

Saving Our CLASSIC Heath 8-Bit Machines!

SETHO JOURNAL

The Society of Eight Bit Heath Computerists' Monthly Newsletter

Volume V, Number 5

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Subscription/Order Blank on Page 9



SEBHC JOURNAL

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The READER'S MAILBOX

Dear Lenny,

Because I do believe in our crusade to save the [H/Z] 8-bit machines, I [have] sent copies of the enclosed letter to all the vendors listed in the last [V5:3] edition of the SEBHC JOURNAL. [See text of Corky's letter below. -- ed]

Keep up the good work Lenny!

"CORKY" C E KIRK jr, 270 Kapualani Street, Hilo, HI 96720

"Gentlemen:

"On-going comments in the Society of Eight Bit Heath Computerists monthly newsletter (SEBHC JOURNAL) out of Ann Arbor Michigan, and more currently in the October 1990 issue (Volume V, Number 3), talk of the need for support of the suppliers who are supplying products to the 8-bit area of the computer hobby.

"Editor Leonard 'Lenny' Geisler, along with his correspondants continue to keep readers up-to-date on things happening to our 'senior-citizen' computers in their day-to-day lives. Their references to Heath hardware and the repair thereof has been augmented by suppliers such as yourselves who have remade some of the boards or have made the next generation of hardware available.

"This is a letter of 'Thanks' to you for your efforts in our behalf.

"Sincerely,
/s/ C E Kirk, jr."

[Well, thank you, Corky, for taking time from your very busy schedule to send your circular letter to all our still-in-business vendors! Now, if those same vendors will take a little of their own time to make up and send us one or more 7-inch wide by 9-inch high black-and-white "reproducible" advertising copy sheets, we shall be delighted to print it/them FREE OF CHARGE in future editions of the SEBHC JOURNAL. In this dog-eating-dog world, vendors and clients both need all the mutual help there is available--and then some! We are here, doing our best, but you vendors might send us a line or two of your own for publication because you'll get a *FREE* one-year subscription if we print your article. -- ed]

Dear Lenny,

Enclosed you'll find my renewal cheque. Keep up the good work...at least someone still supports the old 8-bit machines --although it seems that Zenith doesn't want to!

If you [or a JOURNAL subscriber] has a need for it, I have an extra copy of HDOS 2.0 which I'm willing to donate To The Cause and if you want it, I can send it to you. It has the original manual, discs and all, but it's in hard-sector format.

Thanks again! Also, hats off to all those who still support the H/Z 8-bit line of machines. Shall they live long (as well as their machines)!

DAVE SACKOVICH, 7963 Eaton Street, Arvada, CO 80003

[Hey, Dave! Thanks for so generously offering up your extra copy of HDOS 2.0. We don't need it here, but surely there's some deserving H/Z 8-bit user who's willing to take it off your hands for the "handling and shipping cost" of--say, \$35. Also, this is an excellent season for someone new to computers to start out learning how to run their "senior machine" with some very good "senior operator" helping them get that HDOS 2.0 system up'n running. We think that it's best that whomever wants or needs your HDOS 2.0 very badly will contact you directly. Really Soon Now! And please keep us informed, y'all hear?! -- ed]

Dear Lenny,

I'm looking for Microsoft's BASIC COMPILER on 5.25" hard-sector HDOS discs. Do you think the JOURNAL can help me locate a copy? If possible, I'd like to get an un-registered copy which I would then register with Microsoft before using it.

Presently I have a CP/M soft-sector version, but since I don't use that operating system, it hasn't been used at all. If there's anyone interested, please contact me at the below-listed address by mail, or by CompuServe Email--my ID# is 73770,2333.

Thanks!

