

FREE

TAKE ONE

CIE TRS-80TM Bulletin

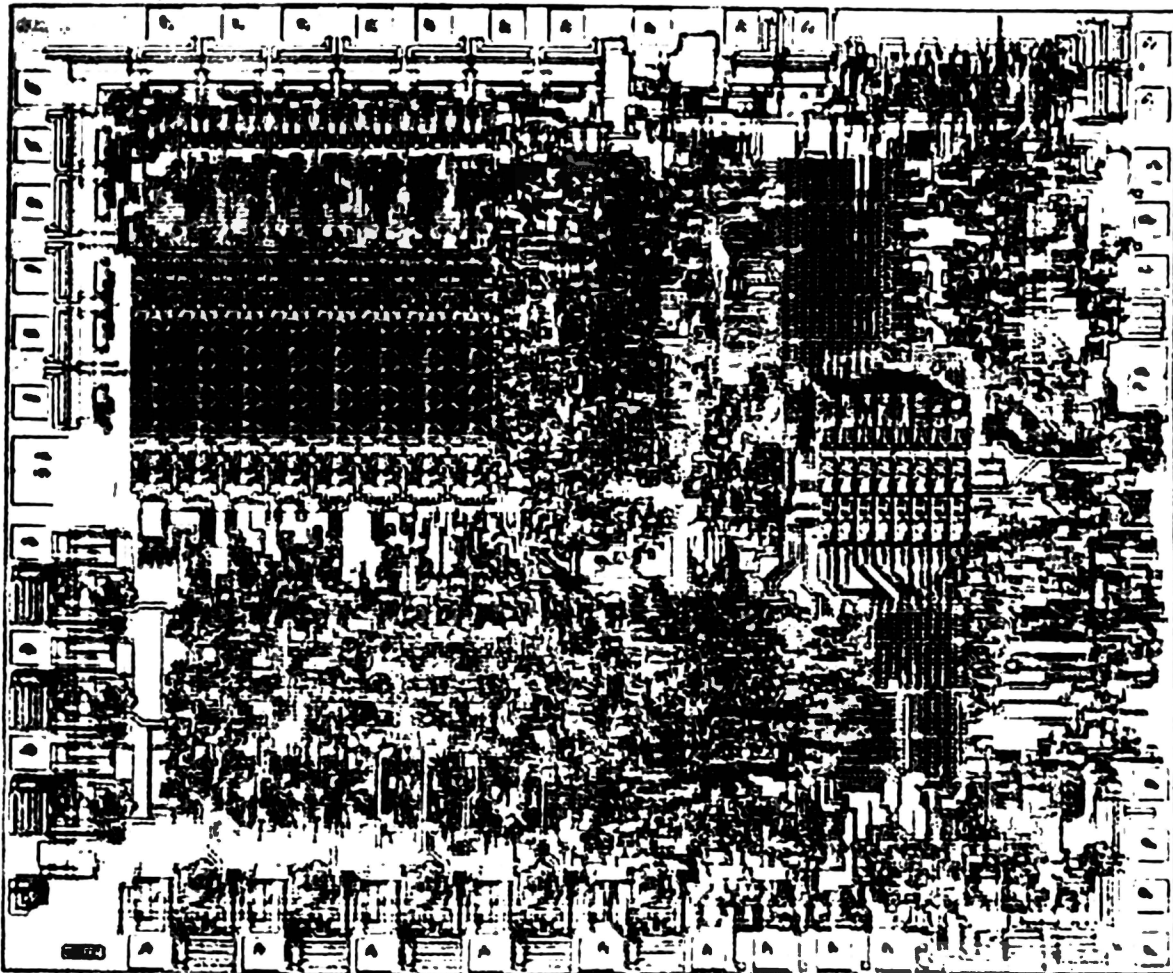
EDITORIAL CONTENT SUPPLIED BY TRS-80 COMPUTING

Vol. 1 No. 7

Bill McLaughlin, editor

July, 1979

TRS-80 trademark Tandy Corp., wholly independent of this publication.



MICROPROCESSOR—Here's a blowup of the 8080, which preceded and is a subset of the Z-80 used in TRS-80. Original "chip" is about a half-inch square. Full-color posters of the Z-80, 18" x 21", are available for \$4 postpaid (first class); and 8080 posters same size, in blue, are \$3. Add 75¢ for shipping unfolded, in tube. Available from GLOBAL, Box 304, Falls Church VA 22046. Dealer inquiries invited.

PEOPLE'S SOFTWARE Library Expands To 5 Tapes

TAPE 1 LEVEL I—Includes the following programs (24):
MORTGAGE CALCULATION—payments.
DOW-JONES Industrial forecast— projects average for major stocks with current inflation rate.
CASH FLOW—investment minus draw (quarterly) with inflation calculated.
INVENTORY AND CHANGE—keeps store inventory and instructs clerks how to make correct change, including sales tax.
INCOME TAX, California State.
JOURNAL/LEDGER (8K)—entries for checks, deposits, opening and closing accounts up to 650 entries.
LOAN AMORTIZATION—calculates repayment of small loan.
PERPETUAL CALENDAR.
BIO-RHYTHM
PAYROLL
DIET
SPEED READING
ROCK, SCISSORS, PAPER.
SEEK—challenging game using basic planar geometry.
STAR TREK III (8K).
RED BARON—graphic flight.
MINI-TREK—compact yet challenging.
STRATEGY—keep track of your armed forces, which are fighting enemy.
PILOT—above-average skill is needed to land this plane.
BATTLESHIP—search game uses coordinate geometry.

ON A SNOWY EVENING—graphic of Robert Frost's poem.
MATH PROBLEMS—teaches addition, subtraction, multiplication and division.
QUEEN—use your queen to put the king in checkmate, vs. TRS-80.
STAR TREK I—battle crafty klingdons for control of the galaxy.
NUMBER GUESSING.
WHEEL OF FORTUNE.
WORLD WAR II Bomber—trajectory exercise.

TAPE 1 LEVEL II—Includes all of above as well as the following 10 programs:
SPEED READING
TOUCH TYPING
SALES RECEIPT TALLY
DECISION MAKER
MAIL ADDRESSING
STRAIGHT-LINE and double declining depreciation,
REVOLVING CHARGE account
MASTERMIND
TIC-TAC-TOE
GRAND PRX
BINGO
STATE CAPITALS
ETCH SKETCH
HANGMAN.

TAPE 2, LEVEL II, fully documented in "Some Common Basic Programs" by Lon Poole & Mary Borchers (Osborne & Associates, \$9.50 postpaid via UPS, from CIE), programs

include:
 Investment, future value regular deposits; regular withdrawals, initial, minimum (for withdrawals), nominal interest, effective & earned interest; depreciation rate, amount depreciation; salvage value; discount commercial paper; loan principal, regular & last payment, remaining balance, term—loan; mortgage amortization; greatest common denominator; integer prime factors; polygon area; triangle parts; analysis, operations two vectors; radian/degree, degree/radian conversion; coordinate; coordinate conversion; coordinate, polar equation, functions plot; linear, curvilinear interpolation; Simpson's & trapezoidal rules, Gaussian quadrature integration; derivative.

Side 2: quadratic equation, polynomial (Newton) & half-interval-search roots; trig polynomial; simultaneous equations; linear programming; matrix addition, subtraction, scalar multiplication, multiplication, inversion; permutations & combinations; Mann-Whitney U test; mean, variance, standard deviation; geometric mean & deviation; binomial, Poisson, normal, Chi-square distribution; Chi-square, student's T-distribution test; F-distribution; linear correlation coefficient; linear, multiple-linear, Nth order, geometric, exponential regression; system reliability; future projections; Federal withholding taxes; tax depreciation schedule; check writer; recipe cost; map check; day of week; days between two dates; anglo to metric, alphabetize.

TAPE 3—PEOPLE'S PASCAL Program Development System, royalty software developed by John Alexander, based on the Kin-Man Chung/Herbert Yuen "A 'Tiny' Pascal Compiler" article in the September, October and November Byte.

AVAILABLE APPROXIMATELY AUGUST 15th, the system includes editor/compiler, interpreter, demonstration Pascal source and object programs, translator, Pascal library, and three run-time systems. People's Pascal runs on any 16K Level II TRS-80 system.

TAPE 4, Level I—Election returns, business percentage, math problems, Snoopy graphic, cash register, action on the enterprise, chase, commander-in-chief (2 programs; instructions, game), Christmas graphic, ups & downs of business, deep dark secrets (2 programs), air raid, cross index (2 programs), speech recording aid, inventory control, checkbook balance, sales receipt tally. AVAILABLE AUGUST 15th.

TAPE 5, Level II—Executive tension-breaker, lineprinter to screen or screen to lineprinter exchange utility program, election returns, business percentage, check balancing, car pool database, RAM memory test, mind bender, mortgage payments, spelling bee, common factor, diet planning II, Star Trek III, Star Wars, klindon capture, knights, federal income tax, chase, tachitscope, music ("Yesterday"), vacation planner. AVAILABLE AUGUST 15th.

People's Pascal: easy way to machine code

Basic is convenient, and self-documenting, but programs use a lot of memory, and run slowly. Machine language is devilishly difficult, and assembler isn't much easier.

If only we had a Basic compiler, we could take one of those sluggish programs, compile them, and have fast-running object programs of machine language.

John Alexander of Pipe Dream Software in Australia adapted for TRS-80 the "tiny" Pascal compiler detailed in the September, October and November Byte magazine. That series was by Kin-Man Chung and Herbert Yuen.

Pipe Dream was selling the Pascal development system for \$60. We've seen a flier indicating someone else has it for \$40. We have arranged, on a royalty basis, to distribute the Pipe Dream Pascal development system for \$15.

Documentation will be in the upcoming TRS-80 Computing 1:4 issue, and what was going to be the 1:4 issue will be in the 1:5 issue, both following rather close to each other, and the current 1:7 bulletin.

As the 1:7 Bulletin was going to press, People's software was at a standstill, with tape reproduction problems. We are attempting to secure two different suppliers, one in-house, another independent, and expect to get either or both these tape sources up momentarily.

CIRCLE NUMBER 88 ON INFORMATION FORM

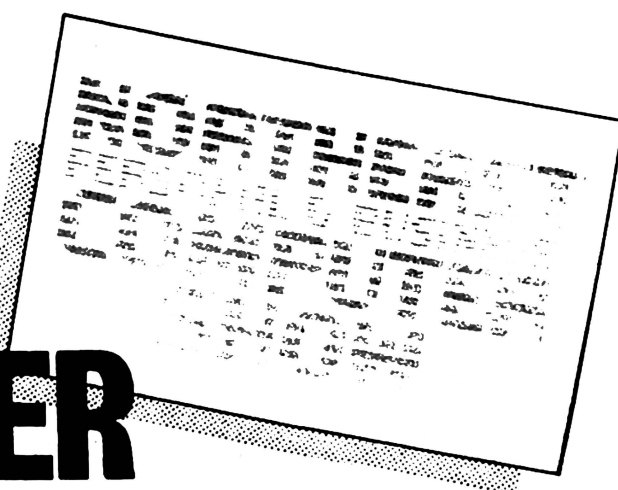
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Hynes Auditorium
Prudential Center



INTERESTED IN PERSONAL COMPUTERS?

This is the place for you! You'll meet and talk with hundreds of manufacturers, distributors and retailers... all showcasing their new 1980 Micro, Mini and Small Computer Systems.

You'll see them all... Radio Shack, Pet, RCA, Compucolor, Heathkit... you name it! All the major terminal and peripheral companies too, plus software developers magazine editors and book publishers. Yes, it'll be the largest showing of personal computer hardware, software and services ever assembled in the Northeast!

You'll be enthralled, entertained and educated. You'll see computer art, graphics and animation. You'll hear computer synthesized music, watch computerized amusements, play electronic and video games and attend scores of free tech talks and briefings given by internationally recognized speakers. And you may win a free computer given away as a door prize!

Don't miss the largest gathering of computers and computerists! No pre-registration necessary. Tickets available at the door. Adult Admission \$5.00.

INTERESTED IN BUSINESS SYSTEMS?

See all the small and medium-sized systems at one time, under one roof!

You'll see them all... the big (and small) names in computers, data and word processing equipment, peripherals and software. You'll attend dozens of free, easily-understood briefings on how computers can help you in your business or profession.

So if you're considering a computer or computer-related service... starting your own computer business or changing your job within the computer industry... or if you'd just like to learn more about computers as they relate to your personal life and to your business or profession, come to the show to see the *Computerized World of Tomorrow*... Today. And bring the entire family. It's a fun-filled educational experience. No pre-registration necessary. Tickets available at the door. Adult admission \$5.00.

