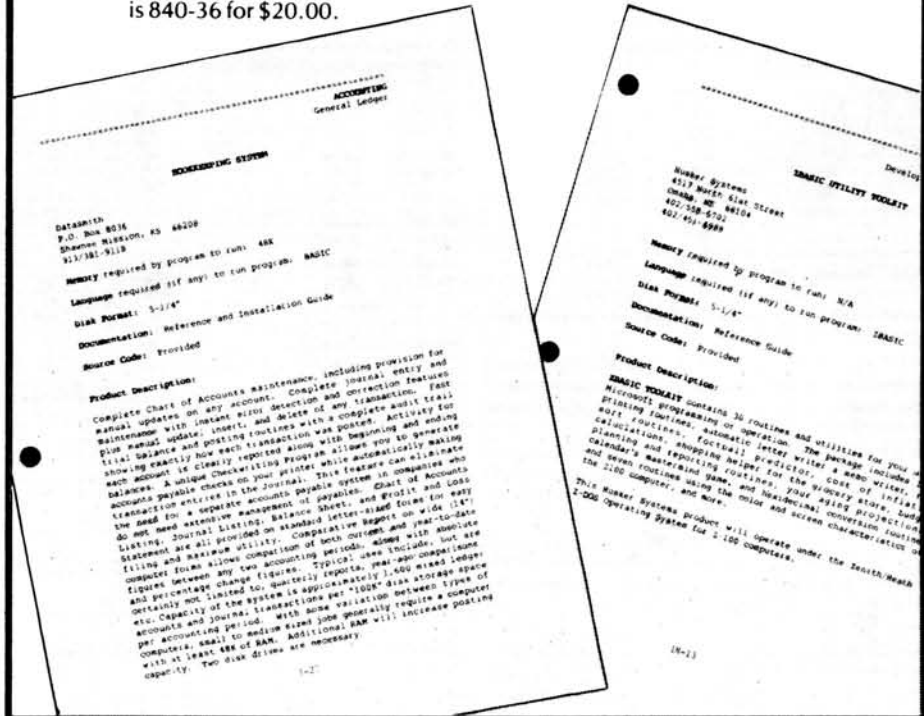
TABLE C Rating: (9)

**P/N 885-3006-37 ZDOS
CHEAPCALC
See P/N 885-1233 For Details**

Z-100 Software Directory Released



- This edition lists more than 475 programs that have been reported to operate on the Z-100 and H-100 microcomputers. (The first edition listed approximately 250 programs.)
- The **Software Directory** has been divided into 21 chapters (reduced from 29 chapters in the first edition). Products have been better grouped and are easier to locate by subheading. Some sections have been renamed, others added or eliminated. One new section added is the "Vertical Markets".
- An alphabetical "Product Index" has been added and the "Vendor Index" redesigned for easier reading.
- An "Owner's Registration Card" has been included.
- The binder-bound product order number is CB-463-15 and sells for \$25.00; the replacement (contents and tabs only) order number is 840-36 for \$20.00.



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- Unmatched drawing speeds result from an advanced design which requires no handshaking or wait states
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- Plug in up to 2 trackballs or joysticks for interactive applications (provisions for light pen)
- 2 Centronics parallel printer ports with full support available
- An alternate character set ROM socket to double the number of characters your screen can display (Script character set available)
- Source codes available
- European 50Hz compatible
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- 90 day limited warranty.



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COMPARE	Northwest Digital Graphics-Plus	Cleveland Codonics Imaginator	SigmaSoft and Systems
Normal Pixel Resolution	512 x 250	504 x 247	640 x 250
Interlaced Pixel Resolution	n/a	n/a	640 x 500
Graphics Memory Size	16k	16k	64k/128k*
Number of Graphics Pages	1	1	3
Pseudo Disk Memory Size	n/a	n/a	64k/128k*/256k*
Super19/Ultra ROM Compatible	No	No	Yes
Vertical Graphics Scrolling	No	No	Yes
Type of Interface	Serial	Serial	Parallel
Independent Power Supply	No	No	Yes
Graphics Input Device Ports	n/a	n/a	2
Parallel Printer Ports	1*	n/a	2
Price/Performance Ratio	Good	Better	Best

* Option at additional charge.



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	PAGE	HARDWARE					OPERATING SYSTEM					LANGUAGE					OTHER HARDWARE					TYPE OF ARTICLE						
		H-8	H/Z89-Z90	H/Z100	H/Z100-PC	HERO	HDOS	CP/M	CP/M-85	ZDOS	MSDOS	OTHER	BH BASIC	MBASIC	ZBASIC	ASSEMBLY	OTHER	TERMINALS	PRINTERS	MODEMS	DISK DRIVES	OTHER	UTILITY	APPLICATION	GAMES	REVIEW	MODIFICATION	GEN. INTEREST
HUG New Products	34						•	•	•		•												•	•	•			
Get Rid Of "Echo On Delete" In CP/M-86	P. Swayne 37		•				•			•													•					
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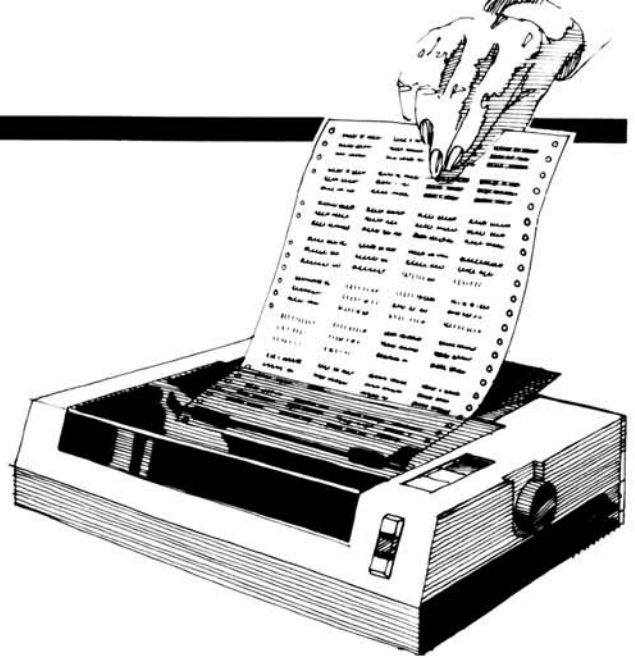
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Related Heath/Zenith Vendors



ACT Marketing Corporation
104 Lakefront Drive
Hunt Valley, MD 21031

Contact: Gerry O'Brien Phone: (301) 628-0260

Comments: Hardware, software and consultation available. Products: A broad range of 5-1/4" Winchester hard disk subsystems including fixed and removable cartridge units. Capacities: 5 Megabytes to 225 Megabytes. Warranty: Two years. Special Notes: Interfaces exist for: Zenith/Heath, H/Z100, H/Z150-160, H/Z89/90, IBM-PC/XT and compatibles, and many more.

ADS Software, Inc.
P.O. Box 13686
Roanoke, VA 24036

Contact: Tom Welch Phone: (703) 344-6818

Comments: Software and consultation (support to dealers only) available. Products: Accounting software for first time small business users of microcomputers. General Accounting and vertical software for Retail Florists, Private Membership Clubs, Church Financial Accounting, Residential/Commercial Services, Small Bookkeeping Services and Veterinarians.

AID Data Systems, Inc.
P.O. Box 750
MD. Route 3 South
Millersville, MD 21108

Contact: Jody Kallis

Comments: Software and consultation available. Product: Complete software programs which will include an interactive General Ledger, Accounts Receivable, Accounts Payable, Payroll, Mailing List especially designed Law Firms, Ambulance Companies, Property Management, Construction Management, and Auto Parts Stores. Special Notes: We are continually developing vertical market programs with total interaction, continued updating, and consultation.

ATC Software
RT 2, Box 448
Estill Springs, TN 37330

Contact: Bill Stone Phone: (615) 455-2611

Comments: Software and consultation available. Products: Big-Print - Prints messages in 8-inch-high letters on standard 80-column prin-

ters. Window-Ads - Produces large-type window ads for retail stores. Prospects - A tool for tracking prospective customers in the personal service field. Checkbook - A full feature checkbook program for small businesses. Word-Plot - Produces business-quality plots that can be merged with word processing text files, and more.

ATG Systems, Inc.
11 Intervale Road
Wellesley Hills, MA 02181

Contact: James D. Jones Phone: (617) 431-7870

Comments: Hardware, software and consultation (after 7 p.m.) available. Products: ZSpool-Plus print-queue manager and spooler for Z89/90 with CP/M. ZSD-89 background screen-print utility for Z89/90 with CP/M. Accusonics Super19 ROM firmware and extended character sets for the Z19. Brochure available.

Ackerman Digital Systems, Inc.
216 W. Stone Court
Villa Park, IL 60181

Contact: David Swoch Phone: (312) 530-8992

Comments: Software and consultation available. Products: We manufacture S-100 board products with software. They are all fully compatible with the Z-100 Heath computer. Products include CPU cards, memory, disk controllers, PROM programmers and more.

Acme Computers
E. 1727 Sprague Avenue
Spokane, WA 99202

Contact: Jim or Chuck Phone: (509) 535-4122

Comments: Hardware, software and consultation available. Products: Complete Zenith line plus add-on boards (memory cards, etc.). Full line of printers. Special Notes: Best prices on 4164 memory chips. HUG discounts on software/hardware.

Agri-Management Services, Inc.
P.O. Box 3659
Logan, Utah 84321

Contact: Scott J. Johnson Phone: (801) 753-7209

Comments: Software and consultation available. Products: Agri-Management Programs: Dairy, swine, beef, horse, poultry, feedlot,

finishing floor, sheep, crops, orchards, equipment and nursery. Also, ration balancing, feed plant, fertilizer plant, seed and equipment dealers, accounting, payroll, and others. Special Notes: Agri-Management Services is the Pioneer of on-farm computing. We provide factory direct support and customization.

Air Capital Computer

1909 Siefkin
Wichita, KS 67208-1760

Contact: David L. Horwitz Phone: (316) 681-0011

Comments: Hardware, software and consultation available. Products: Full Zenith Data Systems product line, also C. Itoh and Epson printers. We specialize in Medical and Aviation software and turn key systems. Special Notes: A live person normally answers the phone between 8:00 and 10:00 p.m. Central Time. Caution: A computer controlled answering machine answers at other times.

Kurt Albrecht

1061 Boot Road
Downingtown, PA 19335

Contact: Kurt Albrecht Phone: (215) 269-7870

Comments: Software available. Product: H*bert: \$18.50 + \$1.50 shipping. Fast action arcard game for the H89 and H8/H19 systems; 32K; HDOS-CP/M and format hard-sectored disk. Outstanding graphics! Real-time play!

Analytic Associates

4817 Browndeer Lane
Rolling Hills Estates, CA 90274

Contact: Robert W. Feakins (213) 541-0418

Comments: Software and consultation available. Products: planEASe(R), software for the cash-flow analysis of investment real estate. Aimed at the professional. CP/M, CP/M-86, MS-DOS. Sold since 1981. Descriptive literature available on request.

Analytical Products

40793 Gibbel Road
Hemet, CA 92343

Contact: Peter Shkabara (714) 929-6919

Comments: Hardware, software and consultation available. Products: Kits for H89 - Automatic Key Repeat, Real Time Clock, Extender board, others. EMULATE program allows H89 to read/write to over 20 disk formats. Discount prices on CDR Controllers and a variety of software. Send for catalog.

Applied Operations Research, Inc.

22056 Saticoy Street
Canoga Park, CA 91303

Contact: Sales Dept. Phone: (818) 888-3336

Comments: Software and consultation available. Products: LPMAS-TER find 'what-IS' the best plan. Automatically applies the techniques of linear programming. ROUTEMASTER finds the best route to take that minimizes travel time and miles on the road. Applied Operations Research specializes in unique 'what-IS' software and business planning tools.

Arctec Systems, Inc.

9104 Red Branch Road
Columbia, MD 21045

Contact: Marilyn Oskard (301) 730-1237

Comments: Hardware, software and consultation available. Products: Artec Systems, Inc. is a distributor for S-C Software Corp. products and Interface Technology products for Heathkit's(R) HERO I Robot.

Arkay Engravers, Inc.

2073 Newbridge Road
Bellmore, NY 11710

Contact: Ken Kaplan or Ivan Wenitt Phone: (516) 781-9859

Comments: Consultation available. Products: We engrave custom keytops for computer keyboards. Special Notes: We can supply keytops for the Z-100, Z-29 and H/Z-89. Keytop for the new Z-150/160 are not yet available.

Arrays, Inc./Continental Software

11223 S. Hindry Avenue
Los Angeles, CA 90045

Contact: Robert McCullough Phone: (213) 410-3977
Product Information

Comments: Software and consultation (by mail or phone) available. Product: The Home Accountant. Personal/small business financial management package. Keeps track of up to 200 budget categories, up to 5 checkbooks, and all cash and credit card transactions. Prints checks and many various reports. Has graphing capability and a forecasting module. Special Notes: The Extended Warranty policy entitles the owner to any free updates issued during the year, a replacement disk if necessary, and unlimited phone support.

Articulate Publications, Inc.

402 N. Larchmont Blvd.
Los Angeles, CA 90004

Contact: Darnell M. Hunt Phone: (213) 871-1350

Comments: Software available. Product: Medicalis™ and Dentalis™ are state-of-the-art medical and dental practice management systems that feature many exclusive features and unheard-of flexibility. Special Notes: Medicalis™ is available in special versions for radiologists, chiropractors, anesthesiologists, and veterinarians.

Autodesk, Inc.

2658 Bridgeway
Sausalito, CA 93965

Contact: Sandra Boulton Phone: (415) 332-2344

Comments: Software available. Product: AutoCAD™ is a computer-aided drafting and design system that runs on any significant microcomputer, bringing the benefits of a high-performance CAD facility within the range of even the smallest drawing office. Special Notes: AutoCAD is a complete, professional CAD system with features you would expect on mini and mainframe systems costing 10 to 50 times more.