MARK HUNT, c/o USPHS Alaskan Native Hospital, Barrow, AK 99723; phone, 907-852-9257 (30 sec answering machine)

[Greetings, Mark! You're right close to good ole Sandy Claws up there in Alaska; what do you hear from him? Any exciting 8-bit news, whatever?! We have Microsoft's HDOS BASCOM which we ARE NOT willing to part with because we're still trying to get it to work for us! We also have the CP/M BASCOM-80 version and have tried to get it to work, also with Very Confusing Results. (Why does the '.ABS or '.COM file end up nearly twice as big as the original MBASIC program?!) We're fairly sure that there's at least ONE SEBHC JOURNAL reader who has that HDOS 2.0 BASCOM set you're looking for. Do keep us informed of your progress in the "desperately seeking BASCOM software" search. -- ed]

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+ HAPPY HOLIDAYS to All Our Valued Subscribers! +
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A Happy Word From Your Editor: That horribly-EXPENSIVE "Irrevocable Lease Agreement" (for the Canon NP-155 copier we've been struggling to print your SEBHC JOURNAL on for the past 3 years) FINALLY EXPIRED! We now have a NEW Canon PC7RE "desktop" copier, and a just-opened nearby copy shop now mass-produces SEBHC JOURNALS--machine "collating" & stapling included --more uniformly, faster and CHEAPER than we ever have. They usually finish a 200-copy, 5-sheet edition in under 4 hours!

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Our "ASK RICK" Feature

H19 DISPLAY SPEEDUP--PART TWO
by N. E. Associate Editor Rick Swenton

[Last month, Rick told you how to make the basic changes to your H19/89/90's Terminal Logic Board (TLB) which result in a 150% faster (2MC/s to 3MC/s) clock speed and much faster display-refresh time, thereby eliminating those horrid "black flecks" in the display. Here's the concluding Part Two of his article.]

If you're now using Superclock, you can piggy-back a 24-pin IC socket onto the Superclock IC and plug the 6116 RAM IC with its bent-out leads into this socket--being sure to observe correct IC orientation, of course! Or, if you don't have the Superclock, but would like to have emulation of it, you can piggy-back TWO 6116s, with the bottom one having all pins in the socket. This produces a "software" Superclock where the time display powers up as garbage, but will run and display time correctly after setting it. You'll also enable all the other Superclock features such as second screen page, and windows. See page 23 of the Superset/Superclock manual and set jumper JP2 (JP23) as described there. With Superclock installed (or the extra 6116), you can leave pin 21 fully connected between all ICs and the socket, since Superclock wiring during installation applies the R/W signal.

For those readers interested in theory: Pin 20 on 6116 is the Output Enable line, and is tied to ground (6116 pin 12) to enable the 6116 outputs. Pin 18 of the 6116 is the Chip Enable line. When low, this line turns on the 6116. Pin 18 is tied to the 2112 Chip Enable line at pin 13. Finally, pin 21 of the 6116 is the Read/Write control signal which is low to Write, and high to Read. This line is connected to the 2112 R/W line at pin 14.

The 2112 IC is a 256-location memory device. You need two of them to get a 256-byte RAM. One takes the lower 4 bits, the other takes the higher 4 bits. The 6116 is a 2048-location memory device--a 2k RAM chip, as opposed to the pair of 2112s (1/4k RAM chips).

The H19 program only needs 256 bytes. To be sure that there are no conflicts by having a 2k RAM in a system which uses only 256 bytes, I referred to the H19 manual. The program ROM U437 (U422) occupies addresses zero through 3FFFH--the first 16k of memory. (It's interesting that even though the Superset ROM is a 32k chip (a 27C256), it's wired so that only 12.8k of its storage space is accessible. It has to be this way unless major changes were made to the TLB.) The system RAM occupies addresses 4000H through 40FFFH. The only other memory in the TLB system is the Display Memory, occupying addresses F800H through FFFFH. The Display Memory is special because both the Z80 CPU and 6845 CRT controller can access this memory. The Program ROM and system RAM are accessed only by the Z80. Since there is dead, unused space

between the end of system RAM at 4100H and start of the Display RAM at F800H, there'd be no problem with a 2k system RAM (the 6116) occupying 4000H through 4800H. The extra 1792 memory bytes are wasted, but a single 6116 IC is cheaper than two 2112 chips, which are not readily available in high-speed versions.

With Superclock installed (or an extra 6116 in its place) the added 2k memory for the second page of screen storage occupies address 8000H through 87FFFH--still not in our way. The memory access is ambiguously decoded so RAM also appears to be at any address which has A15 high and A14 low, such as 9000H, A000H, and B000H. This is also true for the Display Memory at F800H, and appears to be at any address where both A14 and A15 are high, such as C800H, D800H, and E800H. This is so because only A14 and A15 determine which bank of memory to access. You have a choice of ROM, system RAM, Superclock RAM, or Display RAM.