Radio Shack DEALER

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CIRCLE 6 ON FREE INFORMATION FORM

Percom disk runs double-density

Percom Data Co. has expanded its TFD line of add-on mini-disk systems for TRS-80 to include a dual-drive unit boasting double-density storage. Designated the TFD-1000, the unit provides 800K-bytes of on-line storage.

Two systems (four drives) may be used with a TRS-80 to provide 1.6 megabytes on-line.

A TFD-1000 is supplied complete with an interconnecting cable (which accommodates either one or two units), a Peripheral Adapter Module (PAM) PC card, Percom's MicroDOS operating system, and support documentation.

The PAM card replaces the RS-232-C card in the TRS-80 expansion interface and includes RS-232-C circuitry itself so that serial interfacing capability is retained.

The MicroDOS operating system, which replaces TRSDOS, was developed especially for business and professional applications. It provides full random access capability, is faster than TRSDOS, and requires less than 7K of RAM.

MicroDOS is supplied on a system diskette that includes Basic program examples and a menu of the programs. The menu is activated on powerup or reset.

The TFD-1000, complete with cable, operating system, PAM card and documentation costs \$2495.

Orders may be placed by dialing Percom's toll free number, (800) 527-1592, and may be paid by check or money order, COD, or charged to MC or Visa accounts. Texas residents must add 5% sales tax. Dealer inquiries are invited, circle #7. Percom is at 211 N. Kirby, Garland TX 75042.

Percom drive order exceeds \$1.8 million

Percom Data Company has placed a disk order with Siemens Corp. for more than \$1.8 for mini-floppy drives.

Percom President Harold Mauch said that Mike Krunic, Siemens' nat'l sales manager, indicated that the order was one of the largest received since Siemens' purchase of Perkin-Elmer's Wangco division floppy disk product line earlier this year.

Percom uses the Siemens-manufactured units in its TFD models which are sold as TRS-80 microcomputer add-on storage devices, and on its 6800/6809-LFD line.

ADVERTISE IN TRS-80 BULLETIN. If you are trying to reach the TRS-80 market,

Tarzac has software directory

TARZAC/Computer Products has a business software directory listing over 100 sources of disk and cassette applications programming for the business, scientific and professional TRS-80 computer user.

Available applications programming ranges from word processors and text editors to job costing and AMVAY sales and accounting programs, to total integrated accounting systems including payroll, general ledger, payables and receivables, billing and mailing list processing.

Also available are numerous special purpose scientific and engineering programs, and record programs for dentists and doctors.

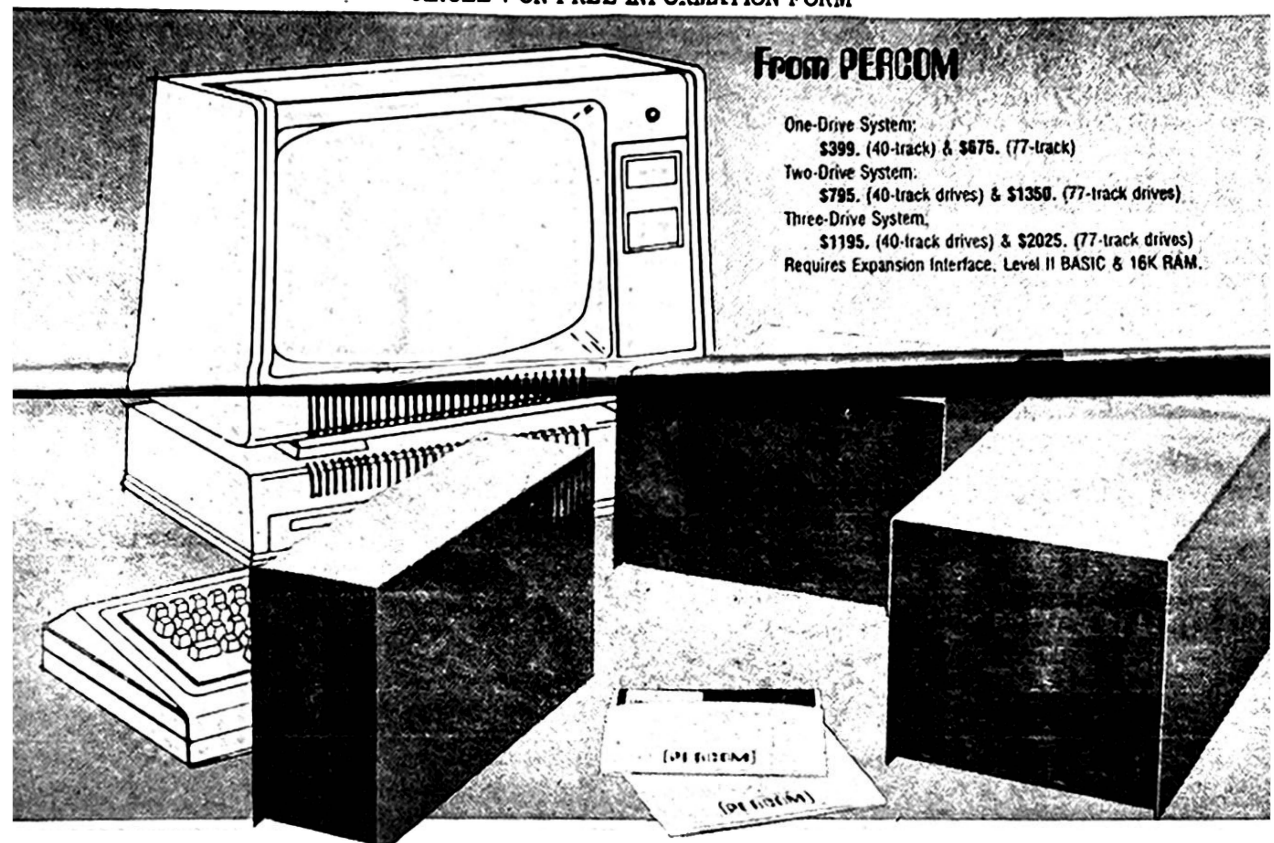
Also included in the directory are sources for CP/M and associated applications programming now available for the TRS-80.

The directory is available for \$5 from TARZAC/Computer Products, Box 10203, Norfolk VA 23513, (804) 853-2304, or circle #56.



DOUBLE DENSITY—Dual-drive double-density Percom floppy, up to 1.6 megabytes on-line.

CIRCLE 7 ON FREE INFORMATION FORM



From PERCOM

- One-Drive System:
\$399. (40-track) & \$675. (77-track)
- Two-Drive System:
\$795. (40-track drives) & \$1350. (77-track drives)
- Three-Drive System:
\$1195. (40-track drives) & \$2025. (77-track drives)

Requires Expansion Interface, Level II BASIC & 16K RAM.

Low Cost Add-On Storage for Your TRS-80*. In the Size You Want.

When you're ready for add-on disk storage, we're ready for you. Ready with six mini-disk storage systems — 102K bytes to 591K bytes of additional on-line storage for your TRS-80*.

- Choose either 40-track TFD-100™ drives or 77-track TFD-200™ drives.
- One-, two- and three-drive systems immediately available.
- Systems include Percom PATCH PAK #1™, on disk, at no extra charge. PATCH PAK #1™ de-glitches and upgrades TRSDOS* for 40- and 77-track operation.
- TFD-100™ drives accommodate "flippy disks." Store 205K bytes per mini-disk.
- Low prices. A single-drive TFD-100™ costs just \$399. Price includes PATCH PAK #1™ disk.
- Enclosures are finished in system-compatible "Tandy-silver" enamel.

Whether you need a single, 40-track TFD-100™ add-on or a three-drive add-on with 77-track TFD-200™s, you get more data storage for less money from Percom.

Our TFD-100™ drive, for example, lets you store 102.4K bytes of data on one side of a disk — compared to 80K bytes on a TRS-80* mini-disk drive — and 102.4K bytes on the other side, too. Something you can't do with a TRS-80* drive. That's almost 205K bytes per mini-disk.

And the TFD-200™ drives provide 197K bytes of on-line storage per drive

— 197K, 394K and 591K bytes for one-, two and three-drive systems.

PATCH PAK #1™, our upgrade program for your TRSDOS*, not only extends TRSDOS* to accommodate 40- and 77-track drives, it enhances TRSDOS* in other ways as well. PATCH PAK #1™ is supplied with each drive system at no additional charge.

The reason you get more for less from Percom is simple. Peripherals are not a sideline at Percom. Selling disk systems and other peripherals is our main business — the reason you get more engineering, more reliability and more back up support for less money.

In the Product Development Queue... a printer interface for using your TRS-80* with any serial printer, and... the Electric Crayon™ to map your computer memory onto your color TV screen — for games, animated shows, business displays, graphs, etc. Coming PDQ!

™ TFD-100, TFD-200, PATCH PAK and Electric Crayon are trademarks of PERCOM DATA COMPANY.

*TRS-80 and TRSDOS are trademarks of Tandy Corporation and Radio Shack which have no relationship to PERCOM DATA COMPANY.

PERCOM

PERCOM DATA COMPANY, INC.
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Orders may be paid by check, money order, or charged to Visa or MasterCard accounts. Texas residents must add 5% sales tax.

Percom "peripherals for personal computing"

Racet Computes offers new utilities

RACET Computes announces three new software products the company feels provide a significant extension to the capabilities of the TRS-80 micro-computer.

COMPROC extends the DOS-AUTO command to perform multiple steps either at power-up or as a single user-system command.

Running an application program is now made simple and automatic — even for the inexperienced user.

The script executed by COMPROC consists of a sequence of commands or data, such as VERIFY, DIR, BASIC, LOAD, RUN, etc.).

This script is easily created, changed and saved using the AUTO/EDIT/SAVE facilities of Basic.

Additional enhanced features available include: -optional self-relocating key-debounce routine, -user-specified fields may be inserted automatically in the user's script when COMPROC is executed.

-COMPROC pauses to allow the user to enter data at specified locations at execution time.

-COMPROC is automatically relocated so as not to conflict with existing Basic or machine-language programs and runs in any size TRS-80 system.

RACET says COMPROC is more powerful and easier to use than any command processor found on even large computer systems.

GEN'L ROUTINE FACILITY

Generalized Subroutine Facility (GSF) is a powerful system for incorporating multiple machine language programs in a unified structure that provides easy access from Basic.

GSF includes 18 machine language subroutines that greatly enhance and extend capabilities of the TRS-80.

Two machine-language in-core sort subroutines are provided that allow sorting of 1000-element arrays in 9 seconds!

The sort subroutines handle multiple mixed arrays or elements of character string arrays using multiple ascending or descending sort keys.

Other subroutines provided include: read and write array to tape, compress and uncompress data, move arrays in memory, duplicate memory, fast horizontal and vertical lines, and display screen controls including screen scrolling and inverse graphic video.

'DOS' SORT/MERGE

The Disk Operating System Sort/Merge (DOSORT) provides a complete sort/merge capability for the multi-diskette file.

DOSORT utilizes a control program written in Basic with very efficient machine language routines for the time-critical tasks of sorting and data comparisons.

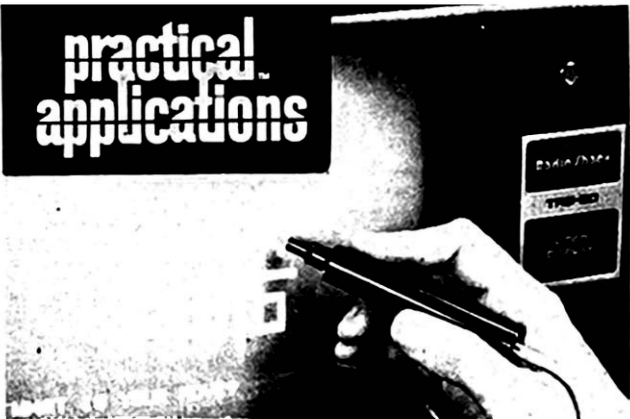
An extended GSF is included which is used as an interface between the Basic and machine-language programs.

The resulting system is both a versatile and effective sort/merge package for the TRS-80 system.

DOSORT is totally compatible with standard TRS-80 sequential files and will work with a minimum 32K two-disk system. Order 32 or 48K version of DOSORT, at \$34.95.

GSF is available in 16, 32 or 48K versions at \$24.95. Order number is TS25E.

COMPROC, which runs on any size system, is RACET Computes is at 702 Palmdale, Orange CA 92665 (714) 637-5016. Circle #58.