MAP PROJECTIONS OF THE WORLD

- Produce high-res color graphics maps for the H/Z-100 and H/Z-150 (or IBM)
- Track up to 10 hurricanes in animation
- Two historical ones are included
- Choose any of 7 different projections- 5 Azimuthal & Polyconic & Mercator
- Pick either of 2 data files: World Coastlines with 5070 digitized points or a very-high-res file of the Caribbean from the Carolinas to Mexico to the Amazon (11940 points)
- Vary the origin, rotation, window and scale(Global or down to 20 miles/inch on most projections)
- Choose any grid spacing for the parallels and meridians
- User's manual includes screen dumps of 16 sample maps to help you learn how to reproduce these and many others
- Superfast execution- over 1000 pts/min from an optimized compiled basic program that requires only DOS and color graphics. A color monitor does help

"...fascinating look at the world from every conceivable angle...The maps are excellently drawn. It's amazing that Dr Pittman could squeeze that much detail onto a single 5 1/4-inch diskette..."-- Dave Felstul--BUSS # 91

Pick up a copy at many Heathkit Centers or order direct by sending \$49.95 post-paid (specify Z-100 or Z-150)to: Dr M E Pittman, 57 Emile Av, Kenner, LA 70065

The Software Toolworks presents: MYCALC™



Full featured MyCalc with sort, bar graphs, multiple files and more is ideal for financial planning and budgets. It sells for \$59.95 from The Software Toolworks, 15233 Ventura Blvd., Suite 1118, Sherman Oaks, CA 91403 (818) 986-4885.

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ROBI...an affordable interface for the robotics experimenter. Easy hook-up (8 screws on HERO®, 1 card slot on Apple® II or IIe) and a low price are combined with extra capabilities in the ROBI computer/robot interface.

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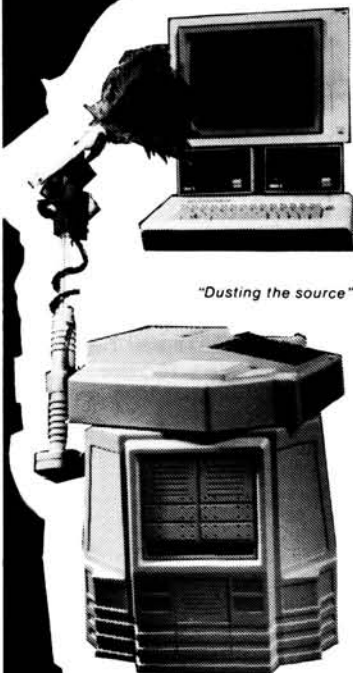
BERSEARCH Information Services

26160 Edelweiss Circle
Evergreen, CO 80439
(303) 674-0796

ROBI SPECIFICATIONS:

- 4 programmable, bidirectional, 8-bit ports for interface and expansion
- programmable control over handshaking
- access to signals through tie point blocks on robot's Experimental Board
- 6-foot cable for interface, limited remote operation
- user-friendly software quickly transfers files between computer and robot; stores and retrieves files to and from disk
- not copy protected. Software is provided in DOS 3.3
- liberally commented source code included

APPLE® is a trademark of Apple Computer
HERO® is a trademark of Heath Electronics



Beeline Services

5718 Ponderosa Drive
Stevensville, MI 49127

Contact: Mary Gillespie Phone: 616-429-6461

Comments: Manufacturers and distributors of PaperWare™ Paper programming aids; Video Layout shts., Flow chart, Printer layout plus others printed in fade-out blue, padded in 50's. The PaperPorter single sheet tractor feeder plus Form-Start for no loss on first tractor form.

Bersearch Information Services

26160 Edelweiss Circle
Evergreen, CO 80439

Contact: Tom Bernard Phone: (303) 674-0796

Comments: Hardware and software available. Product: ROBI, affordable interface for HERO I/Apple II, Ile; 4 programmable, bidirectional, parallel ports; easy hookup; 6 foot cable; user friendly software for file transfer; includes commented source code; \$199.00.

Bit Zero

1413 Redeker Road
Des Plaines, IL 60016

Contact: Hank La Barbara Phone: (312) 298-1504

Comments: Hardware, software and consultation available. Products: Low cost 8" disk controllers for H8 and H89, Video blanker for H19 and H89, H89 Real Time Clock/Calendar plugs into any LEFT hand slot. Write for additional products and information.

Borland International

4113 Scotts Valley Drive
Scotts Valley, CA 95066

Contact: Mr. Philippe Kahn Phone: (408) 438-8400

Comments: Software and consultation (technical support) available. Products: Turbo Pascal, Turbo Toolbox™, MicroCalc, and Sidekick™. Special Notes: Software at an affordable price.

Ralph W. Boyd

761 NW 196 Terrace
Miami, FL 33169

Contact: Ralph W. Boyd Phone: (305) 652-5828

Comments: Hardware, software and consultation available. Products: Submarine, Blast, and Starfleet color video graphics games. Hurricane Tracking and Support color database for plotting Atlantic Hurricanes. Special Notes: Write for a catalog on product descriptions and prices.

Bromley Engineering, Inc.

883A Cambridge Street
Cambridge, MA 02141

Contact: Peter Bromley, John Leahy Phone: (617) 661-3144

Comments: Hardware, software and consultation available. Products: All Zenith Data Systems hardware and software. IBM PC's software. Printers, modems, copiers, shredders, plotters, switchers, cables. We service everything we sell. Special Notes: BEDD © Software uses Dysan DDD diskette and Z-100 for complete diagnostics and alignments of most 5" or 8" drives.

Burr Computer Consultants

6402 Thoreau's Way
San Antonio, TX 78239

Contact: Claudia Burr Phone: (512) 650-4342

Comments: Hardware, software and consultation available. Products: Acts - Church Management software Z-150, all CP/M and MSDOS software. Special Notes: Church software is our specialty.

Business Support Services, Inc.

705 Butternut Avenue
Royal Oak, MI 48073

Contact: Evelyn S. Kennedy Phone: (313) 585-4736

Products: Ribbons, printwheels and thimbles for letter quality printers - Diablo, Qume, C. Itoh, NEC, Silver Reed and Brother. Ziyad Personal feeder, cut sheet feeder. Special Notes: Free catalog has ribbons and printouts of printwheel or thimble typestyles. Include printer model.

ByteSize Concepts, Inc.

18101 Euclid Avenue
Cleveland, OH 44112

Contact: Michael R. Nelson Phone: (216) 486-1114

Comments: Software and consultation available. Products: Home Budget Manager; Personal checkbook accounting including search features, calculator, check printing, graphing. Home Mechanic; Keep track of auto expenses, both personal and business. Screen or printed reports. Home Data Manager; An easy-to-use file creator. Make your own databases, user defined fields and reports. Special Notes: All products are \$49.95 (2.75 S&H). Special offer: all three for \$120. Manuals included with each product.

The CCM Company

1308 East 8th Street
Tucson, AZ 85719

Contact: Peter Halverson Phone: (602) 622-2796 (eves)
(602) 621-6800 (days)

Comments: Hardware, software and consultation available. Products: The AUTOCLOCK hardware and AUTODATE software package gives your Z-100 a clock/calendar which runs even when the computer is off. Eliminates need to enter the DATE and TIME when you boot up the system. Special Notes: Uses one S-100 slot. Package price \$185.00.

C & C Engineering

Route 4, Box 364
Lexington, NC 27292

Contact: Charles Bernhardt Phone: (704) 787-4131

Comments: Software and consultation available. Products: Pro-Surv; A complete Land Surveying computation program. Earthwork; Computers earthwork volumes based on Cross Sections. TOPO; Calculates and plots even contours from field data. Special Notes: Programs designed for H/Z-100 color systems. Monochrome version available for H/Z-150 systems. Demos available.

C.D.R. Systems, Inc.

7210 Clairemont Mesa Blvd.
San Diego, CA 92111

Contact: Marc D. Brooks Phone: (619) 560-1272

Comments: Hardware, software and consultation available. Products: Z-100 Speed Module. H/Z-89, H/Z-90, H-8 double/single density 8" and 5-1/4" floppy drive controllers. Data acquisition instrumentation. BIOS upgrades for reading other computer disk types. Special Notes: C.D.R. Systems has manufactured quality products for the Heath/Zenith community for many years.

CalMed Products

18031 Irvine
Tustin, CA 92680

Contact: J. Plesetz Phone: (714) 832-7599
9 am to 3 pm PST

Comments: Hardware and consultation available. Products: Floppy disk drives 5-1/4" by TEAC. Special Notes: We will provide HUG members with drives at the lowest prices.

William N. Campbell, M.D.

855 Smithbridge Road
Glen Mills, PA 19342

Contact: William N. Campbell, M.D. Phone: (215) 459-3218

Comments: Software and consultation available. Products: "Getting Started With MS-DOS & BASIC Random File Handling" - for Z150/160, MD-DOS & GWBASIC. Price \$25.00. "Getting Started With CP/M & MBASIC Random File Handling" - for H89 CP/M or Z100 CP/M-85 and ZDOS. Price \$25.00. Both above products include disk (specify hard or soft sector) with ready to run mail list programs and demo programs, and manual of detailed tutorials and extensive instructions. "Getting Started With HDOS & Assembly Language Programming" - 36 page tutorial. Price \$15.00. All items sent first class upon receipt of check.

Chaos Computers

P.O. Box 2106
Woodbridge, VA 22193-0160

Contact: Gregory J. Marsh Phone: (703) 590-3360

Comments: Hardware, software and consultation. Product: MDOS - This is the operating system "CP/M" users have been waiting for and most of the source code is included! H8/89/100. Please send for your catalog. Special Notes: 10% discount on all our fine software and hardware products just for mentioning REMark!

Cherry Engineering

P.O. Box 216
Laurel, MD 20707

Contact: Ray or Janet Cherry Phone: (301) 498-4236
Evenings

Comments: Software and consultation available. Products: "Extended Screen Editor" - full-feature screen editor for Z100 under ZDOS, with manual, under \$50.00. Money back guarantee. Bulletin board program suitable for clubs. Special Notes: Ask your dealer to run the Extended Screen Editor demo.

Church-Related Computer Programming

730 Sixth
Sweet Home, OR 97386

Contact: N/A Phone: (503) 367-4330
INA (503) 367-3073

Comments: Software and consultation available. Products: Church administration software for congregations under 350 members: Treasurer's, Financial Secretary's, membership; H/Z-89, H/Z-100, IBM-PC, Apple II. Needs 64K, MBASIC and a printer. Special Notes: Specializing in producing quality software at affordable prices.

CLEO Software, A Div. of Phone 1, Inc.

461 N. Mulford Road
Rockford, IL 61107

Contact: Jeff Schneider, Marketing Phone (815) 397-8110

Comments: Hardware (Z150) and software available. Products: CLEO Software offers two communication software packages, CLEO- 3270 and 3780Plus. These packages are available for both the Z100, Z150 series of microcomputers. Special Notes: CLEO-3270 provides IBM 3276/2 BSC emulation to an IBM host. 3780Plus provides 2780/3780 remote BSC batch communications.

Cleveland Codonics, Inc.

18001 Englewood Drive
Middleburg Hts, OH 44130

Contact: Mike Kolberg Phone: (216) 243-1198

Comments: Hardware and consultation available. Products: The Imaginator I graphics card for the Heath/Zenith H/Z-19 terminal and H/Z-89 computer. Also, the Imaginator II for the H/Z-29 terminal. Tektronix 4010/4014 emulation available. Special Notes: The Imaginator I is available in kit form starting at \$215.00 and fully assembled and tested at \$445.00. The Imaginator II is available fully assembled and tested at \$1075.00.

CODA, Inc.

2075 S. Valentia St. #C
Denver, CO 80231

Contact: David W. McEwen Phone: (303) 750-1550

Comments: Consultation available. Products: 5-1/4" diskette duplication service, small quantities welcome (25 minimum), packaging, handling & order fulfillment available. Complete line of micro/mini-computer supplies. Special Notes: Heathkit H-14 printer ribbons in stock. Discounted pricing on all products & services for HUG members.

Colorworks

5337 E. Bellevue
Tucson, AZ 85712

Contact: Thelma Anderson Phone: (602) 325-0096

Comments: Software (H/Z-100) and consultation available. Products: "Z3D" - Three dimensional graphics. ZDOS, color VRAM, 192K. "States Quiz/Demo" - Educational games for youngsters & adults, ZDOS, 128K. "E" - Programmers text editor. "Financial Calculator." Special Notes: Send SASE for HA8-3 & H89-3 software information.

COMMSOFT

2452 Embarcadero Way
Palo Alto, CA 94303

Contact: Howard Nurse Phone: (415) 493-2184

Comments: Software and consultation available. Products: COMMSOFT provides the ROOTS series of programs, which are designed to help organize your family tree. ROOTS89 (HDOS), \$39.95; ROOTS/M (CP/M), \$49.95; ROOTS II (MS-DOS), \$99.00. Special Notes: Credit card toll free order number 800-227-1617 ext. 585 (in CA 800-772-3545 ext 585).

Compewriterware

700 Milford Road
E. Stroudsburg, PA 18301

Contact: Dean Moxness Phone: (717) 421-0367

Comments: Hardware, software and consultation available. Products: Zenith computers, monitors, and peripherals; printers by Star Micronics and Daisywriter; software for Zenith, IBM, and other popular computers; paper ribbons, disk, and computer furniture. Special Notes: Now open in Crossroads Plaza at intersection of Route 447 and Business 209.

Comprehensive Software

2810 Artesia Blvd.
Redondo Beach, CA 90278

Contact: Lora Meise Phone: (213) 214-1461

Comments: Software available. Products: The Intro Series, a family of friendly instructional programs developed by experts for novices. Uses an interactive, step-by-step process to lead you to computer/software literacy. Special Notes: Subjects - DOS, Databases, Communications, Word Processing, Spreadsheets, Hardware-Z150.

Computer Control Systems, Inc.

298 21st Terrace S.E.
Largo, FL 33541

Contact: Kay A. Murray, Business Mgr. . Phone: (813) 586-1886

Comments: Software available. Products: We manufacture and distribute worldwide utility programs for various operating systems & several high level languages. FABS (fast access B-tree structure) & AUTOSORT (sort/merge/select).

Computer Dynamics

105 S. Main Street
Greer, SC 29651

Contact: Kurt Priester Phone: (803) 877-7471

Comments: Hardware, software and consultation available. Products: Winchester prototyping package/Heath 8, 5, 10, 15, 20 Mbyte hard disk kits for Heath 89/Z90. Kits available, any configuration, including assembled/tested. CP/M only. Low cost Winchester storage from \$500.00. Special Notes: Occupies one I/O slot. No system power required to drive disk. Complete with CP/M auto-booting package.

Computer Innovations, Inc.

980 Shrewsbury Avenue
Tinton Falls, NJ 07724

Contact: Ned Kelly Phone: (201) 542-5920

Comments: Software and consultation available. Products: Professional quality software. C Compilers and related products for the Z100 and Z150. Also, training materials for C Programmers. Special Notes: A high quality HOT LINE is available for users.