Note that I had to examine the Superset ROM's machine language to find the Superclock's memory address.

Here are the addresses of vendors supplying parts recommended in part one for installation in the H19 TLB speedup modifications:

JAMECO ELECTRONICS
1355 Shoreway Road
Belmont, CA 94002
415-592-8097

(\$25 minimum order)

6116P-2 \$2.95

6116LP-2 \$3.25 (low power version)

JDR MICRODEVICES
2233 Branham Lane
San Jose, CA 95124
800-538-5000

(No minimum order)

HM6116-2 \$4.95

HM6116LP-2 \$5.49

DIGI-KEY
P O Box 677
Thief River Falls,
MN 56701-9988
800-344-4539

(Digi-Key's catalog didn't list the 6116; they're an excellent other-parts source.)

[Editor's comments: This TLB 3-Mc/S clock speedup is different than one given some time ago in REMark #32 (Sept '82): "H19 Processor Speedup" by Peter Shoemaker. Peter's fix essentially doubled CPU clock speed from stock 2MC/s to 4MC/s. (But he didn't say it did anything about those black flecks.) Back in 1986, Lee Hart modified our H89's TLB for "The Final HUGCON" with an early version of "Superset". We didn't want to undo Lee's work therefore didn't try Shoemaker's idea, but it looks as if it'd work ok. Rick's version will work just fine, but DO carefully follow his directions! Lee's "Flicker-Free" TLB modification works as Rick's does but swaps current-hogging ICs for low-power CMOS ICs, thereby reducing TLB power-supply consumption by about 300mA...Really COOL! Stay tuned, there's more from Rick on the next page....]

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RICK'S HARD-DISC INFORMATION

HARD-DISC NEWS:
QUIKSTOR/SUPERSSET UPDATE
by

Associate Editor Rick Swenton

John Turley sent me a letter outlining how my patch to SASIX.COM didn't fix his problem with the Quikstor hard-disc software. His letter prompted me to do some more investigation into what's really happening.

For those unfamiliar with Quikstor hard-disc software, on booting your system the hard-disc boot track software will display a menu screen which shows available partitions, and allows you to select the one you want to boot from. The problem is, that when this screen is displayed, the operating system has not yet been loaded! The boot software has to make some assumptions about the running system, such as console port, baud rate, terminal type, and so on. This means that there's a restriction on what specific hardware configuration can run with the Quikstor software. Quikstor software does a test to see if the terminal and host computer's baud rates are matched. If they are not, it changes the host baud rate until it matches the terminal. The terminal must then send something back that the host interprets as "the baud rates are matched". [To verify this happens] I tried disconnecting the data line between terminal and host--the boot menu screen didn't appear; the terminal MUST signal the host in order for the screen to appear.

Quikstor is specified to run on H8 or H89 "standard" hardware--which means, "the way it came from the factory". No software vendor could possibly support all the potential variations; some limits had to be set. Only the H19 and H/Z-29 terminals are supported. I know I'd previously stated I'd had problems with the H29 terminal on the H8. But that was so long ago that I was all wet. Actually, I was able to bring up the H29, but as I discovered, there are so many pitfalls [with this terminal] that it's easy to draw the wrong conclusions. (Guess it's rather like proclaiming your latest program to be BUG FREE!)

There are many H19 terminal upgrade ROMs available with which it's functioning can be enhanced. Unfortunately, after most of these upgrades, the terminal no longer appears like a factory-standard device when Quikstor goes out and looks at it.

I have two H89 systems with Superset and Quikstor installed. I've patched SASIX which replaces bytes D3 EB at addresses 313 and 31F with zeros (NOPs). As John Turley [correctly] pointed out, this patch prevents Quikstor from changing the terminal's baud rate. On an H89 this isn't a problem because the MTR-90 ROM presets the console port to a predetermined state (9600 or 19200 baud). Both H89 systems display the boot-menu screen with SASIX patched [as stated

above]. The H8 is another story...