LIGHT-PEN FOR YOUR TRS-80

PLUGS RIGHT IN! Exclusive design includes two sample programs and complete documentation so you can write your own programs in Basic. Long life from standard 9-volt battery. **A bargain at only \$24.95!**

PRACTICAL APPLICATIONS™ (415) 573-8217
Post Office Box 4139, Foster City, CA 94404

☐ Please send me _____ TRS-80 Light Pens (\$24.95 each enclosed. Calif. residents add tax).
☐ Send your catalogs.

Name _____

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City _____ State _____ Zip _____

TRS-80 is a trademark of Tandy Corp.

CIE879

Expand your TRS-80. Save \$100.

Meet the Vista V80 Mini Disk System. The perfect way to upgrade your TRS-80* system. Inexpensively. (Our \$395.00 price is about \$100.00 less than the manufacturer's equivalent.) Here's how it can help you.

23% more storage capacity. Useable storage is increased from 55,000 to 65,000 bytes on drive one.

8 times faster. While electronically equal to the TRS-80 Mini-Disk system, track-to-track access is 5ms versus 40ms for the TRS-80.

Better warranty. The V80 carries a 120 day warranty — longer than any comparable unit warranty available.

The Vista V80 Mini Disk System comes complete with Minifloppy disk drive, power supply, regulator board and case. And it's ready to run — simply take it out of the box, plug it in and you're ready to go. Dealer inquiries invited.

Vista

1320 East St. Andrews Place, Suite I
Santa Ana, California 92705
(714) 558-8813

At Vista, we mean business.

*TRS-80 ©Tandy Corp

CIRCLE 10 ON FREE INFORMATION FORM

Micro Architect offers finance set

Micro Architect has announced availability of Finance-I, a personal finance package for the TRS-80 system.

FIN-I consists of two programs: BANK-I (a check balancing system) and STOCK-I (a stock security information system).

BANK-I is different from other similar programs in that: it lets the user save and restore the data base to and from a data cassette. It produces reports, allows the user to modify the data base.

A transaction code is used to describe the various events, such as tax expense, medical expense, deposit, etc. A subtotal for each expense or deposit is given at the end of the report.

STOCK-I lets you keep track of your stock holdings and your net worth. After you have entered the day's price of a stock, STOCK gives you a summary of that stock, such as the original cost, market value, profit with/without dividends, annual rate of return and holding period.

After you have entered all the current prices for your stocks, two reports will be produced to see how you are doing in the stock market. The equity of your house is calculated by asking the original cost, down payment, number of years owned and the assumed appreciation rate.

Since both programs are written in Basic, disk users can easily copy them to that medium. Write Micro Architect, 96 Dothan St., Arlington MA 02174, or circle #15.

CIRCLE 3 ON FREE INFORMATION FORM

practical applications **Mini Floppies**
HUNDREDS
only \$2.50 ea.

**FOR ANY TRS-80 SYSTEM!
35 TRACK, 40 TRACK, 77 TRACK—
ANY DRIVE USED WITH A TRS-80
CAN USE OUR MINI-FLOPPIES!**

**MEMOREX MARKETTE "MINIS" FOR ANY
TRS-80 DISK SYSTEM**

10 for \$3.00 ea. / 50 for \$2.75 ea. / 100 for \$2.50 ea.
SPECIFY TRS-80 AND DRIVE NAME.

CALL TOLL-FREE 24 HRS. TO ORDER



**BANK CARDS
OR C.O.D.**

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CALIFORNIA 800-852-7777
FOR MORE INFO 415-573-8217
**PRACTICAL APPLICATIONS
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FOSTER CITY, CALIF. 94404**

Some things are just naturally right.

tiny
C

tiny-c is a structured programming language designed to allow you to focus attention on the problem you want to solve — rather than the language you're using to solve it. With tiny-c you can expand your horizons far beyond the limits of BASIC. The tiny-c Owner's Manual (including 8080 and PDP-11 source code) is **\$40.** Machine readable copies of the interpreter are available on selected media.

To order your tiny-c Owner's Manual call or write:
tiny c associates, P.O. Box 269, Holmdel, N.J. 07733. (201) 671-2296.

tiny
C

You'll quickly discover tiny-c is naturally right for your language needs.

New Jersey residents include 5% sales tax. Mass and Alaska charge separate. Includes charge plate. Payment only cash.

CIRCLE 1 ON FREE INFORMATION FORM

Mail list program stores 2000 per disk

The Peripheral People has announced a new data-base record keeping and mail list program designed to handle large files.

It was originally written for the National Rifle Association to maintain membership activity and proficiency information at various regional offices, using disk-based TRS-80 systems.

The program was 'fine tuned' over a three-month period to meet the demanding task of maintaining NRA records.

Now available to the public, Mailroom Plus is one of the most powerful data-base record management systems ever developed for the TRS-80.

Mailroom Plus is useful in any application requiring the management of records having to do with people. This includes clubs, churches, bulletin mailings, patient checkup reminders, plus an infinite number of business applications.

All data is stored sequentially as a single string, then manipulated and sorted in memory.

For display or printout, the string is disassembled to recover the original data inputs.

This technique provides all the features of a random access file but with the sorting speed and data compacting of a sequential file.

Record size can be any length, from one to 255 characters long and there is no need to specify field dimensions.

Thus there is no waste of disk space and files can be sorted in an absolute minimum of time.

SORTING SPEED

Mailroom Plus will sort 500 records by category number, zip code or last name in less than 45 minutes.

A small file with 50 names or so will sort in less than 30 seconds.

A standard TRS-80 diskette (with DOS) will hold approximately 2000 records.

One of the most spectacular features of Mailroom Plus is the ability to selectively search and display or print records.

The print option will output either in tabular form or as mailing labels.

Any part of the record can be used as a search code.

Thus, it is possible to display or print specific states or zip codes, customer names, cities or category codes.

DISPLAYS DUPLICATES

After a zip-code sort, all duplicates are displayed for operator deletion.

Large files can be selectively separated and saved as smaller files by state or any portion of the zip code. Small files can be merged to create one large file.

In business applications, the category code can be used to maintain records of purchases, back-orders, customer systems or any other code established by the user.

The program also includes a category sort code which can be an employee, member, social security number or any alphanumeric code devised by the user.

In a business environment, the usefulness is limited only by the operator's imagination.

The program is written in Basic, to permit program modification, if desired. For example, a module (supplied) can be merged to print labels four-across rather than the single labels supplied by Radio Shack.

Mailroom Plus requires a minimum of 32K memory and one or more disk drives.

The program is supplied, along with extensive documentation, on diskette, for \$49.95 postage paid. For more information, write The Peripheral People, Box 524, Mercer Island WA 98040, or circle number 57.

Copying software hurts computing

Unauthorized copying of software is of major concern to all who write and market software.

Pirated software reduces the return to those who write and market the best programs and ultimately deprives YOU of further works from your favorite authors.

The development of software is a long and tedious process that in many cases requires hundreds if not thousands of man-hours of effort.

From designing the program to printing the documentation and actually shipping the finished product may demand the skills of dozens of people.

If it proves to be unprofitable to expend the effort for development, the authors, vendors, and support personnel will divert their efforts to profitable pursuits and you are left holding the 'bag', so to speak, because a computer is not much good without programs.

If you had to develop every single line of code to make it work, chances are you would never get around to writing those neat applications that you need for your purposes; you would still be writing a number crunching routine for your operating system.

So when you see or have software that you think is good, recommend its purchase to others and you will benefit from the demand that is created in the marketplace. This will provide the authors of software with the kind of profits that will attract other good authors away from the big outfits such as IBM, CDC, and others, because they, like you, want to 'do their own thing'.

--From Radex-10 (Random Access Data Executive) manual, by Ron Lucia.

CIRCLE 20 ON FREE INFORMATION FORM

TRS-80 OWNERS LISTEN TO THIS...
There's a CT-1
SPEECH
SYNTHESIZER
for you.

The famous Computalker CT-1 Speech Synthesizer that produces highly-intelligible natural sounding speech far superior to any other synthesizer available on the market today can now be installed on your TRS-80.

Complete self-contained, the Model CT-1T comes with its own chassis and power supply, on-board audio amplifier (2 Watts), CSR1 software, and inter-connect cable. The CT-1T comes with complete documentation and is available on either 5 1/4 inch diskette or cassette. TRS-80 Level II and 16K memory required, 32K recommended.

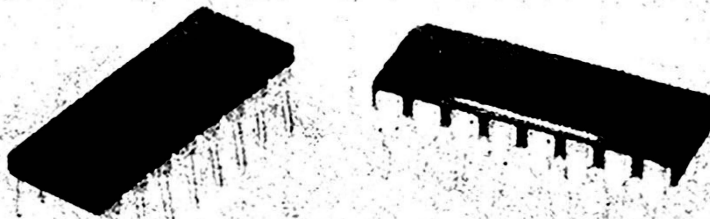
**SAVE \$100
SPECIAL INTRODUCTORY PRICE
\$495**
Suggested retail price is \$595
Calif. residents add 6% sales tax.

COMPUTALKER CONSULTANTS
1730 21st St., Suite A
Santa Monica, CA 90404
(213) 828-6546

CIRCLE 9 ON FREE INFORMATION FORM

TRUE or FALSE . . .

All TRS-80 Memory Expansion Kits are the Same.



Dealer Inquiries
Invited

FALSE! All memory expansion kits are not the same. So, read on if you are about to expand your microcomputer system. We're UHF Associates and we offer a *complete* 16K memory kit for \$95.* We know others offer similar storage for about the same price. Unlike others, UHF gives you *speed and storage*. After all, what's storage if your system has to wait in line to get to it. We'll tell you what it is — *an inefficient bottleneck*. Pure and simple. UHF gives you both memory expansion and a *fast* 200 nano-second minimum access time.

Your UHF 16K kit will come to you as eight new 4116 RAMS (fully guaranteed for one year), pre-programmed dip shunts and all necessary data for installation. All you need is a screwdriver and about 10 minutes. Or, if you'd prefer, UHF will install it for no added cost. Either way, call, write or use the order blank today. UHF offers immediate delivery and all orders are sent post paid.

When it comes to memory expansion kits, go with UHF and don't be stuck with an upgrade that falls short.

* you can buy up to 48K for the expansion interface and save even more.



90 Transport Avenue #4
Rohnert Park, CA 94928 (707) 584-7844



Order Form

- | | |
|---|-------|
| <input type="checkbox"/> 16K Kit with shunts (for computer) | \$ 95 |
| <input type="checkbox"/> 16K Kit (for expansion interface) | \$ 95 |
| <input type="checkbox"/> 32K Kit (for expansion interface) | \$180 |
| <input type="checkbox"/> 48K Kit (for computer and expansion interface) | \$265 |

Name (print) _____

Address _____

City _____ State _____ Zip _____

Charge my ☐ Visa ☐ Master Charge, code# _____

Card Number _____

Expiration Date _____

Signature _____

Make check or money order payable to: **UHF Associates**

Mail to: 90 Transport Ave. #4, Rohnert Park, CA 94928

California residents please add appropriate sales tax

C

Radex-10 solves business problems

(Data management systems show promise of being the tool that will allow personal computers to be easily used for a wide variety of useful tasks. We asked the Radex-10 author to write about his system — Bill.)

By RON LUCIA

Radex-10 (Random Access Data Executive) is a powerful database manager especially written for the TRS-80. It will read any file it creates that you can describe. Its code may be used in any of your programs. It is compact and you don't have to write one byte of code to use its full power.

Here's an application problem. Imagine you need to create a random access file with 30 fields; some are alphanumeric, some integer, some single and double precision. You need several reports generated from the file and you will need to have six different programs access the file. In addition, you will have to write routines to update the file, add-delete-change-and-display records. Then you must write the error checking routines, debug, test and document and have it ready in 30 days!

Here is the rest of the problem you have to solve...you need to keep over 2000 records and each disk will only support 600 with the file layout that you need!

With Radex-10, you can have the job done in 30 minutes-not 30 days. Disk spanning is automatic. Reports and mailing labels are built-in as regular features of the report generator

EASY TASK

The program is menu-driven with generous prompting in plain English. No computer jargon! Describe the file to Radex using English. You will describe your reports to the Radex report generator and you'll be finished in less than 30 minutes — ready to start using your files and reports!

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Uses are unlimited. Build a database of databases. Each one can be unique, and Radex will read every single file you create.

Use it for business, scientific, home, hobby, accounting, inventory, mail lists — you name it. It will never take up more than 6K of RAM for any program module, so you will have plenty of room for your own programs that you wish to interface with Radex.

Radex-10 documentation is written with you in mind. It is complete and leads you through the creation of files and reports as well as file maintenance.

DATA COMMONALITY

Business and scientific applications programs have great need for a database.