Computer Integrated Manufacturing Systems, Inc.

20859 Old Spanish Trail
New Orleans, LA 70129

Contact: John Evers Phone: (504) 254-0545

Comments: Software and consultation available. Products: CAD/C is a three dimensional Design Drafting and Analysis system which allows the user to interactively create, and edit models of any size or scale. Special Notes: Spaceframe - The model designed with CAD/C can be transferred to Spaceframe for analysis.

Computer Systems Inc.

3933 Marlton Pike
Pennsauken, NJ 08110

Contact: Jerry Rubertone Phone: (609) 665-6665

Comments: Hardware, software and consultation available. Products: Complete line of Zenith hardware and software, plus many other major manufacturers' peripherals and computer accessories and supplies. Special Notes: Discount prices!! All Zenith products have 90 day warranty.

CompuView Products, Inc.

1955 Pauline Boulevard
Ann Arbor, MI 48103

Contact: Michael Palmer, Phone: (800) 327-5895
Marketing Manager or (313) 996-1299

Comments: Software and consultation available. Products: TRANSYS - With TRANSYS a user can transfer files between MSDOS diskettes and CP/M-86 diskettes. The user can also initialize CP/M-86 diskettes, erase files from a CP/M-86 diskette, see the information contained in a particular record on the diskette and display its directory. The user can even boot CP/M-86 from his/her MSDOS system. TRANSYS offers a help command to eliminate difficulties.

Condor Computer Corporation

2051 S. State Street
Ann Arbor, MI 48104

Contact: Terry Kerestes Phone: (313) 769-3988
Mgr., Business Development

Comments: Software and consultation available. Products: Condor offers extensive education materials, including self-instruction guide to Condor 3, Condor 3 course materials and on-site/major city seminars on Condor products. Main product line: Data Management Software, which includes Condor 3 - relational DBMS; Condor Jr - file management; Condor Graf - graphics; Condor Talk - communications.

Control-C Software, Inc.

6441 SW Canyon Court
Portland, OR 97221

Contact: Denise Drummond Phone: (503) 297-7153

Comments: Software and consultation available. Products: Business Basic Level II/III Interpreter to run on most operating systems for

EMULATE

A program which allows the H89 to read/write to the following format disk formats.

Osborne 1	SSDD	Morrow MD2	SSDD	Cromemco	SSDD
Osborne 1	SSDD	Morrow MD3	DSDD	Cromemco	DSDD
Xerox 820	SSDD	Epson QX-10	DSDD	CDR 40TK	DSXD
Xerox 820	SSDD	Televideo 802	DSDD	CDR 80TK	DSXD
DEC VT180	SSDD	Actrix	SSDD	NEC 8001	SSDD
Ampro	SSDD	TRS80/Omikron	SSDD	Eagle II	SSDD
DEC Rainbow	SSDD	TRS80-4 CP/M	DSDD	Z100 40TK	DSDD

A universal format program will be supplied as a free update. The H37 version requires 64K of RAM and the use of a modified version of CP/M 2.2.03 or .04 BIOS which is included with the program. Allows the use of virtual drives and reading of 40 track disks in an 80 track drive.

Must include your CP/M s/n when ordering.

For H37 with Heath CP/M \$59

**Limited Version
For CDR controller \$39**

AUTOMATIC REPEAT

Simple plug-in installation of the REP2 gives your H89/H19 keyboard the same auto-repeat function you get with a Z100. Provision for a defeat switch.

A Must For Word Processing!

Kit \$32
Assembled \$40

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Install the TIM2 in a left expansion slot of your H89 to have date and time keeping with battery backup. Requires soldering 4 wires to the CPU board.

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micros, BIFCON - file conversion utility, MWC86 C Compiler. Special Notes: All products available for microcomputers.

Cover Craft Corporation

12 Columbia Drive
Amherst, NH 03031

Contact: Terry M. Pratt Phone: (603) 889-6811

Products: Cover Craft Corporation manufactures anti-static dust covers for computers and carrying cases. We maintain the most up-to-date anti-static dust cover listing by using automatic product introduction. The field-pro line includes cases for over 25 different computers, disk drives and printers to accommodate the most popular models.

Crop Data Management Systems, Inc.

1521 Butte House Road, Suite B
Yuba City, CA 95991

Contact: Raymond A. Krause Phone: (800) 237-CDMS
or(916) 673-6297

Comments: Hardware, software and consultation available. Products: Crop Data Management Systems is a complete field data management system designed to record production activities and analyze costs and methods on a daily basis. Designed for both small and large farms and consultants. Uses CP/M, CP/M-86, PC- DOS, MS-DOS and other DOS. Requires two 320K disk drives or hard disk. Also available for portable, lap-held computers for field data collection.

Custom Software Services Inc.

P.O. Box 65
2500 Hwy 79 S.
Guntersville, AL 35976

Contact: Tyrus M. Dorman, Jr. Phone: (205) 582-4168

Comments: Software and consultation available. Products: Sandman Medical Practice Management Program, Sandman Dental Practice Management Program, Sandman Legal Practice Management Program, Sandman Inventory Management Program, Sandman Payroll Management Program. Special Notes: All programs written in dBASE II. Source code available. Call for more information.

D.E.L. Professional Systems Ltd.

12 - 11151 Horseshoe Way
Richmond, B.C.
V7A 4S5

Contact: Edward Dolejsi Phone: (604) 274-0434

Comments: Hardware and consultation available. Products: "Gemini" - An IBM-PC Emulator board for the Z100/H100 family of computers. Special Notes: Dealer inquiries welcome. In writing please.

D-G Electronic Developments Co., Inc.

700 S. Armstrong
Denison, TX 75020

Contact: Bruce Denton Phone: (214) 465-7805 (9 to 4 CST)

Comments: Hardware, software and consultation available. Products: D-G Heartbeat computer (H/Z89 compatible), D-G Super 89 CPU for the H/Z89, H8 Static and Dynamic Memory boards, H8 Z80 CPU Card, Super 89 BIOS, MP/M II for the Super 89 and

Heartbeat. Special Notes: Above products, as well as a line of products for the H/Z150 series available through many Heathkit Electronic Centers.

Data Access Corporation

8525 S.W. 129th Terrace
Miami, FL 33156

Contact: Les Gay, National Sales Mgr. .. Phone: (305) 238-0012

Comments: Software available. Products: DATAFLEX is an application development package using a relational database management system. It is composed of a menu system, relational database, command language, forms processing system, on-line multi-key ISAM, data processing procedures and applications generator. Special Notes: DATAFLEX is supported on ZDOS and many other operating systems.

Data Eighty Microsystems, Inc.

P.O. Box 630, 1007 West Taylor Street
Griffin, GA 30224

Contact: Jim Highsmith Phone: (404) 229-5294

Comments: Software and consultation available. Products: Durable Medical Accounting package. For any business that rents or sells medical equipment. The package is marketed as DuraMAX™. ProMAX™ is a program that performs computer interpretation of arterial blood gases in hospital laboratories. Special Notes: Available on MS-DOS, ZDOS, CP/M and XENIX (UNIX).

Data Management, Inc.

P.O. Box 406
Croton Falls, NY 10519

Contact: David Wong Phone: (212) 294-8087

Comments: Hardware, software and consultation available. Products: CP/M software, S-100 Bus boards, H-8 hardware, depot repair.

Data Management Associates, Inc.

24 E. King Street
Shippensburg, PA 17257

Contact: N/A Phone: (717) 532-7493

Comments: Hardware, software and consultation available. Products: Z-90, Z-100, Z-150, and Z-160 hard disk and/or floppy drive systems (RAM: 64K and up). Business management programs available covering most fields. Source code is not available. User's manuals and tutorials are available. Telephone support is available. Demos are available for most systems.

Datema, Inc.

666 Howard Street
San Francisco, CA 94105

Contact: Malcolm McVickar Phone: (415) 543-5320

Comments: Software and consultation available. Products: Autocode - program generator for dBASE II. Now does custom forms and labels.

DAYCO Enterprises

Box 3374
Clearwater, B.C.
Canada VOE 1N0

Contact: Dave Yule Phone: (604) 587-6415

Comments: Hardware, software and consultation available. Products: Hardware kits and software for the HERO I; RS232C kits; I/O kit with 16 programmable I/O lines plus interrupts; 6800 and robot code disassembler (Apple and MODIII). Special Notes: Call or write for product description sheets.

DelSoft

564 Calle Anzuelo
Santa Barbara, CA 93111

Contact: Gary Deley Phone: (805) 967-9566

Comments: Software and consultation available. Products: WordKey, makes WordStar the easy-to-use professional word processing program it should be. GPRINT, graphics screen dump utility for the Prowriter printer. Special Notes: Programs are for H/Z-100 computers under Z-DOS or MS-DOS. WordKey \$49.95, GPRINT \$19.95.

Deneva Marketing Company

P.O. Box 1547
Kent, WA 98032

Contact: Konstantin Terentjev Phone: (206) 735-0163

Comments: Software and consultation available. Products: Linear Graphics (LGRAPH) - Used alone or in conjunction with other programs to quickly display and manipulate data on a linear graphics plot. Polynomial Curvefit Program (CRVFIT). Special Notes: Software for Z100 and IBM-PC computers. Other engineering programs available. Custom computer programming with profit sharing.

Digital Information Systems

P.O. Box 198
Loma Linda, CA 92354

Contact: Richard D. Foerster, Owner Phone: (714) 798-0033

Comments: Hardware, software and consultation available. Products: SCDMP - Fast Screen Dump for H/Z-100 with Epson/Gemini or NEC, TEC, C. Itoh printers. Q-DATA - DMBS for H/Z-89/90 and 100/100-PC Systems (CP/M or MS-DOS/Z-DOS versions) written in Microsoft Compiled Basic with source included. Special Notes: Q-MM/GL - Optional Mail-Merge, General Ledger & Property Management application modules for Q-DATA.

Digital Marketing Corporation

2363 Boulevard Circle
Walnut Creek, CA 94595

Contact: N/A Phone: (415) 947-1000

Comments: Software available. Products: Datebook II - Automatic time/equipment manager; Bibliography - Instant bibliographic generator; Grammatik - Grammar and syntax analyst; Footnote - The bottom line in word processing; Milestone - Automatic business project planner; The Micro Link II - Instant access telecommunications; PLAN80 - Plain language spreadsheet; Notebook - Text oriented database manager; The Specialist - A medical accounts receivable/billing system; The Random House Proofreader - Automated spelling checker.

Digital Pathways, Inc.

1060 East Meadow Circle
Palo Alto, CA 94303

Contact: Robert Lewin Phone: (415) 493-5544

Comments: Hardware, software and consultation available. Products: Defender II Computer Access Systems prevent unauthorized dial-in access to host computers. Defender II provides dial-in/callback protection. SoundWare Series of Software provides voice capabilities to IBM PC/XT and compatible computers. Digital Pathways also manufactures various timing and control units, (TCU's and SLC-II). Special Notes: Digital Pathways has sales and service offices throughout the U.S.

dilithium Press

8285 SW Nimbus, Suite 151
Beaverton, OR 97005-6401

Contact: Wynne Ramirez Phone: (503) 646-2713

Comments: Software available. Products: Book and software published for home and business use. All materials are aimed at the microcomputer. Special attention given to the Apple family and IBM.

Dimensional Business Systems, Inc.

250 N.W. 4th Diagonal
Boca Raton, FL 33432

Contact: Ralph Avery Phone: (305) 368-0270

Comments: Software available. Products: Insurance property and casualty agency automation system; Totally interactive from invoicing to P&L statement; On-line customer policy profile/transaction history and much more.

Domino Computer Services, Inc.

108 N. Hickory
Arlington Heights, IL 60004

Contact: David Domino Phone: (312) 870-8707

Comments: Hardware, software and consultation available. Products: All Zenith products, 8-bit and 16-bit, new and used equipment, supplies, support.

Harold Dykens

10275 NE 23rd Avenue
Mitchellville, IA 50169

Contact: N/A Phone: (515) 967-6042

Comments: Software and consultation available. Products: Set of utility software programs to make the agent's task simpler and more professional! 25 programs included! Updates free first two years! \$15.00 each year after! Special Notes: CP/M-80, CP/M-86, MS-DOS, PC-DOS, Z-DOS source included, \$135.00.

Dysan Corporation

CE Division
1244 Reamwood Avenue
Sunnyvale, CA 94089

Contact: Customer Service Phone: (408) 734-1624

Comments: Hardware, software and consultation available. Products: Manufactures Analog Alignment diskettes, Digital Diagnostic diskettes, the Interrogator Diagnostic Software package, and the PAT 2+ Performance and Alignment Tester for testing and repairing flexible disc drives.

Eigenware Technologies

13090 La Vista Drive
Saratoga, CA 95070

Contact: Karl Remmler Phone: (408) 867-1184

Comments: Software available. Products: Programming software at lowest prices. C and Pascal compilers, function libraries, tutorials, editors, "C-Getting Started Examples & Functions" \$39.95. "C-C86" \$324. "Lattice" \$358.00 "Small C" \$30.00. "Small Tools" \$39.95. Special Notes: Catalog available. Bulletin board system (408) 867-6575, 6 pm to 6 am PST. Direct mail order.

Elektroingenioer Niels Immerkaer

Voelvesvej 7
DK-5210 Odense NV. Denmark

Contact: Niels Immerkaer Phone: +459 16 12 15

Comments: Software and consultation available. Products: SEDT text/graphic screen editor; CPRINT fileprint with mail merge; QUICKPRINT background-printerspooler (2-61K); DIRECTORYMASTER; DISK/FILE-PATCH*; C.A.K.E.*; F-TRANS*; CONVERT (8080 to 8086/Z80)*. Special Notes: *Sale in U.S.A./Canada: Generic Software, Marquette, MI 49855.

Elektrokonsult A/S, Inc.

Box 846
Konnerudgaten 3
N-3001 Drammen, Norway

Contact: Terje Bolstad Phone: +47 3 83 15 00

Comments: Software and consultation available. Products: Disk Utility package works on any disk format, CP/M only. File Mover transfers files between microcomputers - even if they use different operation systems. Special Notes: Available for CP/M, CP/M-86 and MS-DOS (PC-DOS) on most popular diskette formats.

Executive Software Inc.