Often I wonder about me. It seems I never knew that my H8 was unable to display the Quikstor boot menu on an H19 terminal with Superset installed. I'd been autobooting the darned thing for years! As John Turley pointed out, unlike the MTR-90 ROM in the H89/90, an H8's PAM-37 ROM doesn't initialise the console port. In an H8, if you apply my patch to SASIX, the console port never gets initialised! (Remember, the operating system hasn't been loaded yet.)

The next thing I did was to copy a code fragment from the MTR-90 and patch it into the H8's PAM-37 ROM. This fragment is code which initialises the console port according to the value (9600 or 19200) set on the general-purpose port's dip switch. Now, after installing the updated PAM-37 ROM and using a patched SASIX, the H8 can now display the boot menu on an H19 with Superset installed. The H8 works with an H/Z-29 terminal as well.

Still in the envestigative mood, I unleashed my ADDS-2020 terminal. This terminal has a nice feature which can be used as a diagnostic tool. It can display ALL incoming characters--even unpriable ones such as control characters. I placed this terminal on the H19's output line and monitored what the H19 was sending back to the host which satisfied the host that it was OK to send the boot screen. It seems the H19 can send many combinations which satisfy the host computer. For example, I've seen "ESC [1 ; 1 R" as well as "ESC [20 ; 59 R". It was interesting.

Then I connected the ADDS terminal to the H8 to see if I could "fake" H8 into thinking that the ADDS was an H19. I was pleased to discover that all I had to do was type an "R" on the ADDS and the H8 would display the boot screen (even though it was "trashed" since the ADDS isn't an ANSI terminal). Remember, SASIX.COM is still patched to inhibit auto-baud rate detection.

Presently I'm waiting to hear from John about how the new PAM-37 worked out for him. I'm still at a loss as to why the patched SASIX didn't work on his H89.

About this auto-baud sensing stuff: It's a real pain in the neck! On the H8, I suppose it's possible that if your terminal and host baud rate don't match, it can make it easier on the user who doesn't know how to set [dip] switches. But on the H89, auto-baud sensing is actually a disadvantage. As Lee Hart has pointed out, if baud rates (switches) don't match on powerup, you'll never get the H: prompt. You can't boot anything until you get the H: prompt.

For those of you whom are contemplating purchase of Quikstor software, don't let this discussion frighten you away. I've been using it for years and never knew my modified H8

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couldn't bring up that one screen--which isn't needed except for exotic setups. You can still do 90% of the functions either through H8 switch settings or by H:-prompt command passing. A "factory-standard" H8/H19/H29 should work fine. (We're sometimes our own worst enemies!)

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OR SALE...  FOR SALE...  FOR SALE...  FOR SALE...  FOR SA
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One Z89A w/10meg 2-partition hard disc & control board; disc is LOADED w/software...\$175 firm!

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19008; phone 215-356-2849.

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ALB... FOR SALE... FOR SALE... FOR SALE... FOR SALE...

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==> EIGHT-BIT VENDOR DIRECTORY <==
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Misc. 8-bit hardware items, hardware/c
of '89/90s: write for catalogue, hel

SEBHC JOURNAL

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WRITING BASIC(ally)

CREATING MODULAR PROGRAMMES IN BASIC

Part One of a Continuing Series

by

Editorial Assistant, A Stapher

Probably every one of our readers has tried to write (or has written) a program in one of Heath's BASIC dialects, ET-3400(A) trainer-module Tiny BASIC, Cassette or HDOS "Benton Harbor" BASIC, HDOS or CP/M MBASIC. And if you're like most computer users, you probably just skimmed through the instruction manual, anxious to get started. By now you've learned how your "Grey Box" works, and it's high time you found out how write your own programs both economically and elegantly in BASIC!

"Hey!" someone asks, "Why should I learn how to write programs in BASIC?! I can buy almost anything I need!"

The answer to this is simple: Our machines, although considered primitive by peesee and clone owners, are quite capable of performing a multitude of the jobs now being run on the Big Buck\$ machines. What's lacking is newer software to make up for our machine's limited memory space by their being more tightly written MODULARly so as to exploit MBASIC's way of CHAINing program elements "on the fly" (more about this capability later).