Many programs require that several programs be able to access the data; since each programs' data is structured differently, each would normally require 'hard coded' program material for each file to read and write to each file.

Radex-10 solves this problem by providing 'common code' that is able to read the file parameters and then handle the fielding, naming, input, output and various other tasks on its own.

To use Radex-10, you should be familiar with disk operation. It is recommended that you read and be familiar with 'TRSDOS & Disk Basic Reference Manual', published by Radio Shack for the TRS-80 disk operating system.

It will not be necessary to know all there is to know about the disk system commands, since Radex-10 will manage your files for you. However, the specifications for file names, extensions, passwords, etc., will be of value. The Level II manual will also provide additional explanation as to 'datatype' (integer, single precision, etc.).

If you plan to use Radex-10 as a 'standalone' program, the program is almost self-explanatory, even though the code and internal operation is complex. In use, you will find it is simple and 'transparent'; in other words, you will not be aware of the various complexities of the program because it is managing itself.

ORGANIZATION IMPORTANCE

Most people confuse 'data' with 'information'. For instance, the numbers 18, 32, 36, by themselves, are meaningless. They are just numbers. In other words, 'raw data'. To be meaningful, they must be organized into some scheme that can be interpreted.

If we rearrange them, 36-18-32, they might suggest something familiar to male chauvinists. See, just by putting the numbers into a familiar pattern, they cause an image to jump into our mind (chauvinist!).

We can also give them meaning by giving them labels and by always putting the proper number beneath its assigned label:

quantity on hand 36
quantity backordered 18
minimum order quantity 32

By giving each number a label, the number suddenly acquired a meaning. Now we have information. Before, all we had was data. With the organization of data, we can see information that is valuable to us.

By organizing the data in the computer, we have a powerful tool at our disposal. If the program will always retrieve the data in the correct format, always 'write' the data to the correct place, always get the right group of data and always keep it organized, no matter how the data was stored — then we have a Radex-10 manager.

WHY THE IJG?

The International Jewelry Guild, Inc., has a funny name to be in the computer software business, but it was no accident.

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Delivery immediate on MS-80 disk drives

Matchless Systems has introduced the new MS-80
minidisk system, which can save TRS-80 owners
more than \$100.

For an introductory period, Matchless is offer-
ing a special price of \$395. The system includes
a minifloppy disk drive, power supply, cable, regu-
lator board and compact case.

According to Brian Black of Matchless, "In ad-
dition to providing cost savings, our new system
increases usable storage capacity 23 percent, from
55,000 to 67,800 bytes on the first drive. That's
because we offer an additional five tracks (40,
rather than 35).

"The MS-80 is also a faster drive. We have a
track-to-track access of 5ms versus 40ms for the
TRS-80 disk.

"And we're completely compatible with TRSDOS.
You can put a TRS-80 diskette in our drive, and
it works.

Matchless stresses that purchase of the MS-80
does not void the TRS-80 warranty. And the MS-80
itself has a 90-day warranty.

Matchless says users can mix and match the
MS-80 with TRS-80 drives in any sequence or
position. Most important, Matchless claims off-the-
shelf availability.

Mike Conner, also of Matchless, adds that there
is no additional charge for a cable. "It's part of
the system and is included in the price. Thus the
unit is self-contained, comes completely assembled
and thoroughly tested, including exhaustive incom-
ing tests. All you need do is take it out of the box,
plug it in and you're ready to run."

For literature or ordering information, contact
Mike Conner, Matchless Systems, dept. P1, 18444
S. Broadway, Gardena CA 90248, call (213) 327-
1010, or circle #54.

RADEX-10 PROBLEMS, Cont. :

Jewelers are, for the most part, small businesses.
In addition to specific programs that deal with
diamond prices, gold prices, and the like, they
need accounts receivable, payroll, general ledgers
and all the other programs that go with running a
business.

We looked at a lot of software packages we
thought might be able to sell, but they were lacking
in one important area—poor file structure.

Files are the cornerstone of every business
program. To solve that problem, we decided to
tackle the files problem first.

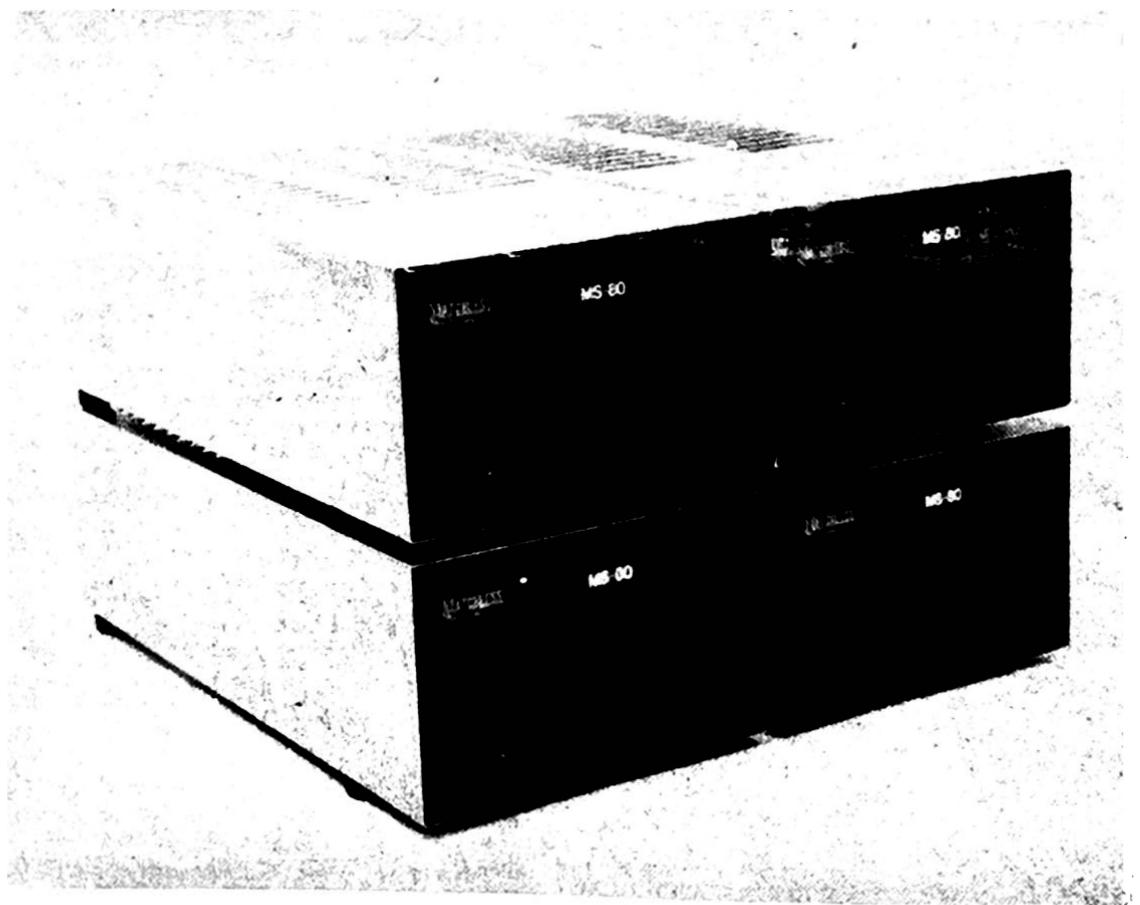
It also became obvious that if we could solve
our problem, we could solve it for others too.

Radex-10 was the outcome, and as a result of
that, here we are in the software business.

Radex-10, our current product, is the primary
standalone program module. Its code is very com-
pact. No sub-module requires more than 6K of
computer memory. You can create your files, add
data, remove data, write reports, make labels and
do other tasks without writing a single byte of code!

In the future, additions (we call them modules)
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the coming year. These will either enhance its
operation, provide additional utility or do another
job involving the data management process. These
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linker, super search, create read/write indexes,
tirety, it cannot be executed. All programs and
RPG report emulator, labels output, and Electric
Pencil linker.

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- Q. Can I mix your drives with Radio Shack drives?
A. Yes! You can mix and match in any sequence or
position.
- Q. Can I read a diskette made on a Radio Shack
drive, on your drive or vice-versa?
A. Yes! Our drives are completely compatible with
the TRS-80 DOS.

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Nepenthe programs has system aids

A TRS-80 program developer's file management system, dubbed FM80, has been announced by Nepenthe Programs.

According to Nepenthe, this is a complete system for the management, storage, and retrieval of data files used in disk or tape applications. FM80 performs three main functions:

1) Creation and maintenance of a dictionary of all data elements used in a system. This dictionary contains the number assigned to the data element by the programmer, the title of the data element, the format (integer, single-or-double precision, or string), and size, as well as a full description of the element. This dictionary may be printed in any sequence at the discretion of the user.

2) Creation and retention of record layouts for files used by the system being developed. These record layouts may be printed for programmer reference at any time and will contain the attributes of the file as well as the attributes of each data element used in the file as taken from the dictionary of data elements. Optimum file organization is an intrinsic function of FM80 and record layouts may be prepared for any of the following storage types:

- tape sequential, fixed and variable-length records,
- disk sequential, fixed & variable-length records,*
- disk random, fixed and variable-length records.*

*FM80 will automatically establish blocking factors.

3) The creation of actual input/output (I/O) instructions for the selected record layout. The instructions are generated in disk Basic, at the line numbers specified by the user, in the form of

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subroutines. A dictionary of I/O subroutines is provided for reference during mainline programming.

FM80 is equally applicable to the major developer who maintains firm control over data elements in his 'corporate' data base or the individual who simply wants to avoid the tedium and treachery of coding I/O routines, according to Will Hagenbuch, author of Nepenthe Programs.

FM80 requires a 32K system with a minimum of one disk drive and a printer, and is self-contained on a single diskette which sell for \$49.95 complete with operational documentation.

Nepenthe Programs is at 3014 Biggs ct., National City CA 92050, or circle number 76.

Cluster/One ties TRS-80 to central storage

Nestar Systems, Inc., a newly-formed firm in California's fertile Silicon Valley, has introduced a low-cost distributed processing system which uses TRS-80.

Called Cluster/One, it provides most of the facilities of large timesharing systems to those using small microprocessors, but with the advantage that the terminals are small computer systems, each with its own CPU and memory.

With Cluster/One, up to 15 individual personal computers (or, optionally, to 30) together in a local network with common access to programs and databases located on a central disk facility.

Besides TRS-80, Apple II and Commodore PET systems are currently available. 'An installation can even mix different manufacturer's processors together on the same Cluster/One system if they wish', said Dr. H. J. Saal, Nestar president.

We've designed the system so we can support all the popular systems we expect to see on the market in the next few years. Users won't be locked into one processor type as prices continue to drop and more powerful processors become available,' he continued.

MEGABYTE CAPABILITY

The central Cluster/One unit contains two full-sized floppy disks, each capable of holding over 100 Basic programs. The 630 K-byte on-line storage can be doubled to 1.2 megabytes by use of double-sided disks. Later this year storage will be further augmented by a multi-megabyte Winchester-technology hard disk.

Each individual work station ('drone') connects to the central system ('queen') via a high-speed parallel data bus with an effective transfer rate of 80 K-bits/sec. Data to be transmitted over this bus are grouped into packets, using the same techniques developed for large communications networks. Block error codes are used to detect transient error, and the system automatically queues and retransmits data packets as required.

Disk commands are easy to learn and use, since they are similar to the commands normally issued for tape cassette functions on the TRS-80. Recent field tests showed that even with 15 simultaneous users, Cluster/One system response times were typically under two seconds for a program-load request, which is about 100 times faster than loading from cassette.

FUTURE PLANS

Nestar plans to provide upcoming releases of its Queen operating system software which incorporate additional data-base support and inter-user communications under program control.

'This will enable users to run applications such as multi-user management or business simulations, with each user having access to only the information he is entitled to know,' said Dr. Saal.

Although the system was designed with educational customers in mind, Cluster/One will also be usable in a variety of business applications, ranging from data entry to on-line data inquiry.

The central Cluster/One unit currently retails for \$4500, which includes two floppy disk drives, buffer memory, disk-and-bus-controller electronics, and all operating system software.

One microcomputer must be dedicated as a central console, and is available for \$795. An additional charge is made for each drone station connected to the system.

Interface electronics, including resident ROM software for each station, is priced at \$150 for each TRS-80 or Apple II station, and \$100 per Commodore PET. The basic system price includes a complete set of utilities for initializing and formatting diskettes (which are written in an IBM-compatible format) and programs for performing regular full or incremental backups of disk storage.

COST NOW QUARTERED

'A few years ago, one definition of a single-user minicomputer was a system costing under \$10,000.