Bay Street
Shanty Bay, Ontario
Canada L0L 2L0

Contact: K. Reed Phone: (705) 722-3373

Comments: Software and consultation available. Products: Decision-Analyst is a program for executives which determines which of several alternatives fits their needs best. Use it to choose computers, software, personnel, marketing channels, new products, etc. Special Notes: Runs on all CP/M, CP/M-86, MS-DOS and PC-DOS computers. Provides present quality reports for each decision analysis.

FBE Research Company, Inc.

P.O. Box 68234
Seattle, WA 98168

Contact: Dave Brockman Phone: (206) 246-9815

Comments: Hardware, software and consultation available. Products: Z-100 - ZCLK™ calendar/clock module (not an S100 card!). H/Z-89 - SPOOLDISK™89 electronic disk and printer/interface spooler, SLOT4™ bus expander, and H89PIP Printer Interface Port. Special Notes: Telephone hours are 6 to 10 pm Pacific Time on weekdays, all day Saturday.

Fairbrother Associates

Box 685
Northampton, MA 01061

Contact: E. Judge Phone: (413) 584-7159

Comments: Hardware, software and consultation available. Products: Heath/H11-DEC/LSI11-03/23/73, hard disks and controllers, floppy replacements to DS/DD, databases, public domain. Special Notes: Specialize in large store/memory small business database machines and programs.

First Capitol Computer

1106 First Capitol Drive
St. Charles, MO 63301

Contact: Tom Jorgenson Phone: (314) 946-1968

Comments: Hardware, software and consultation available. Products: Our new retail store, opening in early 1985, can provide everything you need to set up your computer system including computers, software and peripherals. Special Notes: First Capitol Computer is a subsidiary of Software Wizardry, Inc. Technical Hotline: (314) 946-1968, Orders Only Line: (800) TO-BUY-IT.

Floppy Disk Services, Inc.

39 Everett Drive, Bldg. D
Lawrenceville, NJ 08648

Contact: N/A Phone: (609) 799-4440

Comments: Hardware and consultation available. Products: Manufacturer of disk drive enclosures and power supplies, floppy and hard disk drives, custom Heath/Zenith drive systems. Special Notes: Innovative installation kits for half height drives for Heath/Zenith. Order toll free 800-223-0306.

Fourway Computer Products, Inc.

51061 U.S. 31 North
South Bend, IN 46637

Contact: George Istoic Phone: (219) 277-7720

Comments: Hardware, software and consultation available. Products: Complete hardware/software sales, service and support. Special Notes: A full service dealer.

Friendlyware

P.O. Box 21206
Lansing, MI 48909

Contact: Bob Griewski Phone: (517) 882-1675

Comments: Software and consultation available. Products: Recreational and educational puzzles and simulators for CP/M operating system. ATLANTIS, CELLS, CUBES, DISARM, DOTS, FIRE-FLY/FLYGAME, MATCH, PID (technical), SLABS. 5-1/4 inch hard-sector and soft-sector distribution. Current development is Z100 8088 interlace mode utilities and color synthesis. Public domain LACE.EXE will become available for \$5.00 to cover costs. Thank you, 1983-1984 supporters. Personal inquiries welcomed.

Fusaro Associates, Inc.

3 Roxbury Court
Farmingville, NY 11738

Contact: Joseph L. Fusaro Phone: (516) 732-0248

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Compare these values in dynamic RAM:
\$228 for 128 Kb/\$314 for 256 Kb/\$408 for 384 Kb

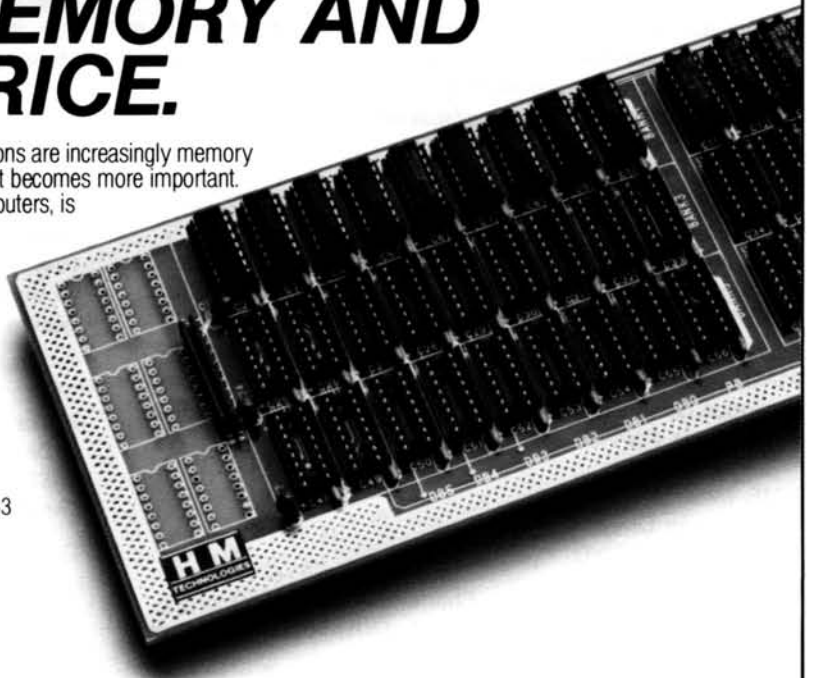
Features: Standard parity checking. No waiting states.
Wide ranging RAM address makes these add-ons more
expandable than other PC memory cards. Sturdy double-
sided board with solder masks and silk screen. 90 day
warranty and 15 day return policy.

Order Information: Money orders, cashier's checks, Visa, M/C
orders filled immediately. Personal and business checks require 2-3
weeks to process. Add \$3 per order for packing and shipping.
California residents add 6% sales tax.



H.M. TECHNOLOGIES

2114 Ringwood Avenue
San Jose, CA 95131
408/946-9036
800/235-5468 (Outside California)



chairs. The BackSaver is made of laminated Birch wood and has a rocking action. The Business BackSaver chair is made of heavy gauge, tubular steel, has casters and is adjustable.

Gebex Gruppen AB

Box 4070
182 04 Enebyberg, Sweden

Contact: Boerje Schmidt Phone: 46(0) 8-768 09 45

Comments: Hardware, software and consultation available. Products: Zenith Data Systems product range (distributor in Sweden); Heath Company product range (distributor in Sweden); Software distributor in Scandinavia; Management consultancy services for hi tech. company; Starting up services for companies establishing in Scandinavia; Distribution of new products to the Scandinavian market; Export of Scandinavian products and knowledge to U.S. market.

Generic Software

P.O. Box 790, Dept RD-104
Marquette, MI 49855

Contact: Lyn Durant, Marketing Phone: (906) 249-9801

Comments: Software and consultation available. Products: Peripheral hardware sales and support. Consultation available from 10 am to 5 pm (EST) weekdays (except holidays). Offer wide range of data entry, database, business/financial, educational, game and utility software for H8/H19, H89, Z100, Z150 and Z160 systems running HDOS, CP/M, ZDOS or MS-DOS. Also market high quality software from outside authors. Authors should send for a FREE Software Author's Kit. Software available at Heathkit Stores and many other Zenith dealers. Call or write for FREE catalog. Dealer inquiries welcome.

Graven Image, The

970 North Meridian Road
Mason, MI 48854

Contact: James D. Scott Phone: (517) 676-4648

Comments: Hardware and consultation available. Products: H-89 keycaps (red, blue, tan, black and gray), black spacebars plus custom engraved legend plates in more than 50 colors, both plastic and metal. Special Notes: No keycaps/spacebars for H/Z-110, 120, 150 or 160 series machines.

Dan Grayson

2409 S. Vine
Urbana, IL 61801

Contact: Dan Grayson Phone: (217) 367-6384

Comments: Software and consultation available. Products: FORMALL, reads 31 other soft-sectored disk formats, the only notable exception being double-sided KAYPRO disks. New formats installable by user. For H89 with CP/M.

HME, Inc.

751 Westcott Drive
Wetumpka, AL 36092

Contact: N/A Phone: (205) 279-3150 (Days)
(205) 567-3264 (Evenings)

Comments: Hardware, software and consultation available. Products: Five models of spike protectors. Other protection drivers under development. Special Notes: Software writing in most languages available. Electronic assembly available.

H-SCOOP

2618 Penn Circle
Sheboygan, WI 53081

Contact: Subscription Dept. Phone: (414) 452-4172

Products: Independent newsletter for H/Z computer support, supporting H8, H/Z89, H/Z100 and PC series computers. The 'double density' newsletter featuring regular columns: Bits & Pieces, New Stuff, Technical Forum, Request, Who's Who, Reports, Feedback, Classifieds and more.

Hawkeye Grafix

23914 Mobile Street
Canoga Park, CA 91307

Contact: John Fail Phone: (818) 348-7909

Comments: Software and consultation available. Products: Hawkeye Grafix has been developing communications software since 1978 for both business and personal needs. Our products include COMMX™, CONSOLX™ and EMM™.

Headware

2865 Akron Street
East Point, GA 30344

Contact: Dick Riggs

Comments: Software available. Products: Public Domain Directory - Covers free software. Mostly 8-bit CPM. Supplied on disk. Income Tax Templates - For Multiplan, SuperCalc cover 1040, Schedule A. Heath CPM 8-bit format. Special Notes: Tax Templates shipped February, March. Discount allowed on early orders. See ads this issue.

Hilgraeve, Inc.

P.O. Box 941
Monroe, MI 48161

Contact: Matt Gray Phone: (313) 243-0576

Comments: Software available. Products: Hilgraeve, Inc. manufactures ACCESS and HyperACCESS - full-featured software that lets any H/Z computer model, running any operating system, communicate with virtually any remote system, with or without a modem. Special Notes: These programs give full-featured, flexible support of any modem/modem board and are available from most Heath/Zenith dealers.

Husker Systems of Nebraska

A Division of NewAmerica Technologies Corporation
6657 Redick Avenue
Omaha, NE 68152

Contact: David M. Winchell Phone: (402) 572-6290

Comments: Hardware, software and consultation available. Products: Education, games, and communications software for all Zenith models. Dealer for many hardware and software brands. Offers a discount mail order service with below-retail pricing. Special Notes: Other services include micro-mainframe consulting and customized system development for vertical markets.

Insurance Sales Systems

8001 West 63rd, Suite 1
Merriam, KS 66202

Contact: James W. Hilliard Phone: (913) 722-0065

Comments: Hardware, software and consultation available. Products: A complete line of software for insurance agents written by an experienced agent. Includes Insurance Specialist™, Auto Rating™, Auto Rating Plus™, Insurance Specialist Accounting™ and others. Special Notes: Comprehensive and integrated insurance software for the agent who wants to automate his office.

International Computer Services, Inc.

13256 S. Brandon Avenue
Chicago, IL 60633

Contact: Jerry Orloff Phone: (312) 646-1511

Comments: Consultation available. Products: Maintenance service on Zenith equipment.

Intuitive Logic

412 Taylor Street
Rochester, MI 48063-4327

Contact: Edward A. Byrnes Phone: (313) 651-3859

Comments: Software, consultation and custom graphics available. Products: Five educational program packages for children ages two to six. The programs are full of delightful, stimulating graphics for motivation and fun while learning. Unprotected MBASIC programs for HDOS, CP/M and CP/M-85. \$29.95 per package. Call or write for free descriptive flyer. Special Notes: Ten percent discount on any purchase until 1 March 1985.

Integrated Equity Planning

98-211 Pali Momi Street, Suite 302
Aiea, HI 96701

Contact: Newton Y.S. Kim Phone: (808) 488-4766

Comments: Software and consultation available. Products: Collection of 32 personal financial planning and analysis templates for Lotus 1-2-3, Supercalc 2 or 3, and soon Multiplan. Special Notes: Overall "A" rated by "The Book of IBM Software - 1984"; July, 1984 - Interface Age Magazine; April-May, 1984 issue of Computerized Investing.

Interdiscipline, Inc.

403 S. Brandon
Seattle, WA 98108

Contact: Jim Illman Phone: (206) 763-2099

Comments: Software available. Products: Simulation adventures: VEGA-BOUND I and USS Fast Attack. Special Notes: Products that specialize in real-time graphical simulation.

Jay Gold Software

Box 2024
Des Moines, IA 50310

Contact: Jay H. Gold, M.D. Phone: (515) 279-9821

Comments: Software and consultation available. Products: Complete Home Finance System that keeps track of checking, asset, and credit accounts. Prints checks, includes many reports. Requires H/Z-89/90 or H/Z-100. HDOS or CP/M. Special Notes: Price \$89.00. Manual \$21.00 credited to complete system.

KCK Enterprise

3328 Northwest C Street
Richmond, IN 47374

Contact: Cay Harris Phone: (317) 966-4052

Comments: Consultation available. Products: Dust Covers - Custom made of nylon pack cloth. Abrasion resistant. Flame resistant. Water proof. Brown-Blue-Green. For ZVM 134/135 - Z100 series. Other sizes on request. Special Notes: Protect your investment/equipment. Contact us for specific sizes.

KEA Systems Ltd.

412-2150 West Broadway
Vancouver, BC
Canada V6k 4L9

Contact: Eric Alexandre Phone: (604) 687-2744

Comments: Software and consultation available. Products: Reliable, high throughput terminal Emulators for the Z100: VT100, D200, 3101; and for the Z150 and PC: VT100 and D200.

KRS Enterprises, Inc.

Rt. 2 Box 241
Buda, TX 78610

Contact: Bob Williams Phone: (512) 295-7311

Comments: Hardware, software and consultation available. Products: Utility Billing System for water, electric and fuel oil companies. Automated Well Logs and Job Estimating for water well drillers. Property Tax Manager for municipalities. Special Notes: All of our software interfaces with our sophisticated accounting packages.

Kandueazy Computer Software Services (KCSS)

6218 Blossom Lane
Alexandria, VA 22310

Contact: James E. Kandul Phone: (703) 922-9450

Comments: Hardware, software and consultation available. Products: Disk-to-tape and tape-to-disk file backup/restore (TAPEIO). Text formatter with 36 commands (PRINTIT). Structured Programming preprocessor for assembly language (STRUCTUR). Line drop out and surge protector (GRAY BOX). Special Notes: All Heath-/Zenith software/hardware discounted 10-30%. Custom made leatherette dust covers. Above software is for CP/M only; Hard or soft sectored.

Ken's Custom Bookbinding

P.O. Box 2247, 4317 Olcott Avenue
East Chicago, IN 46312

Contact: Ken Randolph Phone: (219) 398-3719

Products: Subscription of REMark bound into a book. Leather bound \$30.00, cloth bound \$20.00. Special Notes: Send us your subscription copies for binding plus \$5.00 shipping.