We shall now present a brief description of One of The Serious Programmer's Finest Tools--The Outline. An outline can be as complicated as any legal document, or simply a list of things to do written in either ascending or descending order of importance. Put another way, you write down what you want a program to do, then describe major parts of how the program should proceed to carry out your desires. This is known as Program Planning--a most necessary first step.

Usually you're writing an application program with which you intend to solve a particular problem in your area of interest--statistics, business, word-processing, a game, or whatnot. In order to effectively compose and test your program you plan your sequence of activities carefully. Let's say you'd like to write a program that produces mortgage amortisation tables. Here's an example sequence:

- Determine information to be stored and retrieved
- Design displays and reports from the computer
- Outline input dialogue
- Design information storage system if required
- Produce overall program design
- Write BASIC program modules
- "Smoke-test" program modules with typical data
- Trial-run program on a "real" job, then modify the program as required (also known as "fine tuning")

Now, before you set down at the keyboard, remember that

our H/Z machines allow a maximum of 24 lines 80 character/-spaces (or columns) wide on the screen at a time. Deliberately work this limitation to your advantage by planning your program in modules (small segments) so that each program section tends to stand alone, and will perform a single given job. This design principle can later be used to easily incorporate sections with other stand-alone sections into an elegantly functioning whole. Or (if the program starts growing toward your computer memory's limit), into several small, dedicated stand-alone but chainable programs. The chaining technique can quite easily overcome our Grey Box's limits, because--unlike programmers working with Big Buck\$ machines--you can't let the program get bigger than the operating system and useable memory space!

Let's take a quick look at "top down" program design. Top down design implies a philosophical approach to problem solution rather than a rigorous use of technical tools. It requires that you think of your problem in its' most all-encompassing sense. Let's first lay out a rough box-shape sketch of the entire problem on a blank piece of paper. Print a title: "Entire Problem" in the middle of your box.

Now we'll subdivide on another blank piece of paper that "huge" problem into several major parts, usually from three to four. Let's assume you have three major parts, named from left to right, "Inputs", "Processes", and "Outputs".

Next, divide each major part down into more and more detail. Under "Inputs" (again from left to right), might be two boxes named "From Files" and "From User". Under "Processes" might be three boxes, "Sorts", "Searches", and "Calculations". And under "Outputs" you might have two boxes, one labelled "To Printer", and the other "To Screen".

If you've stuck with us thus far, you can see that what we have done closely resembles the kind of outline you'd create before writing an article or an essay. That is, first you describe the entire topic, then divide it into its' major parts, then subdivide each major part into its' minor parts.

You can use this "Top Down" outline approach in creating a BASIC program. We can assume that each major part will be calling subroutines (GOSUBs). This is a "planned delay" which lets you work on one or more specific routines without worrying too much about other parts of the program until later. When you have a number of independant subroutines which can work in stand-alone mode they can be thought of as skeletal portions of your entire program. This approach also is very helpful because it allows you to perfect each subroutine well before trying to debug the entire program.

In our next installment we'll take up "Structured Programming as Applied to Modular Programming". We hope that you'll continue with us because we'll be writing a program together!

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Rough sketch of
entire problem

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graph TD
    A[Entire Problem] --- B[Inputs]
    A --- C[Processes]
    A --- D[Outputs]
  
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graph TD
    Problem[Problem] --- Inputs[Inputs]
    Problem --- Processes[Processes]
    Problem --- Outputs[Outputs]
    Inputs --- FromFiles[From files]
    Inputs --- FromUser[From user]
    Processes --- Sorts[Sorts]
    Processes --- Searches[Searches]
    Searches --- Calculations[Calculations]
    Outputs --- ToPrinter[To Printer]
    Outputs --- ToScreen[To Screen]

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[To be continued in our next (January, 1991) edition]

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The JOURNAL's CATALOGUE PAGE

Discontinued ("Vintage") H/Z Eight-bit CP/M software in Original Factory-Sealed Packages. Warranties WILL BE HONORED by Heath. All "Demo" software runs EXACTLY AS WARRANTIED PACKAGES DO, but updates aren't available (usually won't matter).