'Nestar Systems can now offer a system complete with four drone stations, dual floppy disk drives and dedicated intelligent video terminals for less than that,' Dr. Saal said. 'The capabilities of large time-sharing systems can be made available to the small system user, but at prices that are consistent with the hundreds of thousands of low-cost microprocessor systems being sold

DISASSEMBLER: Read, write, and copy system tapes. Display and modify memory contents. Disassemble Basic, Disk Basic and system tapes into 280 Nemonics. Search for strings in memory. Much More! Includes 32 pages of documentation and other information. For 16K Level II \$19.95

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Cluster/One is currently operational and in production. Delivery of a fully-tested system is typically 60 days after receipt of order.

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HIGHLIGHTS

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Medical Info program for '80

Ultidata medical information program from TARZAC/Computer Products uses random disk files to hold patient information and is currently being used by two hospitals and several dentists and doctors.

The program stores patient name, home and office telephone numbers, social security number, next appointment date and time, last appointment date (for recall purposes), insurance data, medical history data, home address (street, city, state, zip).

The program recalls records via record number or by patient name using a search routine.

The name search is automatic, as the program calculates where the end of the file is, and searches until the correct name is found or until the end of the file is reached.

The program displays a daily appointment directory for any date, again using a search routine to find all records having a next-appointment date matching the desired date for which a directory is requested.

Twenty-four hour time is used, and the daily appointment directory displays the appointments sorted into time order, and displays the patient name, the home and office telephone numbers.

A printer output is included in the program so that a printed appointment directory is also available if desired. The program uses a full sector per record, so that a data diskette can store 350 records, and a DOS diskette in a one-drive system can store 195 records.

A complete name search of a full file (350 records) takes only two minutes.

The program is priced at \$65 on cassette, or \$69.95 on a diskette, with immediate availability, from: TARZAC/Computer Products, Box 10203, Norfolk VA 23513, or circle #56.

Connects TRS-80s to 2 megabytes

(Something similar to the Nestar Idea, but less sophisticated, is the IFC-8400 Floppy Disk Controller from Cybernetic Programming Systems. This device allows multiple TRS-80s to be connected to up to 2-megabytes of storage. To use it with more than one TRS-80, the user must prevent more than one system at a time from requesting data. Here are the details, Ed.)

The Cybernetic Programming Systems' IFC-8400 diskette controller will control up to 8 single-sided single-density flexible-disk drives, either standard 8" or minifloppy.

The controller will interface to any computer or stand-alone terminal over an RS-232C or 20ma current-loop serial channel, or through parallel 8-bit TTL I/O channels.

The integral file-based operating system provides a completely stand-alone capability. The user can create, delete, or list files, etc., with only a dumb terminal or a Teletype.

The on-board diskette operating system is operational from the moment the power is applied. It is no longer necessary to boot-up a system by loading it from a diskette into user memory. Not only does this save time and user memory space, it also removes the need to record the code on a diskette, leaving more diskette space available for the user's data files.

The same operating-system approach makes it possible for the IFC-8400 to support a dumb terminal or Teletype without the need for a host computer system.

IFC 8400 FEATURES

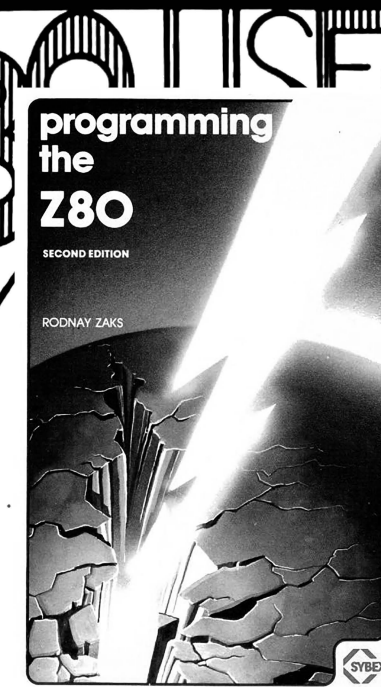
- File-based structure. The primary commands given to the IFC-8400 controller are file-based commands; i.e., the user specifies operations on files rather than on tracks and sectors.
- Transparent track and sector. The diskette house-keeping operations which are normally performed by the user (including track-seek, verify, formatting, sector read/write, CRC error checking routines, etc.) are performed automatically by the IFC 8400.
- Self-contained directory. The IFC-8400 controller completely maintains a diskette directory, including space allocation, file linking, sector usage, and addition and deletion of file names to and from the directory. The user thinks only in terms of creating new files, appending to existing files, or deleting old files.
- ASCII high-level commands. All IFC-8400 commands consist of primitive ASCII character strings. This allows operation of the diskette system with almost any device containing an ASCII keyboard and serial or parallel interface. ASCII error messages alert the user to illegal operations or undefined commands.
- Standard IBM format. The controller format is based upon the IBM 3740 format with modified gap structure.
- Standard SBC board size. Although the IFC-8400 will interface to any microprocessor or terminal with serial or parallel I/O, the board size has been chosen to fit the industry-standard SBC-80 multibus configuration.
- Simple software interface. Only simple ASCII-based commands and ASCII or binary data streams flow across the controller/user interface bus. The user need only send appropriate ASCII command and ASCII filename, and then send or receive the actual data file. Adding complete diskette operation to an existing system can be done in days.

IFC 8400 SPECIFICATIONS

- Commands: initialize disk, create file, delete file, rename file, add to file, list file, list directory, append fileA to fileB
- Physical: 12" x 6.75", weight 13 oz.
- Electrical: 8085 CPU, 4K x 8 PROM supplied, similar spare socket, 1K x 8 RAM, requires max. 1.96 amps 5V, .18 amps 12V, .051 amps -5V, .045V -12.

User should specify intended disk drive to facilitate shipping card with correct software in PROM.

Price is \$795, from Cybernetic Programming Systems, Inc., 175 Jefferson dr., Menlo Park CA 94025, Circle #85.



programming the Z80
SECOND EDITION
RODNEY ZAKS

Making your TRS-80 work for you! This assembly language programming book features addressing, I/O and addressing techniques, Z80 instruction set and more! Exercises in text check your progress at each step. Rodney Zaks, Ref. C280, pp 330 **\$11.95**

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By Phone: (415) 848-8233. Visa, MasterCard, American Express.
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Tax in California add 1%.

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2020 Milvia Street
Berkeley, CA 94704

CIRCLE 46 ON FREE INFORMATION FORM

CIRCLE 5 ON FREE INFORMATION FORM

TRS-80 SOFTWARE

NEW! SORT-IID In memory sort for DOS BASIC system, 32K min.

same as SORT-II with addition of sequential disk I/O * line printer output * on diskette w/doc. * \$29.95

SORT-IIDU Tape to upgrade SORT-II users to SORT-IID \$15.95

SORT-IX In-memory alphanumeric sort. 16K Level II BASIC * Handles KB, Tape, and/or Video I/O * Sorts on up to 5 fields * Ascending or descending seq. Handles variable length records * On tape w/documentation \$19.95.

BLACKJACK SIMULATOR - 4K Level I or 16K Level II BASIC program allows you with a min. knowledge of BASIC to write simple routines to test or develop your "system" to beat BJ. Simulator plays thousands of hands of BJ and keeps W/L statistics. Package includes statistical summary program to analyze data. On tape w/documentation \$19.95.

CIRCLE 33 ON FREE INFORMATION FORM

Northgate/MICROWARE

BOX 6153.

SYRACUSE, N.Y. 13217

Crunch 14 compacts programs

Digital Applications Research has developed a software tool that allows distribution of more compact Basic programs.

With Crunch 14, the programmer develops his program as usual, but includes as many REM statements and 'pretty print' conventions as he would like. He uses as many or few Basic statements per line number as his style dictates. The programmer writes his code free of RAM restrictions.

The programmer then enters, tests, debugs as usual, then runs Crunch 14.

Crunch 14 produces a logically-equivalent copy of the program, but without REM statements, unnecessary blanks, tabs and line feeds. Lines are combined to save four bytes per combined line where logically permissible.

The output is used as working code and the original code is saved for future use.

Crunch 14 output code is virtually unreadable because of compacting. This is attractive to those who dislike having others reading, copying or modifying proprietary programs.

Digital Applications Research is looking for someone to market Crunch 14 for TRS-80. The product would sell for \$50 a copy, and licenses are available for \$300, with the program distributed on 8" floppy, running under CPM. The firm is at 2032 Rustic rd., Dayton OH 45405, (513) 274-5580.

Shack to add 100 sales centers

Radio Shack plans to add 100 "computer sales departments" to existing stores, beginning July 1.

The program will provide selected stores throughout the U.S. with additional personnel and display equipment.

"This means that while the addition of regular TRS-80 Computer Centers will continue, we can get a large number of sub-centers in place in very short order," Shack President Louis Kornfeld explained.

"Our computer business, particularly with the addition of the Model II, really demands that we provide this additional service and capability through certain Radio Shack stores already in place," he continued.

Improve TRS-80 performance with new DOS+

Enjoy the wizardry of your TRS-80 to its fullest! Maximize and expand all of its magical capabilities with the new DOS+. Just look at the capabilities you can evoke.

Modifications, corrections, and enhancements to Radio Shack's TRS DOS 2.1.

- A Basic REFERENCE command for variables and numbers.
- A super-fast machine language RENUM program executable under BASIC.
- A built in keyboard-debounce routine.
- A print screen option under DOS or BASIC to your line printer. Simply press JKL keys.
- New copy commands for backup, allows you to copy from drive to drive keeping the same filespec.
- Execution of DOS commands while in BASIC.
- New BASIC scrolling and invocation commands and more.
- Apparat's own SUPERZAP, a Hex dump utility to examine or modify disk or memory locations.
- Modified EDITOR ASSEMBLER with Disk I/O and new cross reference feature.
- A super-fast machine language DISASSEMBLER program.
- A LOAD MODULE for transferring machine tapes to disk.
- Faster disk access.
- Level I ROM relocated in Level II RAM.
- The capability of storing and retrieving Level I programs on Disk.
- An improved DISKDUMP program.
- A DIRCHECK program to test a directory & list/display the contents in alphabetical order with extensions.

You don't have to pull a rabbit out of a hat... Send \$99 for the Apparat/MTI New DOS+ (on diskette). See all the magic unfold before your eyes.

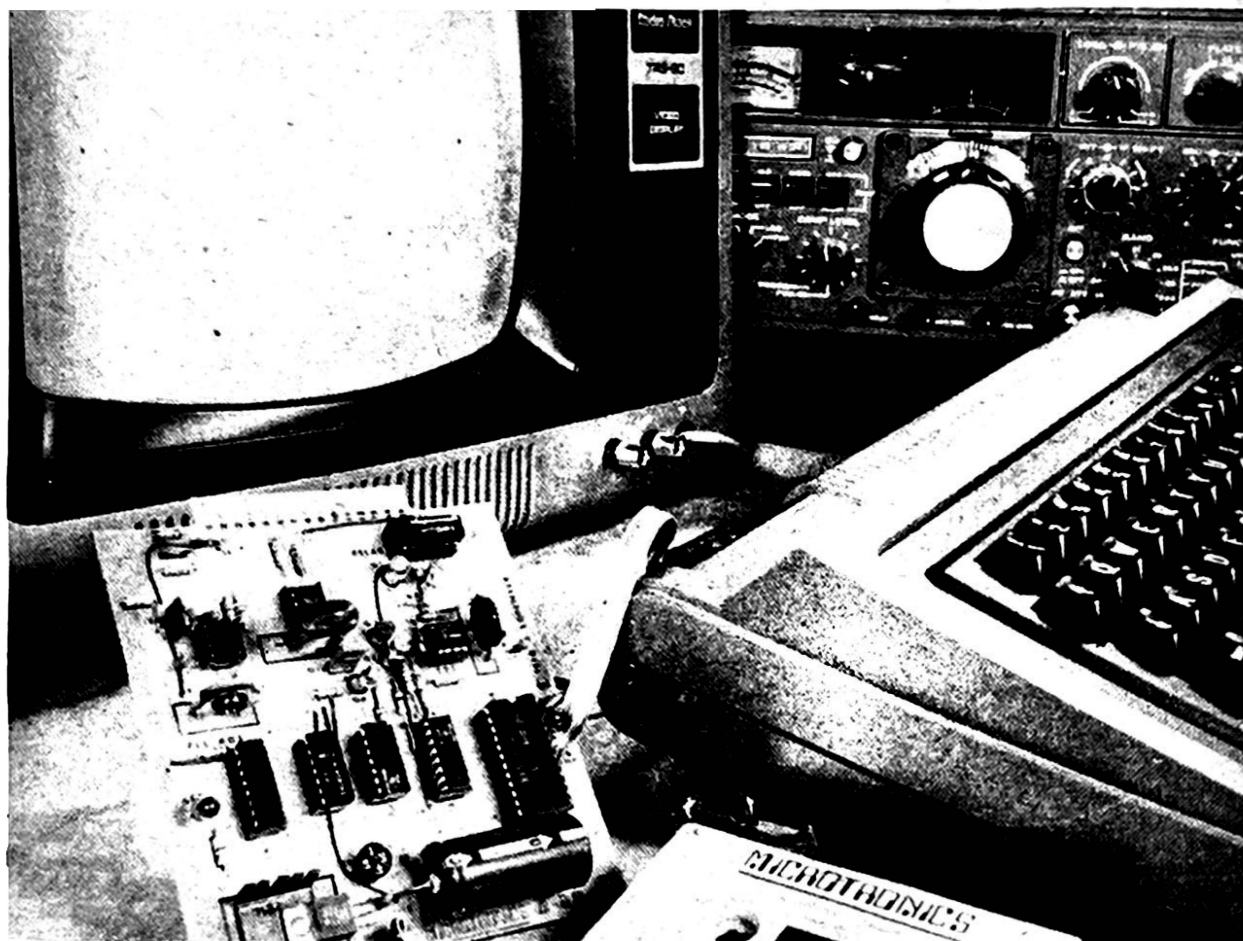
INTRODUCTORY SPECIAL

NEW DOS+ and the very Best of Apparat's disk utility programs \$99.00 (a \$250.00 value).