Lab Data Systems

P.O. Box 1234
Kirkland Lake, Ontario
Canada, P2N 3M7

Contact: Gerry Killoran, Ph.D. Phone: (705) 567-3497

Comments: Software and consultation available. Products: Applied Statistics for the Z89, Z150, etc. (IBM). Descriptive Statistics, Signifi-

cance Tests, ANOVA, Weighted (curvi)Linear Regression, Editing, Transformations, Graphics, Simulation, etc. Database and manual. Priced from \$59.95. Special Notes: For experimental data (e.g. evaluation and validation of Analytical Methodology). Used in universities, research, and industry. Also available from Sunflower Software.

Labsoft

P.O. Box 5026
Oxnard, CA 93031

Contact: Robert Hanan, M.D. Phone: (805) 487-8776

Comments: Software and consultation available. Products: Medical laboratory data processing software.

Laser Beam International

Bld de Smet de Naeyer, 182
B - 1090 Brussels, Belgium

Contact: Christian De Smet Phone: 32-2-428.10.30
Telex 61217 LBI B

Comments: Hardware, software and consultation available. Products: Laser Beam - GBP is a data base generator. Working on the Z100, Z150, IBM PC, IBM XT, HP150, and other PC's. Possibilities to make everything in a conversation with the computer without being a programmer (accounting, tables, etc.). Laser Beam - Word Processing. Working on the Z100. Conversation with the user.

R. Lewis

P.O. Box 273
Chester, MD 21619

Contact: Robert Lewis

Comments: Software and consultation available. Products: Amateur SWL software for CP/M with H8/H89. dCOM - Copies CW, Radioteletype and ASCII. MUFCALC - Calculates Maximum Usable Frequency, Bearing Distance between any two locations. Special Notes: Available in SSSD H.S. format only.

Lexisoft, Inc.

P.O. Box 1950
Davis, CA 95617

Contact: Sales Phone: (916) 758-3630

Comments: Software and consultation available. Products: SPELLBINDER is an integrated word processing and office management system. Full text-editing features plus forms handling, mail merge, footnoting, alphanumeric sorting, boilerplating, and an on-screen calculator. Its extremely flexible print formatting includes true proportional spacing and two-column print. SPELLBINDER also features a spelling and grammar checker.

LINKS COMM

11456 Links Drive
Reston, VA 22090

Contact: Dale Grundon Phone: (703) 437-3710

Comments: Software and consultation available. Products: TAXEZ 1984 is a series of income tax preparation worksheets that are designed to operate with Microsoft's MultiPlan program. Over 20 IRS forms supported. Special Notes: Price - \$30.00. Requires Microsoft MultiPlan. Versions available for ZDOS, MS-DOS, CP/M, or IBM-PC. Dual drives recommended. Annual updates at reduced cost.

MDG and Associates

4573 Heatherglen Ct.
Moorpark, CA 93021

Contact: Paula Graybill Phone: (805) 529-5073

Comments: Software and consultation available. Products: MEDIA MASTER is a disk-to-disk format conversion program that allows your computer to Read, Write, and Format over 70 different CP/M-80, CP/M-86, and MS-DOS disk formats. Special Notes: MEDIA MASTER is immediately available for the H/Z150 and H/Z160 computers. The Z100 version will be available February 1985.

Dr. M.E. Pittman Scientific/Engineering Programming

57 Emile Avenue
Kenner, LA 70065

Contact: Michael E. Pittman, Ph.D. Phone: (504) 443-2355

Comments: Software and consultation available. Products: "Map Projections of the World" in which very high-resolution color maps of either global (5000 points) or caribbean (12000 points) coastlines are displayed with choice of scale, origin, window, rotation, grid, or any of seven different projections. One may also track hurricanes in animation, and more. \$49.95 postpaid or at many H/Z Centers, with documentation and examples. Color graphics required, monitor recommended. Specify H/Z-100 or H/Z-150.

MRD Microcomputer Service

10172 Mardel Drive
Cypress, CA 90630

Contact: Wayne Martin Phone: (714) 527-4622

Comments: Hardware and consultation available. Products: Specialize in floppy disk drive repairs. Also, sell new half-height floppy disk drives, \$135.00 each.

The MSW Company

P.O. Box 229
Penfield, NY 14526-0229

Contact: Dennis E. Hamilton Phone: (716) 586-6757

Comments: Software available. Products: EZCPR, SC80 Small-C Tools, and the Conclave RCP/M Construction kit for CP/M-80 and CP/M-85 systems. Special Notes: Free updates and notices distributed by CompuServe CP-MIG and network of RCP/M systems.

Mako Data Products, Inc.

1441-B N. Red Gum
Anaheim, CA 92806

Contact: Diane Barron, Order Desk Phone: (714) 632-8583

Comments: Hardware, software and consultation available. Products: H89/Z90: MH89+3 Buss Expander \$125.00, doubles accessory expansion area. PSGx2 Sound Board \$100.00. SOFTWARE: Unit Conversion Master, Load-'n-Go, Micro-Piano, PSG Demo for HA8-3. Special Notes: Write or call for our free brochure.

Maps For Micros

2348 Hooke Way
Sacramento, CA 95822

Contact: Lester L. Brown Phone: (916) 451-4215

Comments: Software and consultation available. Products: Data Bank for outlined maps of the world land masses. Special Notes: Available in radians or as XY coordinates for an XY-plotter. CP/M system.

HME's SPIKE PROTECTION

Spike protection is now available at affordable prices. You can be sure of what you are getting! We are a small company who gives you the protection claimed. We have seen cleverly worded ads claiming to protect against spikes and interference. We can tell you, there are companies who do not provide the protection they claim or suggest they have. All of our models have three-way protection from spikes. That simply means we have protected units plugged into our power strip (with 6 outlets) against spikes traveling on any of the three wires from your power source. **WE KNOW OF NO OTHER PRODUCT LIKE OURS AT AN AFFORDABLE PRICE!** Some of our models have an monitor circuit (LED) to let you know the protection is still working. This is also a lighted switch and 15 amp circuit breaker on all of our power strips. We offer two versions of the protected power strip with a filter designed to trap RFI/EMI going to or from your equipment. Here is our offer:

- Model 101 - Basic 3-way protection from spikes - \$29.95*
- Model 102 - Same as Model 101 with LED circuit - \$39.95*
- Model 103 - Same as Model 101 and RFI/EMI filter - \$49.95*
- Model 104 - Same as Model 102 and RFI/EMI filter - \$62.95*

*Plus \$3.00 for shipping and handling.

Checks/money orders only. Order shipped after check clears. We can modify your existing power strip. Quotes available. Call or write: **HME, INC., 751 WESTCOTT DRIVE, WETUMPKA AL 36092 Ph. (205)567-3264**

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Flexible loan amortization schedules provide you with the information you need to select the best terms for home and auto loans.
- **INVESTMENT-MASTER™** \$29.95 CP/M-80 \$49.95 MS-DOS
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- **FUND-MASTER™** \$39.95 CP/M-80 \$59.95 MS-DOS
Stock market investment aid. You benefit by knowing when to buy or sell and how much to buy/sell.
- **DEPRECIATION-MASTER™** \$149 CP/M-80 \$199 MS-DOS
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Marquette, Michigan 49855**



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P.O. Box 7093
Menlo Park, CA 94026
Phone: (415) 851-3414



Include 3% p/h (\$3.00 min.). California add 6 1/2% tax.

For Z-100 AND Z-150 FlexiPrint Screen Printer:

Print out screen graphics on dot addressable printer. Version 1.2 provides menu set-up of such choices as Z-100 versus PC, printer selection including OKI, Epson, C-Itch, NEC, ImageWriter, MPI-99, DataSouth and so on. Print-out is activated at any time by Sh-F12 or PrtSc, or by your own programs. You get source code (MASM) so you can change for other printers, other areas of memory or different video boards. Includes patch to speed up MSDOS 2.13 printer driver. Requires ZDOS/MSDOS/PCDOS 1.1 or above. \$34.95

FlexiTek Tektronix 4010 Emulator

Use your Z-100 or Z-150/160 to access mainframe graphics packages. Draws fast. Selectable baud rates to 9600. Complete set-up menu for terminal parameters. Capture graphics to disk. Print out on dot-addressable matrix printer using FlexiPrint (included FREE, see below!) OR send picture to HP plotter. You get TWO versions, one for Z-100, and one for PC-compatibles such as Z-150/160. Z-100 version uses 400-line interlace mode, with 35 lines by 74 column text, a very close imitation of the 4010. The PC version supports only 32 lines of text, and 200 lines res, but otherwise is similar. PLUS you get ALL source code (MASM), so you can see how it's done, modify it if you wish, or use our drawing routines for output from your own programs.

Version 1.2 includes a dumb "no-eyestrain" 80 by 25 character mode, for logging-on and other activities where Tek mode not needed. Z-100 version provides extensions for color (NOT 41xx compatible), such as automatic different color for text versus graphics. Comprehensive concise manual gets you started quickly. Requires ZDOS/MSDOS/PCDOS 1.1 or above. \$129.95

IBEm Version 2.0 Now Available

PC-ROM BIOS Emulator for Z-100, which allows numerous PCDOS packages to run on the Z-100. NOT a complete solution, so write for info PLEASE. New version runs with ALL versions of ZDOS/MSDOS 1.1 and above, and supports four screen attributes. Runs WS 3.24, PW 1.0, RBase, DB II 2.3, more. Still \$79.95. Present users, your update agreement is extended to July 1 85, see manual.

Our Update Policy (All Products): For the time specified in our User Agreement, you may swap your version for our update. All you do is send us your original disk, plus a stamped return package.

For more info send business-size SASE. Dealer and local author enquiries welcomed. **ORDERING:** Please add tax (Cal res only, 6%) first, then shipping and handling (\$3 per item in U.S. or Canada, elsewhere \$12). Check or money order OK, money order only outside U.S. (sorry Canadians).



VariousWare
P.O. Box 21070
El Cajon, CA 92021
(619) 448-7126

IBM would like you to think of them when you see 'PCDOS'. Likewise Zenith for 'ZDOS', 'Z-100'.

Mark of the Unicorn

222 3rd Street
Cambridge, MA 02142

Contact: Cynthia Pratt Phone: (617) 576-2760

Comments: Software available. Products: The Final Word - word processing system. Contact Mark of the Unicorn for details.

Meridian Technical Associates Inc.

2 Southboro Lane
Glen Rock, NJ 07452

Contact: J. Fitzpatrick Phone: (201) 445-8645

Comments: Software and consultation available. Products: Meta Input Controller (MIC) - command file processor for HDOS batch, "submit" functions. Intelligent Modem Program (IMP) - for terminal communication to mainframes, minis, other micros (CP/M or HDOS). Business applications, communications, and integration into mini & mainframe environments is our specialty.

Micro Ap

7033 Village Parkway, Suite 206
Dublin, CA 94568

Contact: Robert B. Goodman Phone: (415) 828-6697

Comments: Software and consultation available. Products: Selector V is a relational database management system for creating and managing business, professional and educational applications. Selector uses two powerful report generators for columnized and formatted reports. It features an automatic record and playback module. Price \$450.00. Special Notes: Demonstration version sells for \$45.00. It is the full system restricted to 60 records.

Micro Doc

3108 Jackson Street
Bellevue, NE 68005

Contact: Fred Pospeschil Phone: (402) 291-0795

Comments: Software and consultation available. Products: GRAPH-PAC-I and GRAPH-PAC-II software for HA-8-3 and HA-89-3 color graphics boards. Multi-language interface for all hardware capabilities plus fast line, circle, and font generation. GRAPH-PAC-II supports Pascal MT+, COBOL, Fortran, C80 V.2.0 (HDOS & CP/M); MBASIC (CP/M). GRAPH-PAC-I is Tiny Pascal 4.1G LER (HDOS).

Micro World Publishing

1102 Winona Street
Northfield, MN 55057

Contact: Linda Seebach Phone: (507) 645-5496
Charlie Corbin (507) 645-4611

Comments: Software and consultation available. Products: Will typeset your text files from any H/Z disk format, via modem (300/1200) or CompuServe. Use simple, powerful commands to code your text - or create your own. Ensure error-free typesetting and same money. Special Notes: MWP has developed software to support converting encoded and non-encoded text files to typeset copy.

Micro/Mation, Inc.

3838 N.W. Loop 410, Suite 104
San Antonio, TX 78229

Contact: Hal Guenter Phone: (512) 736-4271

Comments: Hardware, software and consultation available. Products: Printers, drives, software, repairs. Special Notes: Computer Systems House offering programming and repair service on all computers, as well as hardware sales.

Micro-Systems Software, Inc.

4301-18 Oak Circle
Boca Raton, FL 33431

Contact: Jeff Sherman Phone: (800) 327-8724 Sales

Comments: Software and consultation (305-393-5077) available. Products: MTERM - Communications program. MSCRIPT - Word processing program. MIRACLE - release date 1/1/85.

MICROTRAN*

76 Flintwell Way
San Jose, CA 95138

Contact: Rick Lutowski Phone: (408) 226-4122

Comments: Software and consultation available. Products: FORTRAN support for HDOS: library manager, "CORE" graphics package; AM9511/AM9512 math libraries; overlay package; console I/O, sorting, metric conversion, bit manipulation, and HDOS interface libraries. Special Notes: Libraries are inter-dependent and include source code, documentation, and sample program on H17 disk. * Not affiliated with MICROTRAN Co., Inc. of Valley Stream, NY, manufacturer of telephone interconnect transformers.

Miketronics Digital MicroSystems

8113 Baywood Drive
Norfolk, VA 23518

Contact: D.C. "Mike" Michielson Phone: (804) 588-4977

Comments: Software and consultation available. Products: MIKETRONICS/TCS "Big Four" Accounting Systems Version 5.1 - General Ledger, Accounts Receivable, Accounts Payable, Payroll (with source code) written in MBASIC5.x. Requires 56K RAM, CP/M 2.x, 2 disk drives, and 132-column printer. Special Notes: Also custom dBASE II programming.

Miracle Computing

313 Clayton Ct.
Lawrence, KS 66044

Contact: Richard Elliott, Owner Phone: (913) 843-5863

Products: EDUDRILL - Host computers supported: IBM PC jr, PC, PC/XT, and PC/AT. Operating environment: DOS, 64K, and 1 disk drive. Operating mode: Interactive. Source language name: BASIC. Usage pricing: License \$35.00. Maintenance provisions: Error corrections guaranteed. Custom modifications: Yes, \$55.00 per hour.