NOTE:

Continuing Education (EC) packages are complete w/lectures on cassette & final (college-acceptable credits) examination.

Item	H/Z cat #	Description	Price
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SJ-XTRA CP/M-80 for WH47--reformatted to EITHER Hard or Soft Sector 5.25" discs, \$8 (Please Specify!).... \$19.95			
SJ-1	EC-1101	Programming in FORTRAN	* 39.95
SJ-2	173-57-1	MICROSOFT FORTRAN v3.4 (demo)	* 39.95
SJ-3	173-66-1	Programming in COBOL	* 29.95
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SJ-5	EC-1110	Programming in Microsoft BASIC	* 29.95
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SJ-7	HMS 817-1	CP/M MBASIC-80, hardsector "	* 39.95
SJ-8	173-56-1	MBASIC-80 (CP/M) demo w/manual	* 29.95
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SJ-24	173-70-1	DATASTAR (w/warranty)	10.95

1 - Prices include shipping inside continental U.S.A. only.

2 - We WILL NOT accept opened returns.

3 - All "Demo" software packages work EXACTLY as warrantied versions except manual pages are red over-stamped. (They're easy to read through a red cellophane overlay.)

4 - Some CP/M programs may not work on non-Heath machines, but usually can be patched with DDT (or equal) & run ok. ALL will run on H/Z-100 series machines on 8-bit side.

5 - On request we'll convert between hard- and soft-sector formats, between H/Z 5.25" and 8" formats (KAYPRO or Magnolia ss, sd 5.25" discs on special order) at \$5 each 5.25" target disc. Original distribution disc(s) will be included with converted discs. (Caveat: Some Heath Terminal escape codes aren't Kaypro 8-bit-machine compatible.)

Contact Gus Bakalis at D:KUG.DOC, 313-755-2060, or L Geisler at SEBHC JOURNAL, 313-662-0750 if you need more information. Note: Profits from any software sales made thru D:KUG.DOC go toward D:KUG.DOC's operating expenses.

NOTE: "*" means 10% off both packages if ordered as a pair w/matching course--example: MBASIC & Programming in MBASIC, COBOL & Programming in COBOL, etc.

Most CP/M-80 runs on H/Z100-series machines under CP/M-85 & 6

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HPCP#0H	40trk ss HARD-sector HDOS 2.0 "Prgrmr's CARE"..	\$ 3.66
WSKPS	WordStar H/Z19/89 Keypatch	=> DISCONTINUED <=
HTXTS	40trk ss soft-sector TeXT PRocessor disc.....	\$29.50
HTXTH	40trk ss TeXT PRocessor on 2-HARD-sector discs	\$30.95
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CTXTH	CP/M TeXT PRocessor on 2-HARD-sector ss discs..	\$30.95

NOTE: All above TeXT PRocessors come with ON-DISC MANUAL

Last published Version 4.1 for HDOS 2.0, 3.0 & CP/M-80.

=> When ordering Please:

1 - Pay ONLY by US Dollar Cheques or Money Orders.

2 - Allow about four weeks for single back-issues.

3 - Allow 5-30 days for discs, software & bound volumes.

4 - Use order blank on opposite page; list catalog number price and quantity of each item and mail with payment.

5 - Include THIS issue's mailing label with your order!

NOTE: Unless otherwise indicated, postage, "handling" and shipping is included in all above-listed prices.

==> UNCLASSIFIED AD SECTION <==

FOR SALE: Two Complete WORKING H8 setups including these discrete parts:

Item	Qty	Description
1	1 ea	H8 motherboard
2	1 ea	Trionyx H8 motherboard w/fans
3	1 ea	H8-37 Soft-sector disc controller board
4	1 ea	HA8-6 Z80 CPU board
5	3 ea	WH8-64k RAM boards
6	2 ea	H8-4 4-port serial I/O boards
7	1 ea	H17 Drive cabinet w/1 std 40trk & 2 80trk half-height drives
8	1 ea	H17 Drive cabinet w/3 80trk full-height drives
9	3 ea	H8-16 (16k) RAM boards
10	2 ea	H8-8 (8k) Static RAM boards
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