To order your diskette of tricks, write or call one of our dealers.

Thorpe Data Services, 24145 Vanowen St., Canoga Park, CA 91307, 213-703-6900
Apparat Inc., 6000 E. Evans Ave., Bldg 2, Denver, CO 80222, 303-758-7275
Microcomputer Technology Inc., 2080 S. Grand Ave., Santa Ana, CA 92705
714-979-9923
LJG, 569 N. Mountain, Suite B, Uplands, CA 91786, 714-982-7829
AMS, 13771 University, Westminster, CA 92683, 714-893-2311
CPU Shop, 39 Pleasant Street, Charlestown, MA 02129, 617-242-3350





HAM INTERFACE—Macrotronics M-80 reads and keys Morse code and RTTY, teaches Morse.

CIRCLE 31 ON FREE INFORMATION FORM

BRAND NEW HIGH SPEED PRINTER FOR YOUR TRS-80

110 characters per second Bidirectional printing
Prints a 8 1/2" x 11" page
in less than 60 seconds!!

\$650
REG. \$1,200.00

GUARANTEED:
To be in good working order
and in perfect condition at
time of delivery

SERVICE MANUAL

Contains over 100 pages with over 40 drawings & charts
Complete mechanical & electrical description of printer
Includes parts list, schematics & maintenance procedures
Detailed description of all errors & mechanical parts
Price \$40.00

SPECIAL INTERFACE BOARD

Plug printer directly into TRS-80 expansion interface port
No other hardware or software necessary. Just
plug-in and run. Assembled & tested. Price \$100.00

KIT & SCHEMATIC For Special interface board

Contains all parts to build your special interface
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305 595 2100

CIRCLE 11 ON FREE INFORMATION FORM

Macrotronics has ham interface

Macrotronics, of Keyes (CA) sells its M-80 Morse code and RTTY system for the TRS-80. The M-80 system components include both hardware and software.

Hardware consists of one printed circuit board which connects to both the ham rig and the TRS-80 expansion port (edge connector of keyboard or EXPANSION UNIT).

No modifications are required to either the radio equipment or the TRS-80. Everything plugs into existing connectors.

The M-80 board includes a side-tone oscillator which connects to speaker or headphones, thus making it ideal for teaching Morse code to large groups or to just one.

With receiver audio attached, the TRS-80 will begin decoding either CW or RTTY.

Attached to the CW key jack of a transmitter and the TRS-80 becomes a message-memory keyboard keyer. Attached to either FSK or AFSK, RTTY is transmitted (note: AFSK unit not included).

Software is supplied on cassette, and disk is available. The program is written in Level II Basic, with machine language subprograms, and requires 16K RAM.

399 WPM MORSE!

Morse code is continuously adjustable from one to 399 wpm in any of three modes: receive, send, and code practice.

In the receive mode, a CW signal will be automatically decoded and the resulting text will appear on the video monitor. Changes in the sending station's speed of plus/minus-10 wpm are automatically compensated for.

In the send mode, the system acts as a keyboard keyer with software selectable weighting ratios. The keyboard is buffered, which allows typing ahead. A provision for up to ten programmable message memories (2550 characters total) makes contesting or traffic handling a pleasure.

Depressing the Clear key transfers rapidly between receive and send modes, and with a VOX system provides complete control of the transmitter/receiver from the keyboard.

In the code-practice mode, the computer will continuously generate random characters of five letter word groups (selectable). The speed may be changed at any time by typing in the desired speed in WPM.

With keyer attached, the M-80 will decode locally-originated messages — great for training correct code sending.

In the RTTY receive mode, the mark and space tones will be decoded and the resulting text displayed on the video monitor. Narrow or wide shift at keyboard-selectable speeds of 60, 66, 75 and 100 wpm are accommodated on both HF and VHF.

The ten message memories are also available on RTTY, making 'brag tapes', pix, etc., possible with a single key.

Automatic shift, unshift, line feed, unshift-on-space, as well as CW ID are all included.

Five separate keying circuits (two relay contacts and three transistors) allow maximum flexibility in interfacing FSK, AFSK, and TTY equipment.

The M-80 system is \$129 assembled/tested, or \$99 in kit form, postpaid via regular UPS or parcel post. There is extra charge for air delivery, and California residents add appropriate sales tax. Macrotronics is at Box 747, Keyes CA 95323, phone (209)637-2888, or circle #64.



SOUND EFFECTS AND MUSIC FOR YOUR HOME COMPUTER

SOUNDWARE adds a whole new dimension to your computer. Games and programs come to life with laser sounds, bird calls, bounces, clicks, sirens, music notes, tunes, and whatever else your imagination dreams up.

SOUNDWARE is a complete system. It includes a speaker/amplifier unit with volume control, earphone jack, and connectors. It boasts excellent tone quality yet is small and convenient to use. Add batteries, plug it in, and play. One year warranty.

The **INTRO** to **SOUNDWARE** programs include "Demo" and "Sound Composer" and provide all the tools for programming you need to make sound. You get:

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directions to easily create your own sounds and tunes

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Works with TRS-80 LV II / Disk or any RS-232 port. Use with games and hundreds of other applications.
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STOP YOUR MICROWELDING BLUES . . . An instant and permanent fix the size of an ice cube.
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CIRCLE 49 ON FREE INFORMATION FORM

Web has Tshort to ease keying

Remember Level I shorthand, how quickly and easily you could write Basic code?

Now, Web Associates has made available TSHORT, a Level II Basic shorthand which gives you single-keystroke (with shift) entry, with 100 per cent accuracy, for 32 difficult-to-type, long and/or repetitive commands.

TSHORT, its makers claim, saves up to 86 per cent of programmer's time, and eliminates the programmer's biggest frustration, syntax errors. Typed lines and listings are in normal spelled-out format, i.e., there is no code to interpret (not like Level II).

It features a trademarked Kustom key, changeable anytime, for user-defined function up to 64 characters of instruction, as well as a self-executing "GO TO 10" function (line 10 may contain "RUN").

TSHORT includes the most popular and difficult Level II Basic commands such as "RIGHT\$(", "LEFT\$((", "INPUT", "LPRINT", "CLOAD", "PRINT USING", "GOSUB", etc.

TSHORT comes on cassette — one side for Level II and the other for disk.

To make TSHORT easy to use, a set of pressure-sensitive decals (white letters on clear) come with each cassette. These are easily and permanently placed on the front surface of each key, and readily identify each shorthand key function.

TSHORT loads in low memory, thereby not interfering with Basic, DOS or user machine-language routines.

TSHORT retails for \$9.95 and may be purchased from Web Associates, Box 60T, Monrovia CA 91016, (714) 559-6249. Californians add tax; charge cards honored. For information circle #49



TSHORT—Eases keyboarding.

Nepenthe Programs has system aids

Nepenthe Programs has three software products to help the TRS-80 programmer.

POPT, for Program Optimization, casts out all extraneous blank spaces (except in enquoted strings), eliminates unnecessary remarks, and concentrates instructions.

PVAR, for Program Variables, is a development and documentation tool. It will find and display all variable names used in the program, along with all line numbers on which that variable name appears.

PVAR performs extraction of variable names in accordance with conventional programming syntax. Fancy or tricky syntax could defeat PVAR.

PUTL, for Program Utility, is a debugging and development tool, which performs the following: - locates and displays all transfer (GOTO, GOSUB, THEN, ELSE) line numbers. Line numbers having no corresponding line number in the program are annotated.

- change any string of characters to any other string of characters.
- locate all occurrences of a specified string of characters.
- change disk unit assignments for all occurrences of specified files.

All of the Nepenthe programs require 32K disk systems, and provide optional display to either video or printer. They are written in disk Basic and shipped on disk, for which there is a \$5 charge. In addition, POPT is \$15, PVAR \$20, and PUTL \$15. Postage is prepaid; CA residents add tax.

Nepenthe Programs is at 3014 Biggs ct., National City CA 92050. Circle 76 for information.

Free assembler with weller book

A free TRS-80 cassette tape containing the object programs for editor/assembler and debugging monitor is now available exclusively from Bits Inc., with the purchase of Walter J. Weller's comprehensive text, 'Practical Microcomputer Programming: the Z-80'.

The book covers assembly-level programming for Z-80-based microcomputers such as the TRS-80.

The first 16 chapters cover Z-80 programming comprehensively, from binary operations to interrupt handling.

Included are chapters on moving data, logical and arithmetic operations, use of the stack, communications with the terminal, floating-point arithmetic, and graphic output.

All programming techniques are illustrated with formal, tested examples.

The last part of the book is software; containing the editor/assembler and debug in printed form. This software is available free, on TRS-80 cassette, by sending in the coupons supplied with the book.

Order from Bits, Inc., Box 428, Peterborough NH 03458, or call in MC or Visa orders to (800) 258-5477 (in NH, 924-3355). Price is \$29.95 plus 75¢ postage/handling (\$1 foreign). Circle #80.

Has H-14 printer

Howard Dempsey of Fresno CA has interfaced the Heath H-14 printer, and wishes to hear from others who have done the same.

He found that pins 4 and 5 on the plug need to be switched (reversed), and the plug was of the wrong gender, which he changed.

When he called, his printer was down with RS232C interface problems. His address is 1743 West Vartehlan, Fresno CA 93711.

CIRCLE 44 ON FREE INFORMATION

JADE SPECIALS FOR THE TRS-80

* SOFTWARE *

THE BASIC TOOLKIT FOR TRS-80 by TBS, Inc.

A collection of truly useful utility programs. These machine language programs will do the following: Search a basic program and print out a screen of printer, an alphabetized listing of the variables used in the program and the line numbers in which they are found; Search and print to screen or printer, a listing of all GOTO's and GOSUB's and the line numbers in which they appear; Restore basic programs that have been accidentally lost (after typing NEW, etc.); Will check for bad memory in 15 seconds; WILL MERGE PROGRAMS ON A CASSETTE BASED SYSTEM; Will search memory for all occurrences of a specific byte and list the locations where it appeared. This program can be accessed at any time while you are programming by hitting SHIFT/BREAK. The Basic Toolkit is the answer to your programming problems.

Requires 16K Level II
SFR-51350300T \$19.80

MACHINE LANGUAGE UTILITY PACKAGE-1

by Disco-Tech
(Screen Handler). MLUP-1 is a versatile screen-handling package, with routines which permit inserting and deleting characters from the screen; scrolling up; scrolling down; a protected field input routine, which prevents many common input errors; and a keyboard-handling routine which eliminates key-bounce and provides options for auto-repeat and for ignoring the BREAK key.
SFR-52651001T \$24.95

MACHINE LANGUAGE UTILITY PACKAGE-2

by Disco-Tech
(Line Printer Handler). Contains an extremely flexible line printer handler, including commands for top-of-form; setting lines per page and automatic paging; and the option of a tractor-feed or friction-feed mode. MLUP-2 also contains the keyboard handler described in MLUP-1, with a keyboard command which will execute a top-of-form.
SFR-52651002T \$24.95

MACHINE LANGUAGE UTILITY PACKAGE-3

by Disco Tech
(Editing Package). A line-renumbering program which can move and/or renumber blocks of code. MLUP-3 can renumber a program, keeping existing increments between line numbers or resequencing them. It also provides a condense function which removes all remarks and spaces from a BASIC program.
SFR-52651003T \$24.95

THE ELECTRIC PENCIL by Shryer Software
The time-tested word processing software package now adapted for TRS-80 owners (level II).