Mockingbird Data Systems

2296 Hoover Road
Grove City, OH 43123

Contact: Jerry Mercier Phone: (614) 875-0753

Comments: Software and consultation available. Products: Omniscoder™ Assembler and Linkage Editor for Z80 and CP/M; has

extensive user interface and macro facilities; requires 64k; \$90/site.
Special Notes: Other projects: Source code management system;
Pandora™ operating system.

Mountain View Press, Inc.

P.O. Box 4656
Mt. View, CA 94040

Contact: Roy Martens Phone: (415) 961-4103

Comments: Software available. Products: FORTH language products, including books, manuals and software. Special Notes: MVP-FORTH is in the public domain.

MOXON, Inc.

P.O. Box 279
Mystic, CT 06355

Contact: Larry Moxon Phone: (203) 536-6953

Comments: Hardware, software and consultation available. Products: WORD-MAGIC MENU, USN OPTAR Requisition Log, USN Calibration Status & Tracking program, FORMULA II Database Manager, GAS General Accounting Systems, AUTOCAD & others. Special Notes: Specialists in customized application software products; military, corporate & commercial. USN approved training center.

MMORROWARE

12503 Gristmill Cove
Austin, TX 78750

Contact: Mark Morrow Phone: (512) 250-1303

Comments: Software and consultation available. Products: MMORROWARE publishes software for the Heath/Zenith Z-100 series microcomputer. Categories are: Educational, Scientific, Engineering, disk file cataloging, and printer utilities. Special Notes: Contract programming is available in the above software areas.

muHelios

33 Cherry Drive
Mt. Vernon, IL 62864

Contact: Gwynn Holbrook Phone: (618) 244-7446

Comments: Software and consultation (Evenings 6-9 pm CST and weekends) available. Products: A disk cataloging system for MSDOS 1 or 2. Available on 5-1/4 inch IBM format disks. Catalog up to 2000 files on 200 disks.

Nanos Systems Corporation

P.O. Box 24344
Speedway, IN 46224

Contact: Paul P. Nanos Phone: (317) 244-4078

Comments: Software available. Products: These thoroughly researched quick reference cards contain all the information in the manuals and then some, making programming easy and enjoyable: Cards available for the HDOS 2.0 system and CP/M-80 (Versions 1.3, 1.4, 2.2), CP/M-86, and MP/M.

Neff Software

Box 29
Centerport, NY 11721

Contact: Bert L. Neff Phone: (516) 757-3696

Comments: Software available. Products: File compress, expand,

\$24.50. Formula Pack spreadsheet fixed or floating point \$99.50. Sort, merge (4 programs) \$49.50. Full screen edit, word processing, \$49.50. Free brochure. Special Notes: For H8, H/Z89 HDOS or CP/M, hard or soft. Also, Z100 ZDOS except Edit.

New Orleans General Data Services, Inc.

7230 Chadbourne Drive
New Orleans, LA 70126

Contact: Jean or Dave Troendle Phone: (504) 241-9495

Comments: Hardware and consultation available. Products: H-8 Music Synthesizer board, with optional 8-voice compiler; H-8 and H/Z-89 Color Graphics boards, with optional joysticks and GRAPH-PAC-I and GRAPH-PAC-II software packages; PASCAL/MT+ for HDOS; and Z-GRAPH-100 Software Package for the Z-100.

Newline Software

P.O. Box 289
Tiverton, RI 02878

Contact: Ron Rocheleau Phone: (401) 624-3322

Comments: Software and consultation available. Products: Wordprocessing/Text Editing, Applications software, utilities, games, diskettes for Zenith Z-89, Z-100 series, Z-150 series, DEC Rainbow and IBM-PC. Send for free catalogue. Special Notes: New Releases: for Z-100, PTP-100, TAXTYME-84; for Z-89, TAXTYME-84; for Z-150/IBM-PC, PTP-PC, TOUCH TYPIST.

NORCOM

9630 Hayes
Overland Park, KS 66212

Contact: Roger Lembke Phone: (913) 888-6237

Comments: Hardware and consultation available. Products: G-Prom is a replacement character generator which improves screen graphics resolution and character formation of the H/Z-19 and H/Z-89. Price, including documentation and shipping, is \$19.95. Special Notes: Full details are available from NORCOM.

Northwest Digital Systems

P.O. Box 15288
Seattle, WA 98115

Contact: Don Moore Phone: (206) 524-0014

Comments: Hardware available. Products: Graphics-Plus Enhancement logic boards for Heath/Zenith terminals provide high resolution Tektronix graphics and DEC terminal emulation and much more.

OWI Inc.

1160 Mahalo Place
Compton, CA 90220

Contact: Hiro Okayama Phone: (213) 638-4732

Comments: Consultation available. Products: MOVIT line is a series of computerized (and logic-controlled) battery robot kits that can teach the basic principles of robotic sensing and locomotion. Special Notes: Kits features pre-assembled pc boards, hardware and mechanical drive systems that can be handled by anyone.

Oasis Systems

7907 Ostrow Street
San Diego, CA 92111

Contact: Deirdre Wendt Phone: (619) 279-5711

Comments: Software and consultation available. Products: The WORD Plus is a complete spelling checking package. It hyphenates words automatically and helps users solve (and create) crosswords, anagrams, and other word puzzles. Punctuation and Style finds, marks and documents over two dozen types of punctuation errors in a text file.

OMNI Data Systems, Inc.

35 Park Street
Attleboro, MA 02703

Contact: Dave Bibeault Phone: (617) 222-0425

Comments: Hardware, software and consultation available. Products: We carry the complete Zenith line of products with discounts on hardware and software of up to 30%. We also carry printers, modems, boards, chips, etc. Special Notes: Please call or write for our complete catalog. Member: Better Business Bureau, Attleboro Chamber of Commerce.

Optical Technology, Inc.

Route 1, Box 138
Earlysville, VA 22936

Contact: Bob Charlton Phone: (804) 973-5482

Comments: Hardware, software and consultation available. Products: Model EP-2B-87 - Eprom programmer with serial interface CP/M software, Z-90 format, for programming 2709 thru 27256 EPROM's. Model EP-2A-79 - Eprom programmer includes parallel interface and H-DOS program for H-8 computer.

PC & J Graphics Co. Inc., The

P.O. Box 108
Deer Park, NY 11729

b1 Contact: Pat Caputo, Pres. Phone: (516) 667-8076

Product: Third Party hardware and software for Heath, Atari, Apple. Also, general programming aids, ribbons, disks, etc. We can also be contacted on The Source - TCK755 and Compuserve - 70330,175.

Panamax

150 Mitchell Blvd.
San Rafael, CA 94903-2057

Contact: Donna Moore Phone: (415) 472-5547
Outside CA (800) 472-5555

Products: Panamax carries a complete line of voltage surge suppressors with noise filter, stand by battery back up systems, anti-static mats, phone modem and data line protectors.

**Paul F. Herman,
Data Systems Consultant**

P.O. Box 535
St. James City, FL 33956

Contact: Paul F. Herman Phone: (813) 283-2227

Comments: Hardware, software and consultation available. Products: DOODLER Graphics Package for Z-100. PDM Personal Data Management package for Z-100. Custom software and consultation

available. Zenith Data Systems Dealer/Service Center. Special Notes: Our software is available at your nearest Heathkit Electronic Center.

Payload Computer Services

15006 Sun Harbor
Houston, TX 77062

Contact: Charles Porter, Prop. Phone: (713) 486-0687

Comments: Hardware and software available. Products: Our product lines include Zenith computers, various disk drives, boards, printers, software, and floppy disks.

PEP Engineering

390-M Oak Avenue
Carlsbad, CA 92008

Contact: Bob Gibson Phone: (619) 434-6023

Comments: Software available. Products: An integrated accounting package with A/R, A/P, Order Entry, Inventory Control, Fixed Assets and Payroll with an Interactive General Ledger. Special Notes: Used by small to medium retail and wholesale companies and most distribution and manufacturing companies.

Jerry A. Phelps

6013 Innes Trace Road
Louisville, KY 40222

Contact: Jerry A. Phelps Phone: (502) 425-4765 Evenings

Comments: Software and consultation (for software offered) available. Products: Arcade quality games. LADDERS - Fast action graphics game, see BUSS #52, #65. For H/Z-89 or H-8 with H8-4, H/Z-19, and H/Z-17. Available for CP/M 2.2 (40k) or HDOS 1.6 and up (32k). Supplied, 5-1/4" hard SSSD. \$21.50 includes postage. Special Notes: Available spring 1985 - Apples and Floors, graphics game for H/Z-100, color or monochrome, ZDOS or CP/M-86, \$27.50.

Piiceon, Inc.

2114 Ringwood Avenue
San Jose, CA 95131

Contact: Harry Masuda Phone: (408) 946-8030

Comments: Hardware available. Products: Offer H/Z-100 hardware: SUPERAM 50A/ZD (256K RAM); HZD-10 & HZD-20 (10 & 20MB Winchester hard disk).

Powerline Systems

P.O. Box 97
Lincroft, NJ 07738

Contact: John W. Preusse Phone: (201) 747-2063

Comments: Software available. Products: JUPITER - Records Management program handling over 25,000 records of personal information. Built-in screen editor and many conveniences for data entry, searching, sorting and reporting.

Pressure Applications

2478 Briarwood Drive
San Jose, CA 95125

Contact: Charles Stanley Phone: (408) 269-6107

Comments: Software available. Products: H/Z-89/90 software -

Big machine Chess now on your IBM-PC, Z-150, & DEC

The co-author of the program that beat the Russians presents ChessWright for your PC

A decade's work with top-class Chess programs results in a major breakthrough in ease of use! Enter moves with Arrow keys or in Algebraic or Descriptive Chess Notation—ChessWright replies in the same notation.

- Seven levels of play, blitz to postal Chess
- Extensive opening book —rarely repeats a game
- Save & restore games on disk
- Set up problems, games
- Digital Chess clock
- Includes many historic games
- Print score on printer
- "Instant replay" of game
- On-screen help
- Can suggest moves for you
- Instant move take back

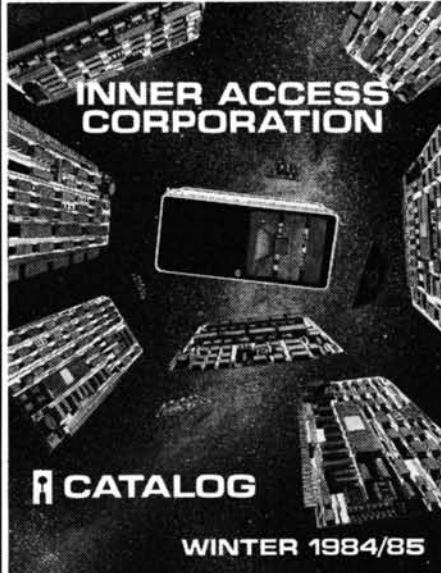
Check, MasterCard or Visa \$50
Please specify version.
(NC residents please add 4% sales tax).

Order from:
SoftWright Systems
P.O. Box 3208
Durham, N.C. 27705
(919) 383-4441



*IBM is a trademark of International Business Machines Corp.; DEC is a trademark of Digital Equipment Corp.)

FREE S-100 CATALOG



This catalog is a **MUST** for any S-100 user. It contains detailed information on all our S-100 products, including our:

- 68000 processor card
- 8 channel I/O card
- SCSI card
- PROM Programmer
- ROM Simulator
- Static Memory card

16 page 1985 Catalog featuring our full line of support hardware and software products for your S-100 requirements. Send or call for your free catalog at (415) 591-8295



Inner Access Corporation

P.O. BOX 888 • BELMONT, CA 94002

ZDOS VERSION 1 OR 2

ZZAP Disk file/sector editor. Display data in oct, hex, dec and/or ASCII. Large 4K buffer makes data manipulation easy. Use the page display to view 256 bytes at once. Dump the page to a printer with the touch of a key. \$29.95

PRO-LIFE With one of the largest cell populations of any life program available, we are also one of the fastest! Seed your population in either the one or two player mode. Each player has a different entity and selectable color. Pause the display, edit the population and continue to view some incredible patterns. With 4,000 cells in high density interlace mode (640H x 400V), the average time between generations is 1.5 seconds! \$29.95

GAMMON Colorful board display and lightening fast play will impress even the advanced player. This real time backgammon game will respond at the touch of a key. Watch the dice flash for your next move. Great for any age. \$29.95

ENTERTAINMENT PAK This is a combination of ZFORCE, T3D3, PRO-LIFE, GAMMON, OHELLO and WARI all in a nice soft vinyl binder. The two diskettes are organized in an anti-static vinyl disk page. You'll not only have your entertainment needs fulfilled for a long time but you will save as much as \$50.00 over the total cost if purchased individually! \$89.00

All items prepaid for USA/Canada shipping
California residents add your sales tax

Call for COD orders - \$2.00 COD fee required

Most items available at your local Heath/Zenith store

WESTCOMP

517 N. Mountain Ave.
Upland, CA 91786
714-982-1738

LEARN A NEW WORD FOR YOUR VOCABULARY

ZPAY \ zē pā \ n, 1: A computer payroll system for the Zenith and Heath computer systems 2: The act or fact of paying or being paid 3: The status of being paid by an employer

ZPAY PAYROLL SYSTEMS Presents

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Some of the features available in the **ZPAY** Payroll System

- User Friendly — Menu Driven
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May be seen at many Heathkit Electronic Centers or order yours today from **ZPAY** Payroll Systems — **Only \$100.00.**

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Orders shipped by UPS. Enclose \$100.00 plus \$4.00 per order for shipping and handling. Payment by check, money order, or Visa / Master Card. Allow 2—4 weeks for delivery.

ZPAY PAYROLL SYSTEMS

3516 Ruby Street • Franklin Park, IL 60131 • (312) 671-3364

Circuit Analysis program \$50.00; EESERIES #1 program \$30.00; GRAPHLOT program for IDS printers \$40.00; Setup programs for IDS and Brother printers \$20.00; C Language book for beginners \$20.00

Professional Business Systems

221 E. Government Street
Pensacola, FL 32501

Contact: Gerry Harris Phone: (904) 438-7805

Comments: Hardware, software and consultation available. Products: Hardware - Zenith 100/150/160, Corvus, Okidata, Diablo, Star Micronics, Hayes; Software - Lotus, Micropro, TCS, Microtax, I.M.S., DBASE, etc.; Supplies - Furniture, Sound covers, Ribbons, Diskettes, Dustcovers, Printwheels, etc.

Quikdata, Inc.

2618 Penn Circle
Sheboygan, WI 53081

Contact: Sales Dept. Phone: (414) 452-4172

Comments: Hardware, software and consultation available. Products: High Tech innovative mail order company (oldest H/Z independent in the business) with complete support and service facilities, handling a wide variety of lowest priced hardware and software for H/Z systems; disk drives being our specialty. Reliable cost effective winchester drives, wide variety of disk drives, cabinets, cables, computers, printers and software. ZDS dealer. Consulting and custom dBIll programming available. Visa/MC accepted.

RCK Associates

640 Trepahny Lane
Wayne, PA 19087

Contact: Robert C. Koestler Phone: (215) 687-3194

Comments: Software and consultation available. Products: Portfolio Manager - On entry of current stock prices, prints a one page report containing 19 different categories of stock info and data. Pedigree Manager - Maintains a four generation pedigree for small animal breeders. Morse Code Tutor - Your H89 sends code lessons. No hardware modifications needed. Contact RCK for more information. Special Notes: All programs are for the H89. Supplied on 10 sector 40 trk SSSD disk.

RD Software

1290 Monument Street
Pacific Palisades, CA 90272

Contact: Bob Doolittle Phone: (213) 454-8270

Comments: Software and consultation available. Products: ZDM/ZDMZ are CP/M-80 debuggers for Z80 CPU systems. Performance is similar to DDT, but with a more powerful command set and full control over all Z80 registers and flags. ZDM features extended Intel 8080 mnemonics, while ZDMZ displays Zilog Z80 mnemonics. ITOZ/ZTOI are a pair of assembly source program translators. ITOZ translates from Intel extended 8080 mnemonics to Zilog Z80 mnemonics, while ZTOI does the inverse translation.

RealData, Inc.

P.O. Box 691
Southport, CT 06490

Contact: Frank Gallinelli Phone: (203) 255-2732

Comments: Software and consultation available. Products: Titles -

Real Estate Overlays, Commercial/Industrial/Development Applications, Financial Overlays, Residential Real Estate Models, Tax Shelter Syndication Analysis, FNMA Appraiser - 1004, On Schedule (Month by month analysis of subdivision project). Special Notes: All programs work in conjunction with at least one of the following: SuperCalc™, Multiplan™, Lotus 1-2-3™. Brochures on each program available upon request.

Red Wing Business Systems

610 Main Street
Red Wing, MN 55066

Contact: Patty Brown Phone: (612) 388-1106

Comments: Software available. Products: Red Wing manufactures software for rural America. Primarily farmers, Ag-businesses, small businesses. Their four different product lines are: Financial Management Series, Production Management Series, Decision Aids Series, Financial Modeling Series. Dealer networks are set-up throughout the country. Primary dealers are computer retail stores. Support by telephone and by dealers. 30-day, money back guarantee.

Redwood Development

7 Redwood Drive
Butte, MT 59701

Contact: Phil Winninghoff Phone: (406) 494-5610

Comments: Software available. Products: Z-DRAW: A general purpose graphics editor allowing text and graphics to be manipulated through the keyboard. Transformations include: Transfer, Repeat, Rescale, Distort, Rotate, and Mirror. Special Notes: Data created through using Z-DRAW drives digital plotters. An ET-500 driver is provided in source.

Reichert Digital Systems

29 Blazier Road
Warren, NJ 07060

Contact: N/A Phone: (201) 469-3854

Comments: Software and consultation available. Products: A line of applications software for all Heath/Zenith machines. Includes scientific, engineering, home accounting, and productivity packages. Special Notes: Most disk formats available. Some software customizing services offered.

Rex Service Company

6610 West 111th Street
Worth, IL 60482

Contact: Sandra Mason, Marketing Rep. Phone: (312) 448-5558

Comments: Hardware (repair) and consultation available. Products: Rex Service Company is a factory authorized service center for Heath/Zenith. Along with Zenith we service other brands of computers and peripherals, including IBM, Apple, Epson, Okidata, MPI, Diablo, Corvus, and others. Carry-in service is made easy with our seven locations in and around the Chicagoland area.

Richmond Computerware

15807 Kenbrook
Missouri City, TX 77489

Contact: Jerome E. Banasik, P.E. Phone: (713) 437-8188

Comments: Hardware, software and consultation available. Products: Hardware - Mass Storage Systems for micro & supermicro

computers. Disk Drive Shielding/Mounting kit for H/Z-89. Software - Drivers to interface the data storage hardware. Engineering programs. Special Notes: Accepts contractual hardware and software work.

Ross Custom Electronics

1307 Darlene Way, Suite A12
Boulder City, NV 89005

Contact: J.D. Ross Phone: (702) 293-7426

Comments: Hardware, software and consultation available. Products: IntelliBurner EPROM, EEPROM, 87xx Microcomputer Programmer \$299.00 (or PC board \$99.00); DumBurner II EPROM & EEPROM Programmer \$199.00 (or PC board \$59.00); 16K/32K DumBurner EPROM Programmer \$149.00 (or PC board \$39.00). Special Notes: Complete software support included - HDOS, CP/M, ZDOS, and MS-DOS. UV lights and accessories available.

Satellite Software International

288 W. Center Street
Orem, UT 84057

Contact: Dan Lunt, VP Marketing Phone: (801) 224-4000

Comments: Software available. Products: WordPerfect is a full-featured word processing system. Includes footnotes, headers/footers, math, text columns, spelling, proportional spacing; supports Greek, math, and foreign characters.

Secured Computer Systems

8575 Knott Avenue, Suite D
Buena Park, CA 90620

Contact: Ken or Lowell Phone: (714) 952-3930
Technical Assistance Retail Sales

Comments: Hardware and consultation available. Products: 16K RAM expansion card; 2 port serial, 3 port parallel interface; Real-Time clock, True 4 MHz-I/O expansion module for the H/Z-88/89/90. We develop custom software on contract basis for business and general database functions. Special Notes: Mail orders: 12011 Aclare Street, Cerritos, CA 90701. Phone orders: (213) 924-6741.

Sextant Publishing Company

716 E Street, S.E.
Washington, DC 20003

Contact: Gabriele Burkhard Phone: (202) 544-0900

Products: Sextant magazine and Buss newsletter are independent publications for users of Heath/Zenith microcomputers. Sextant - \$14.97/6 issues (1 year); Buss - \$28.00/20 issues (1 year).

Sigma Technology Company

491 Breezewood Drive
State College, PA 16801

Contact: Robert Peters Phone: (814) 238-3321

Comments: Software and consultation available. Products: Communicating software for Z-100 series computers using ZDOS. Includes TTY and VT-52 emulation. Automatic modem support, on-line file manipulation and printer support. Special Notes: Includes file format conversions and encryption. Most popular use as a full screen VAX/VMS workstation for the Z-100.

SigmaSoft and Systems

4488 Spring Valley, #107
Dallas, TX 75234

Contact: Clay D. Montgomery Phone: (214) 392-1025

Comments: Hardware, software and consultation available. Products: The Interactive Graphics Controller/Pseudo Disk system for the H/Z89 and H/Z19-H8 systems provides high resolution graphics and a RAM disk for just \$495.00. Special Notes: We also offer one of the most complete lines of printer support products for the H/Z89 and H8.

Skill Data

P.O. Box 1943
Olympia, WA 98507

Contact: Claude T. Abbott Phone: (206) 352-0669

Comments: Software and consultation available. Products: Function-key software for WordStar (WSKEY), dBASE II (DBKEY), ZIP (ZIPKEY), QuickCode (QCKEY), and SuperCalc (SCKEY). "Peek and poke" software with screen print capability (QuickLook). Special Notes: All software (both CP/M and Z-DOS) under \$30.00. VISA and MasterCard accepted.

Skycastle Computer Products

P.O. Box 1412
San Carlos, CA 94070

Contact: Mike Krivohlavek Phone: (415) 254-3931

Comments: Software and consultation available. Products: Offers software for dot matrix printers. Programs add an extra touch to your printed documents by combining graphics and custom fonts with standard text.

SMART MACHINES™

Interaction Dynamics Systems™

Kapaau, Kohala, Hawaii 96755-0419

Contact: Patrick M. Nc Nally or Lori Cornell

Comments: Software and consultation (by mail) available. Products: SLEDGE™ - general ledger; SofTouch™ - key remapping utility (Z100); 89/STAR & Z/STAR - WordStar enhancements; Z/BASE - dBASE II enhancement; EP/STAR - Epson/WordStar enhancement; GRAPH-IT - graphing utility; FLIGHT - simulator. Special Notes: Most programs are available in Z-DOS and CP/M. Write for complete descriptions and price lists.

Soft Firm, The

P.O. Box 1125
Picayune, MS 39466

Contact: Dot Holyer Phone: (601) 798-0740

Comments: Software and consultation available. Products: Disk Support systems providing CP/M disk diagnostic and data recovery utilities for H-8, H-89, and H-100. File Transfer utility for transfer of files between systems with incompatible media formats (CP/M and ZDOS included). Catalog upon request. Custom programming services available.

Softquest, Inc.

P.O. Box 3456
McLean, VA 22103

Contact: Susannah Rosenberg Phone: (703) 281-1621

Comments: Software and consultation available. Products: A personal and small business financial management program, the Smart Checkbook accommodates sophisticated financial needs, while remaining simple enough for novices to use. It produces, complete financial records, including budget reports, net worth statements, tax records, custom reports and summary tables. Special Notes: Available for Zenith Z-100 (Z-DOS and CP/M-80); Z-150, Z-160 (PC-DOS); Heath/Zenith-89 (CP/M 5-1/4" and 8").

Software Place, The

Box 151006
Tampa, FL 33684

Contact: Brian L. Griffin Phone: (813) 238-3818

Comments: Hardware, software and consultation available. Products: Small business accounting packages with integrated G/L, A/R, A/P and Inventory for up to 2,000 accounts receivable/payable for private club management or 2,000 inventory items for retail stores with a P-O-S system, running in RAM disk emulation mode *. Special Notes: * Emulation mode keeps data in 64K RAM to greatly increase operating speed compared to disk based accounting systems. We have a SECRET level clearance with the Defense Intelligence Security Clearance Office (DISCO).

Software Seeker, The

720 West Indian School Road
Phoenix, AZ 85013

Contact: Bob Zucker Phone: (602) 265-0393

Comments: Hardware, software and consultation available. Products: Zenith Data Systems hardware and software, Standard Data Network, Okidata and Brother printers. Special Notes: Software Modification Services, Quarterly Discount Software catalog available.

Software Services

1326 23rd Street South, Suite C
Fargo, ND 58103

Contact: Bob Rohrer Phone: (800) 634-2248
ND (701) 280-0121

Products: Wholesale computer supplies. A variety of brand name diskettes, storage modules, computer cleaning kits, ribbons, etc. We serve software houses, hospitals, schools, government, clubs, and large end-users.

Software Toolworks, The

15233 Ventura Blvd., Suite 1118
Sherman Oaks, CA 91403

Contact: Susan Hayes/Tech. Support Phone: (818) 986-4885
Cheryl West/Marketing Dir.

Products: Toolworks™ C/80 3.1 - A professional programming tool and a great way to get started with this popular language. Supports full C structures, pointers and arrays, all storage classes, static data initialization, and in-line assembler. Available from Heathkit Electronic Centers, various Computerlands world-wide, selected Software Toolworks independent dealers, direct mail from The Software Toolworks.

Software Wizardry, Inc.

1106 First Capitol Drive
St. Charles, MO 63301

Contact: Tom Jorgenson Phone: (314) 946-1968

Comments: Hardware, software and consultation available. Products: Full line of computers, software and peripherals for your Heath/Zenith systems, including lightpens, the P-SST multifunction board, Palette, Zlynk/II, Ultra ROM, Reactor and much more. Write for free catalog. Special Notes: Software Wizardry is an authorized ZDS dealer and service center. Visit our new retail store, First Capitol Computer, opening soon. Technical Hotline: (314) 946-1968; Orders Only Line: (800) TO-BUY-IT.

SoftWright Systems

P.O. Box 3208
Durham, NC 27705

Contact: Bruce C. Wright Phone: (919) 383-4441

Comments: Software and consultation available. Products: ChessWright - Chess program. Supports graphics, color, notation or cursor move entry; save, restore, and print games; large 'book'; problem setup; 'instant replay'; seven skill levels. Special Notes: Now available for Heath/Zenith Z-150, IBM-PC, and DEC Rainbow; Z-100 version out soon.

Robert J. Stalder

3508 Furey Avenue
Madison, WI 53714

Contact: Bob Phone: (608) 241-5483

Comments: Software and consultation available. Products: Software maps out on your terminal eight lines of information on computer byte or word. Input can be in octal numbers or decimal bit numbers. Special Notes: At \$49.95, an aid to H11 or PDP-11 assembler programmers, students and hobbyists.

Standard Computer & Leasing, Inc.

P.O. Box 5628
Little Rock, AR 72215

Contact: Sharon Stark Phone: (501) 224-6660

Comments: Hardware, software and consultation available. Products: Z-90, Z-100 Finance & Insurance programs for auto dealers and financial institutions. Training and service on Zenith products.

Studio Computers, Inc.

999 South Adams
Birmingham, MI 48011

Contact: Ray Massa

Comments: Hardware and consultation available. Products: Authorized Zenith Data Systems dealer, MPI dealer and distributor. We support both hardware and software accessories for all Zenith computer lines. Retail store and mail order sales. Special Notes: Free 24 page illustrated catalog upon request.

Sun-Flex Company Inc.

20 Pimentel Court
Novato, CA 94947

Contact: Judy Hotzner Phone: (415) 883-1221
Marketing Support Rep.

Heath/Zenith Users' Group

PROGRAM SUBMITTAL and AGREEMENT FORM

Programmer: _____
Address: _____ **City-State** _____ **Zip** _____
Company (if any): _____
Telephone: _____
Program Name: _____

Please describe your program in sufficient detail so that other users may understand its intended purpose and use. The following outline is suggested as a guide to help you in preparing an abstract of your program(s), should your program(s) be selected as a future release of the HUG Software Library. Your outline of the abstract should be prepared and submitted on an attached sheet of paper with this Submittal Form. Be sure to fill out all the information requested on this form.