ON CASSETTE
SFR-15100080T \$99.95

ON 5 1/4 INCH DISK
SFR-15100081M \$149.95

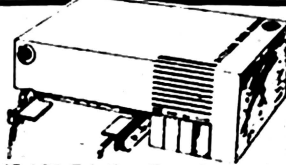
The Easy Way to Add 16K

JADE's memory expansion kit contains everything you need to add 16K of memory to either your keyboard or expansion interface in 15 minutes. Kit includes memory chips, DIP programming device, protective anti-static material, and concise, easy to follow instructions. JADE unconditionally backs this kit with a 90 day warranty on all parts.



Price: \$82.00

INTEGRAL DATA SYSTEMS



IP-125 Integral Data System IP-125 Friction Feed Printer
• 96 upper & lower case ASCII character set
• Enhanced character control
• Serial RS232C interface, std. wiring, Parallel TTL optional
• 80 column line, 256 byte multiline buffer

PRM-33125, 30 lbs \$799

IP-225 Integral Data System IP-225 Tractor Feed Printer
• All standard features of IP-125
• Tractor feed paper drive
• Forms Control Option (P1250)

PRM-33225, 30 lbs \$949

TRS-80 Interface and Cable \$49.00

Vista Mini-Disk

\$395.00



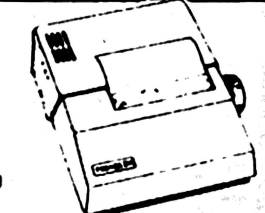
Interface Cable: \$24.95

Requires 16K RAM, Level II Basic, Expansion Interface

25% MORE STORAGE CAPACITY.
Increases your usable storage capacity 25% from 55,000 to 67,800 bytes on drive one.
FASTER DRIVE—Electronically equal to the TRS-80 Mini-Disk System, but up to 8 times faster (track to track access in 5ms for the V80 versus 40ms for TRS-80).
HERE'S WHAT YOU GET: Minifloppy Disk Drive/ Power Supply/ Regulator Board/ Compact Case.
DOUBLE DENSITY FOR DOUBLE STORAGE—The V80 will work with the Vista double density expansion unit when available.

The Trendcom 100 Intelligent Printer

- 40 characters per second rate
- Low cost thermal paper
- 96 character set
- Microprocessor controlled
- Bidirectional look-ahead printing
- Quiet operation
- No external power supplies
- Only two driven parts
- High reliability
- Clear 5 x 7 characters
- Attractive metal and plastic case



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All prices subject to change without notice

* SOFTWARE *

CP/M FOR TRS-80 by FMG Corporation

At last! The "standard" Disk Operating System for Microprocessors is now available for the TRS-80. Digital Research's CP/M Disk Operating System has been adapted by FMG Corporation to work with Radio Shack's TRS-80, and you can now purchase it from JADE.

This Implementation of CP/M contains the usual CP/M commands, such as: DIR, ERA, TYPE, SAVE, REN, SYSGEN, STAT, PIP, ASM, LOAD, DDT, and SUBMIT.

For those not familiar with CP/M, the set of 6 CP/M manuals is available for only \$25.00.
SFR-52770080M \$150.00
CP/M Manuals (set of 6) \$25.00
SFC-52501007D

RSM-15 By Small Systems Software

A Monitor with a Built-In Disassembler. All of RSM-1 plus a 22nd command to display memory in Zilog symbolic code (A Z80 Disassembler)! Computes all relative addresses and displays both object codes and mnemonics. Runs in 4K.
SFR-55301020T \$23.95

MICROCHESS By Small Systems Software

Play Chess Against Your TRS-80. Play chess at 3 levels of difficulty. Plays an aggressive game and is not easily beaten. Great fun to play, and is a tireless opponent for practicing checkmates, learning openings, and for sharpening playing skills. Set up the board any way you wish, switch sides with the computer, or make the computer play itself! Written by Peter Jennings. MICROCHESS runs in 4K.
SFR-35301040T \$19.95

AIR-RAID By Small Systems Software

A Real-Time TRS-80 Shooting Gallery. Air Raid is an arcade type game that takes full advantage of the TRS-80 machine language capabilities. Large and small airplanes fly across the screen at different altitudes. A ground based missile launcher is pointed and fired from the keyboard. Aircraft explode dramatically when hit, sometimes destroying other nearby planes! Score is tallied for each hit or miss, and the highest score is saved to be challenged by other players. Air Raid will provide hours of fun for you, and is a super demonstration program. Runs in 4K.
SFR-35301060T \$14.95

FORMATTED SCREEN INPUT ROUTINE

by Disco Tech

This utility program provides "big system" features for the TRS-80. It sets up a screen of input fields. The user can input to and change fields at random; and it provides a comprehensive error-checking function.
SFR-52651004T \$24.95

Realty expense analysis program

REAP, a Realty Expense Analysis Program, is designed to provide the property owner or manager with complete expense information for each building in payment-by-payment and summary format, including tax-ready totals for IRS filing.

The building-payee report displays expenses for any building, for all or selected payees. A year's payment record including total yearly expense, average monthly expense and total number of payments can all be displayed on-screen at once for any regular paid account. Duplicate or missed payments are easily checked.

The utility-summary report displays yearly, year-to-date, or monthly average utility expenses for each building under the categories: electric, gas, water, trash. This enables the user to make quick building-to-building comparisons.

The tax-totals report displays totals for each building under the categories: utilities, insurance, repairs and property tax. This should make it easier to cope with April 15th!

Special accounts may easily be set up to track auto, general office management, advertising, telephone or any other type expense.

Complete data inputting, editing, and sorting capabilities all with extensive error recovery, provide easy data file maintenance. Expense data may be added to the file and the latest reports run at any convenient time interval.

REAP is available on cassette, with complete documentation for the TRS-80 Level II, and uses

CIRCLE 13 ON FREE INFORMATION FORM

DON'T TALK DOWN TO YOUR TRS-80!!!

At last you can easily take full advantage of Level II's full capabilities with the aid of our new **POCKET-REFERENCE** guide!

POCKET-REFERENCE helps you find the correct code or format in seconds! A **MUST** for all Level II users, **POCKET-REFERENCE** is an easy to read guide, fan-folded to fit neatly in your shirt pocket — where it's available when you need it! Makes it easy to find any obscure fact, code or format!

POCKET-REFERENCE will save you hours of valuable time! You will quickly find:

- ERROR CODES
- EDIT MODE SUB COMMANDS
- CONTROL CODES

...plus **HUNDREDS** of procedures and time saving hints!

Don't waste another minute! Send for your **POCKET-REFERENCE** guide today!

For each **POCKET-REFERENCE** guide please send \$1.95 + 35¢ postage and handling (\$2.30) to:

**Tom Brooks - P.O. Box 3054
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(California Residents please add 6% sales tax)

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

8K of memory. Each additional 4K of memory will handle 150 expenses per week, month, yearly or any other convenient time period.

At \$25, REAP could easily repay its cost rather quickly. It was written and is supported by Realty Software Co., 2045 Manhattan av., Hermosa Beach CA 90254, circle #77.

CIRCLE 62 ON FREE INFORMATION FORM

TRS-80* BOOKS ??? dilithium Press has 'em!

*TRS-80 is a registered trademark of the Tandy Co.

If you've been running all around town looking for books to interface with your TRS-80, then look no more . . . dilithium Press has 'em!!

MICROSOFT BASIC

by Ken Knecht

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RIIP was written and is supported by Realty Software Co., 2045 Manhattan ave., Hermosa Beach CA 90254. For information, circle #77.

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Apartment complex management program

A thorough apartment complex management program is now available for TRS-80.

The package includes extensive documentation and a user's guide written for non-programmers.

The system includes an initialization segment and forms used to organize and set up the data base.

Functions include listing transactions, posting rents, listing vacated tenants, tabulation of all transactions, vacancy listing, delinquent tenant listing, mailing labels, and more.

Price is \$150 from Honest John's Software, 8929 Cardinal terrace, Brentwood MO 64144, (314) 961-3726, or circle #78.

War games arrive in homes

Stratagems Co. has available a free catalog describing its line of computer wargaming products.

Computer wargames allow players to re-create historical and hypothetical military conflicts while acting as commanders of the forces involved.

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Write Stratagems Co., Box 786, Taylor MI 48180, or circle #82.



A specially designed SF TACTICAL BATTLE GAME for your TRS-80 Computer.

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Racet Computes tools aid programmer

With REMODEL, from RACET Computes, you can:

- renumber any portion or all of a Basic program with line number references adjusted,
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With both REMODEL and PROLOAD, also from RACET, you have the additional power to:

- load all or any portion of a Basic program from tape (CLOAD format),
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And with COPSYS, also from RACET, a computerist can:

- copy system (machine language object) tapes rapidly and accurately,
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REMODEL eliminates manual restructuring and renumbering of program lines.

This allows the user to rapidly create working and well-organized programs.

Blocks of lines may be moved from one location to another, thus enhancing program readability and ease of documentation.

Specify 16, 32 or 48K versions, order TS21C, complete with user manual, \$24.95.

PROLOAD allows creation of a library of Basic programs which can then be loaded individually or in combination with other programs.

This greatly enhances the user's programming productivity by avoiding re-creation of commonly used routines.

Also, a library of DATA statements can be selectively saved and loaded, which is a more effective method of storing and retrieving fixed data than using data tape facilities.

Specify 16, 32 or 48K versions, order TS22C (PROLOAD plus REMODEL on same tape), just \$34.95. If you have REMODEL, order TS23C, at \$14.95. Both have user manuals.

COPSYS is designed to copy system tapes (machine-language object code) generated from the Radio Shack Editor/Assembler program.

COPSYS can be used to duplicate valuable system tapes before they become damaged. Order TS24C at \$14.95.

Also available from RACET Computes are two highly sophisticated Basic programs:

TIMSER is a Time Series Analysis program that fits data to nine different 1st, 2nd and 3rd-order curves.

Goodness of fit data, tables including projected data and confidence limits, and geographical displays of curve fit and variance are included.

The program provides for correction factors and functions to test seasonal variations, inflation corrections, or cyclical variations. A detailed user manual is included complete with illustrated examples. Order RD11C, for \$14.95.

Y-YBAR is an optical system design program that implements the latest Y-Ybar diagram techniques allowing manipulation of ray heights at lens surfaces. User documentation is provided. Order RA31C, for \$14.95.

For more information write RACET Computes, 702 Palmdale, Orange CA 92665 (714) 637-5016, or circle #38.

Software publishing guide released

While many are reaping sizeable profits selling software, there are many technicalities and pitfalls in the marketing and distribution process, according to a new Kern book.

'Free-Lance Software Publishing', a 134-page soft-cover volume, has been written specifically for the independent software developer and for the small business.

It presents several proven techniques now being used in the industry to market, license and maintain proprietary software products ranging from sophisticated software systems to personal computer software.

Topics covered include selling major software packages directly to end users, installing programs on service bureaus, selling low-cost programs, and publishing software in book form. Setting up a program user's group is also discussed.

The book provides tips for the independent programmer when negotiating with a large corporation.

A sizeable portion of the book is devoted to contacts and license agreements including important terms that should be included in all software contracts.

Of special interest is a section dealing with professional liability and ways of avoiding it thru indemnifications. Several sample documents used in actual license agreements are included.

The book costs \$15 and is available from Kern Publications, Box H211, Littleton MA 01460, or circle #74.

LIKE ADDITIONAL COPIES of TRS-80 Bulletin for your club, school, store, etc.? Just drop us a card, letter, or phone (714) 757-4849. Be sure to tell us how many you can use.

Software Source has 3,000 listings

ComputerMat has released the newest and updated version of its TRS-80 Software Source. The comprehensive summer edition contains 3,000 listings of TRS-80 software that is available from 200 vendors.

The TRS-80 Software Source has been designed to help the TRS-80 owner locate specific programs for their microcomputer.

ComputerMat says the spring edition was sold out in 45 days and the summer edition is expected to do the same. The TRS-80 Software Source is published in the spring, summer and fall.

Individuals and companies from around the world are subscribers and include: IBM, Pepsi Cola, Procter & Gamble, NBC TV, Detroit Steel, Union Carbide, AT & T, Texas Instruments, Square D, Stewart Warner, IT & T, Tektronix, US Navy & Air Force, Nat'l Bank of Kuwait.