Suggested Outline:

- Introduction:
- Requirements:
 - Software
 - Hardware
- List of the Programs:
- Program Content:
 - Include Special Notes
- Comments:

Note: Refer to the HUG Software Catalog for examples and details in using this outline.

Brief information for the Software Evaluator of your program(s):

Prepared on/for computer model: _____

Special hardware/software configurations, if any: _____

Program requires: _____ **bytes of memory**

Language: _____ **Version:** _____

I would like you to include the program(s) described on this agreement in the (check one)

- Public Domain Library
- HUG Software Library
- Royalty Software Library

I understand and agree that HUG may distribute it at nominal cost to HUG members.

I assure you that the program is my own design, that I have run and de-bugged it, and that I will answer questions any library user may have about it. You may modify and adapt the program at your option to make it more suitable for your use and the library.

I represent that the program is mine to submit and that any necessary permissions for its use and sale have been obtained.

Date: _____ **Signed:** _____

P/N 885-6

Comments: Software available. Products: We distribute the AutoCAD™ program, a 2-dimensional drafting system which runs on the Zenith Z-100 and Z-150. AutoCAD handles drawings the way a word processor handles text. Drawings of any size are created and edited. Once a drawing is stored on a floppy or hard disk, the drawings may be plotted out at any scale.

Sunflower Software, Inc.

13915 Midland Drive
Shawnee, KS 66216

Contact: Rick Kerbel Phone: (913) 631-1333

Comments: Hardware, software and consultation available. Products: Since 1981, Sunflower has provided high quality, low priced software for the Heath/Zenith community. Products include: Utilities, Word Processing, Applications, Games and Educational software. Special Notes: Free catalog sent upon request.

SuperSoft, Inc.

P.O. Box 1628, 1713 S. Neil Street
Champaign, IL 61820

Contact: Stephen Hagler

Comments: Software and consultation available. Products: SuperSoft has a wide range of products for the Heath/Zenith systems, including a spreadsheet called ScratchPad Plus, a C compiler, a FORTRAN compiler, Diagnostics programs, and others.

Systems Integration Unlimited

P.O. Box 24421
San Jose, CA 95154-4421

Contact: James R. Murdock or Phone: (408) 448-2541
Robert Humphreys

Comments: Hardware, software and consultation available. Products: TUTOR.COM, generates subject tutorials with modes for student and teacher. Tutorial size limited only by disk size; menu driven. FORMPRNT.COM, find the exact location to print information on preprinted forms with a Diablo 630 printer. This generates the control codes needed to control print head; user supplying data. Special Notes: Both programs available in 5-1/4" hard-sector and 8" SS/SD CP/M format. Also has business application programs; send SASE for brochure.

Systems Plus, Inc.

1120 San Antonio
Palo Alto, CA 94303

Contact: Chip Barclay Phone: (415) 969-7097

Comments: Software and consultation available. Products: Medical Manager is a complete accounting and clinical practice management package for microcomputers. It is menu-driven and has a built-in, user defined report generator that provides for unlimited formatting of patient bills, statements, encounter and insurance forms and recall notices. It is multi-user. The program can maintain single or multiple doctor practices with automatic third-party insurance billing and tracking for multiple insurance companies per patient.

Taranto & Associates, Inc.

121 Paul Drive
San Rafael, CA 94903

Contact: Arlene Schaffer Phone: (415) 472-2670

Comments: Hardware, software and consultation available. Products: Financial Management system. Includes General Ledger, Accounts Receivable, Accounts Payable, Inventory Control, and Payroll systems. Also can include Point-of-Sale system. Transactions can be entered through general ledger direct posting cash journal or external sources, such as accounts payable, accounts receivable, payroll, inventory or any other user source.

Bill Tavalga

5151 Windward Avenue
Sarasota, FL 33581

Contact: Software and consultation available. Products: Word puzzle solving aids for crosswords, acrostics, cryptograms. Create your own puzzles. 5-1/4" disk in almost any H/Z format. \$26.00 post-paid. Special Notes: Specify: HDOS, CP/M-80 or -85, Z-DOS; Soft/Hard; 1 or 2 sides; 40/80 track. (Color in ZDOS only.)

Technical Advisors, Inc.

861 Washington Avenue
Westwood, NJ 07675

Contact: Matt Baum Phone: (201) 666-0504

Comments: Hardware, software and consultation available. Products: Parallel multi-port I/O board for the LEFT side slots of the H/Z-89. Special Notes: Multi-port I/O board is ideal for machine automation or special applications.

Thin King Thingies

115-1 Roxanne Ct.
Walnut Creek, CA 94596

Contact: K. Schultz

Comments: Hardware and software available. Products: Printers (\$139.00!), Monitors (\$90.00), Diskettes (from \$19.00 up). Dice game for CP/M (5-1/4" hard-sectored) systems with H-19 terminals (\$22.50). Special Notes: California residents add sales tax. No catalogs. 2-4 weeks delivery. Checks or money orders only.

21st Century Data, Inc.

P.O. Box 1139
Solana Beach, CA 92075

Contact: Helene Levine Phone: (619) 755-6218

Comments: Software and consultation available. Products: Rescue & Repair™ - When your computer hangs up and your word processor or spreadsheet entries have not been saved, this program will find them and save them to disk \$75.00. Special Notes: Available for H-8, H/Z-89, Z-90, H/Z-100, CP/M 2.2, CP/M-85, CP/M-86, Z-DOS.

UCI Corporation

948 Cherry Street
Kent, OH 44240

Contact: Eric W. Larson, Vice Pres. Phone: (216) 673-5155
or (800) 824-2667

Comments: Hardware and software available. Products: UCI provides Z100 memory boards up to 2 Megabytes, and related products to allow Z100s to operate faster with more memory and flexibility.

Special Notes: The EXPANDABLE RAM board is the most advanced memory board ever designed for Z100 systems.

U.S. Robotics, Inc.
8100 N. McCormick
Skokie, IL 60076O

Contact: Mark Smith Phone: (312) 982-5010
Public Relations Dir.

Comments: Hardware, software and consultation available. Products: U.S. Robotics manufactures modems and communication software.

United Software Company, The
2431 E. Douglas
Wichita, KS 67211

Contact: Michael Cole Phone: (316) 684-5281
(800) 255-1382 Ext 47

Comments: Software and consultation available. Products: Two excellent stand alone or integratable programs TMP/FREEFORM FILER lets you store electronic index cards on computer. TMP/MANAGER I is a sophisticated database manager. Special Notes: Both programs are excellent for new or first time computer users.

Unlimited Processing, Inc.
8382 Baymeadows Road, Suite 8
Jacksonville, FL 32216

Contact: N/A Phone: (904) 731-8330

Comments: Software and consultation available. Products: IN-FORMA 15 - A relational database with ten levels of security. A multi-file DBMS. Single-user, upgradeable to a multi-user. IN-FORMA 20 - A relational database with ten levels of security. Includes all the capabilities of INFORMMA 15. A multi-file DBMS. Allows for an unlimited number of network users. Special Notes: * Nationwide support * On-screen help for all functions * Tutorial manual.

Valley Computer Sales & Consulting
1407 24th Avenue South, Suite 218
Grand Forks, ND 58201

Contact: John Real Phone: (701) 746-0518

Comments: Hardware, software and consultation available. Products: Zenith Data Systems computers and peripherals, Compupro Systems, Digitronics, Quadram, CXI, Hayes, Novation, Star-Micronics, IDS Printers, MPI Printers, Ashton-Tate, Microsoft, Digital Research, Auto-Cad, Computer Associates. Special Notes: Software and hardware special applications designed to specifications.

Valley Data Sciences, Inc.
2426 Charleston Road
Mt. View, CA 94043

Contact: Kathy King Phone: (415) 968-2900

Comments: Hardware and software available. Products: Logic and memory device program workstations.

VariousWare
P.O. Box 21070
El Cajon, CA 92021

Contact: N/A Phone: (619) 448-7126

Comments: Software available. Products: FlexiTek - Tektronix 4010 Graphics Terminal Emulator for Z-100 and PCs. File capture, print-outs, color \$129.95. FlexiPrint - Graphics Screen Dump for Z-100 and PC \$34.95. Special Notes: Send Biz SASE for details. Shipping and Handling add \$3.00 per to US/Canada.

Viking Software
2243 South Belaire Drive
Salt Lake City, UT 84109

Contact: Grant Phone: (801) 466-6820
7-9 AM, 5-10 PM

Comments: Hardware, software and consultation (limited) available. Products: ZDOS, HDOS & Pascal copy to CP/M; HDOS products (15); Compare & Sorting (7); WordStar keys and printer (9); Database in C; C/80 Clibrary for CP/M and M80; H89 4 MHz kit; H89 Eprom Programmer; Copiers (2); Disk Crash Utilities (3). Special Notes: Free catalog. Source in C or assembler for ZDOS, HDOS, MS-DOS, CP/M-80, CP/M-68K (most packages).

Virginia Polytechnic Institute and State University
Blacksburg, VA 24061

Contact: Dr. Linda Leffel, C.E.C. Phone: (703) 961-4848

Products: Workshops - Personal Computer and STD Computer Interfacing for Scientific Instrument Automation \$450.00 for 3 days. 1) Blacksburg, VA (Va. Tech.) March 14-16, 1985. 2) Blacksburg, VA (Va. Tech.) May 30-31 and June 1, 1985. Special Notes: These are hands-on workshops with each participant wiring and testing interfaces.

Barry A. Watzman
560 Sunset Road
Benton Harbor, MI 49022

Contact: Barry Watzman Phone: (616) 925-3136

Comments: Hardware, software and consultation available. Products: CP/M Plus, CP/M-86 for Z-100. Cartridge Tape and large Winchester Mass Storage devices. Applications software for CP/M-86.

Westcomp
517 N. Mountain Avenue
Upland, CA 91786

Contact: Dave or Russ Phone: (714) 982-1738

Comments: Hardware, software and consultation (selective) available. Products: Software covers entertainment, utilities, languages and artificial intelligence - product listing available. A.I. packages are IBM compatible. Hardware covers speedup kit for H/Z-100, select S100 boards, etc. Special Notes: Most software is for the H/Z-100 system. All software for the H/Z-100 system is for ZDOS (1 or 2).

Winterhalter, Inc.
3853 Research Park Drive
P.O. Box 2180
Ann Arbor, MI 48106

Contact: Gary L. Stone Phone: (800) 321-7785
Senior Sales Rep. Michigan (313) 662-2002

Comments: Hardware, software and consultation available. Products: The DataTalker product line allows the Zenith family of mic-

recomputers to communicate to mainframe computers by emulating a variety of IBM terminals. Special Notes: The DataTalker product line currently supports 3780/2780 and 3270 Bisync, 3270 SNA/SDLC, and X.25 protocols.

Wizard Software House

79 Marshall Street
Providence, RI 02909

Contact: N. 'David' Haskel (Prop.) Phone: (401) 331-5034

Comments: Software and consultation (Tues. - Thurs. 7 pm to 9 pm EST) available. Products: Illustrator Graphics Design package: \$89.99. An easy to use, very powerful graphics editor for the H/Z-100 (MS-DOS), or an H19/89 (HDOS) with the Imaginator board. Special Notes: System drivers for HDOS and the Z67 or Corvus Winchesters. Unix-Like utilities for HDOS and MS-DOS.

Woolf Software Systems, Inc.

6754 Eton Avenue
Cano;a Park, CA 91303

Contact: Torie Daves Phone: (818) 703-8112

Comments: Software and consultation available. Products: Move-It - A communications package for transferring files, etc. Pocket Change II - Small business accounting program. Medi-claims - A complete medical transmission system for medi-care claims.

Zephyr Software

317 N. Humphreys
Flagstaff, AZ 86001

Contact: Bruce Grubbs Phone: (602) 774-7809

Comments: Software available. Products: Programmer's utilities for H8/H89, CP/M and HDOS. Full Screen Disk Editors, disk duplicators, etc. Special Notes: Catalog free.

ZPAY Payroll Systems

3516 Ruby Street
Franklin Park, IL 60131

Contact: Paul Mayer Phone: (312) 671-3364

Comments: Payroll System for Heath/Zenith computer. User changeable tax tables (with full screen editor). Pays hourly, salaried, and commissioned employees. Pays weekly, bi-weekly, monthly, etc. periods. Special Notes: ZPAY is available for the Heath/Zenith CP/M, ZDOS, and IBM PC-DOS (IBM compatible) operating systems.



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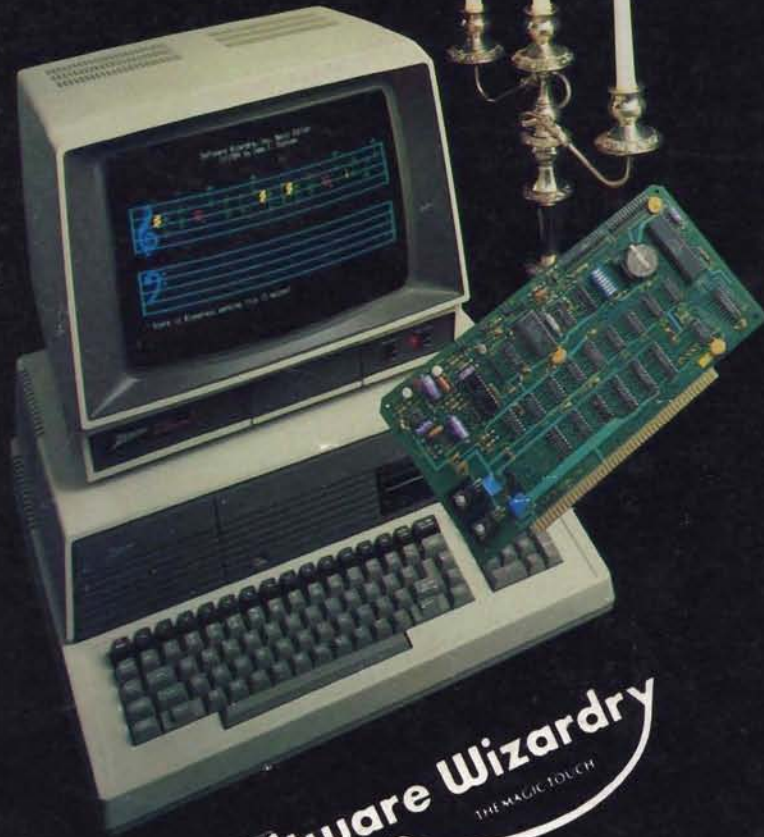
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