Program listings are cross-indexed and divided into five sections:

- program listings alphabetized by supplier,
- program listings alphabetized by subject,
- program listings by Basic (lev. I, II) & memory,
- program listings for disk,
- suppliers' name, address and phone number.

Subscription price is \$10 per year (3 issues), or \$4 per copy.

Distributors of TRS-80 software may be listed in the directory at no charge and are requested to contact ComputerMat for information. Dealer discounts available.

Orders outside the U.S. are welcome, and should include \$2 additional per issue for air mail.

ComputerMat is at Box 1664, Lake Havasu City, AZ 86403, circle #73.

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Checks random access memory to ensure that all memory locations are working properly.

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High quality/high resolution 12" LEEDEX monitor w/ cable.....119.00

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TRS-80 40 track disk drives complete with power supply and case.....399.00
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CASSETTES: High quality - C-10.....1.25
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PRINTERS

NEC Spinwriter - letter quality printout on plain paper - high speed 55 cps. - choose font style with interchangeable thimble - friction & tractor feed combined in same unit. Includes TRS-80 software interface.....2679.00

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Centronics: Nationwide field repair by Centronics: Call Centronics (800) 258-1952

779 tractor feed - 60 cps - same as line printer used by Radio Shack.....1179.00

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P1 Cable to plug into expansion interface.....39.00

Integral Data Systems - Upper/lower case - 100 cps. unidirectional - switch selectable RS232 or parallel - paper width 8.5 edge to edge - can attach to keyboard with TRS-232 or expansion interface with printer cable (below):

IP125 - friction feed printer.....799.00

Printer Control Option: variable pitch under program control - 64-132 columns per line.....39.00

IP225 - tractor feed with form feed control, 8 switch-selectable form sizes - automatic page boundary skip.949.00

Variable pitch, 2k buffer & full graphics options...149.00

Expansion interface printer cable.....49.00

Cable to plug into TRS-232 interface, 10' (below).....35.00

TRS232 PRINTER INTERFACE by Small System Hardware
Software driven serial output port w/ built in power supply - plugs into cassette aux port - can be used to drive Integral Data, Diablo, teletype printers, etc works with Electric Pencil.....49.00

BIDIRECTIONAL RS-232C INTERFACE from Radio Shack.....99.00

COMPUTER PAPER ALSO AVAILABLE FOR ABOVE PRINTERS

POWER ACCESSORIES
POWER STRIPS: 6 grounded outlets with 6 ft. extension cord, 15A circuit breaker, on/off switch, pilot light.16.00

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Hayday line surge protector.....90.00
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THE CPU SHOP GAMES SOFTWARE

ANIMATED GRAPHICS PROGRAMS WITH SOUND from 80-US.
Just plug any inexpensive amplifier (such as 200mw amplifier below) into the aux jack of your cassette recorder. You won't regret buying these programs.

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MICROCHESS by Peter Jennings - mac. lang., 4K Lev. I or Lev. II - one of the first and most popular play chess against your TRS-80" games. 3 levels of difficulty. Includes instructions.....19.95

BRIDGE CHALLENGER by George Duisman - 16K Lev. II - you and the dummy play against the computer in regular contract bridge. Complete with samples & instructions.14.95

PILOT by Bob Edison - mac. lang. version of the educational language PILOT with all the features of TINY PILOT and more. Incs. built in editor plus sample programs.....cassette 14.95
Diskette version with Disk I/O & Math capability....24.95

AIRRAID by Small System Software - a real time shooting gallery for the TRS-80 - player shoots cannon as airplanes fly by and parachutes land at user adjustable speeds. requires the skill of an arcade game.....14.95

STAR TREK III - by Lance Nicklus - (16K Lev. II) - this updated and advanced version won't let you win easily. Object is to explore as much of the galaxy as possible, destroy 20 klingons and locate planets.....14.95

THE LIBRARY 100 by The Bottom Shelf 16K Lev. II - 5 cassette album with 100 business/financial, educational, home, graphics and games programs.
VALUE = .50 per program.....49.95

ST-80 III INTELLIGENCE TERMINAL SYSTEM by Lance Nicklus
Enables a TRS-80 to act as a dial-up terminal on any standard time sharing network. Provides a TRS-80 w/ Control key, EIC Key, Repeat key, Rub Out Key, Break Key, full upper & lower case support, selectable printer output and program selectable transmission rates.....diskette 150.00

SYSTEM INTEGRATION TEST by SBSG - A diagnostic tester. It checks your diskettes, disk drives, and control units. The RAT tester checks memory and notifies you of the failing address if there is any problem. Checks all the characters on your printer. diskette 29.00

The CPU Shop offers a 90 day warranty on all items. Add \$2.50 for regular or \$3.50 for air shipping of any item 5 lbs. or less. All other items freight collect.

THE CPU SHOP UTILITIES SOFTWARE

G2 LEVEL III BASIC: Level II tape from Microsoft duplicates many disk features for TRS-80 users who do not own disk drives also adds new quick screen graphics commands, ten machine-language user calls, TIME\$ routines, relieves cassette loading problems and keyboard debounce, adds octal and hex constants. Uses 5K of Ram. Includes User's Manual, etc.....49.95

FORTH from HMS: For the serious hobbyist & professional programmer. Offers stack oriented logic and structured programming, machine-code speed and compactness, virtual memory, major advantages of interpreter, compiler, and assembler (all are co-resident), and your own commands in its extensible dictionary, etc. Sample game of Life program and user information included....16K Cassette 35.00
Disk w/ Disk I/O 45.00

"The MicroFORTH PRIMER", best manual for HMSFORTH 15.00

NEWDOS from Apparat: Finally an improved DOS with fixes for all known bugs in TRSDOS 2.1 plus additional features over TRSDOS 2.2 to make the DOS more useful. Some fixes include keyboard bounce, "APPEND", End-of-File markers, "LOC", the "VERIFY" command, SYS3 bugs which crashed the disk directory, several bugs which caused lost data errors. Enhancements ie."RENUM" fast line renumbering, fast variable or constant locating program, LOAD and SAVE functions run up to 30% faster, more granule space saving, output checks, output of screen display to printer, all DOS commands can now be accessed from BASIC and more! Available in 35 or 40 track versions. (please specify).....49.95

DISK UTILITY 7 PROGRAM PACKAGE from Apparat - incs. the following: Entire package on diskette.....99.00

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DIRCHECK: Makes checks & lists/prints directory contents.

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AUTOK & QEDIT from Discovery Software - Level II - loads at top of RAM. New and powerful BASIC screen oriented text editor. Move cursor to anywhere on screen, insert/delete characters, can even edit line numbers, adds auto repeat functions to keys and more for quick and easy editing of your programs. (state RAM size).....cassette or diskette 14.95

RSM MONITORS by Small System Software - many functions incl. memory test, read & write machine language tapes, enter and execute machine language programs.....29.95

DCV-1 by Small System Software - a disk conversion program for Level II machine language tapes such that the programs can be saved and loaded from disk.cassette 9.95

COMPRESSS from SBSG - Compresses your basic programs by removing all unnecessary blanks and line feeds.diskette 15.00

RENUMBER from Mad Hatter - machine language - improved renumber - rennumbers your BASIC listings in seconds. Requires Lev. II - loads at the top of 4K, 16K, 32K or 48K
.....cassette 14.95
.....diskette 17.95

LEVEL I RELOCATED from Level IV: Once you've purchased Level II you can relocate your Level I capabilities with this cassette program. cassette 16.95

The CPU SHOP, Inc.

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Z-CHESS for 16K Level II

Play the classic game of CHESS using the TRS-80 graphics. Seven levels of difficulty (up to six levels of "look ahead") provide a challenging game for all. Alpha-Beta pruning and move sorting are employed to keep response times to a minimum. SETUP mode allows the board to be arranged as desired. Plays all moves including CASTLING and EN PASSANT captures. Numbered squares simplify move input. Possibly the fastest good strategy chess game available! \$17.95

BACK-40 for 16K Level II

A superior opponent which makes extensive use of the TRS-80 graphics to display a regulation style BACKGAMMON board of unrivaled quality and clarity including the dice! BACK-40 DOUBLES if it stands a good chance of winning which it usually does! Every feature of a regulation BACKGAMMON match is included-even keeps score! \$14.95

DR. CHIPS for 16K Level II

A fascinating program based on the famous "DOCTOR" and "ELIZA" programs. Simply "TALK" (or "TYPE") to your computer-DR. CHIPS will analyze your sentences and "TALK" back to you immediately! Although DR. CHIPS' responses should not be taken seriously, he is the ultimate computer introduction for the family and friends-and a super "conversationalist" at parties! \$14.95

The Software Association
P.O. Box 58365
Houston, Texas 77058

Texas residents please add 5% sales tax

CIRCLE 17 ON FREE INFORMATION FORM

Electric Secretary hyphenates words with dictionary

The Peripheral People has introduced to TRS-80 users several new concepts in word processing programs.

The Electric Secretary was written in Basic to permit user customization, and requires a minimum memory of 32K, single or multiple disk system.

In addition to rapid file access, Electric Secretary provides numerous advantages compared to cassette-based systems.

One unique feature is a hyphenating dictionary. Long words at the end of a line need not produce large gaps in the text. When this might occur, the TRS-80 asks the operator to hyphenate the word. The word is then stored in the dictionary, with correct hyphenation points and the text is printed, hyphenated and justified.

File coupling permits lengthy manuscripts to be prepared without overloading memory.

The program is ideally suited for automatic generation of form letters. Address lists and form letters can be cross coupled so that no operator intervention is required. The operator can insert text during printout if desired.

In applications where 'bollerplate' paragraphs must be added to manuscripts and letters, the operator can call up any number of standard files.

Exclusive features include an echo routine to permit the printer to be used as an electric typewriter and an upper-case shift lock (when TRS-80 is modified for upper/lowercase).

TRS-80 Electric Secretary supplied on formatted disk is priced at \$75 postpaid. Upper/lowercase conversion information is free upon request.

To place orders or request more information, write Peripheral People, Box 524, Mercer Island WA 98040, or circle #57.

Wants program for horoscopes

We would like a program to print horoscopes on a TRS-80.

People visiting our booth at a convention could input name and birthday and get a personalized readout.

-GENE WYBLE, pres, Wyble advertising, 516 High St., Millville, NJ 08332.

New advertiser for used computers

The Computer Exchange newsletter, edited by Jeff Villwock, has begun publication with a May 15th charter membership issue, promoted through computer stores.

In a letter to retailers, Villwock claims that many people would buy new equipment if they could liquidate some of their investment in the computer they now have.

Cards have been distributed to stores entitling subscribers to a ten-line, 600-character advertisement with every \$5 year's subscription.

The publication is to be mailed monthly, via first class. The initial issue was six pages, nearly all display advertising. The address is 2217 Freeland way, Dallas TX 75228.

Isolator catalog is available

A new catalog from Electronic Specialists presents its line of microcomputer interference control products.

Protective devices are also included.

Descriptive sections outline particular problems. Suggested solutions are given. Typical applications and uses also are outlined. Request catalog 971 from Electronic Specialists, Inc., 171 S. Main st., Natick MA 01760; (617) 655-1532, or circle number 18.

'Shorty' tapes have backing

Elliam Associates' "shorty" cassettes use Scotch-brand high-output low-noise tape that is Post-Trak back-treated to provide uniform winding.

Tape is loaded in a five-screw take-apart shell that has a spring-loaded pressure pad and nylon rollers to accurately guide the tape.

Cassettes come in a hard-plastic box with label. Space is provided on the label for 12 start-and-end counter readings, as well as room for each program name.

"Side 1" and "Side 2" are preprinted and space is provided for a tape number.

Price is 10 for \$13.50, or 20 for \$26, and dealer inquiries are invited.

Elliam Associates also handles a line of computer and word processing supplies. Catalog is \$2, and includes a \$2-off coupon. Firm is at 24000 Bessemer st., Woodland Hills CA 91367, (213) 348-4278. Or circle #81.

CIRCLE 2 ON FREE INFORMATION FORM

* TRS-80 USERS - Treat your computer to these exciting programs: *
* *
* AIOS/1-This program combines NATURAL LANGUAGE with a simulation of *
* the associative and stimulus/response LEARNING mechanisms in *
* the MIND to allow true action verb programming. 4K & up *
* *
* MLOS/1-Give your TRS-80 the power to read and understand ENGLISH! *
* Build conversational data bases - solve problems and *
* answer questions relating to information learned. 16K *
* *
* MAZE/1-Randomly generate and solve MAZES of selected complexity. 4K *
* CONSTELLATION-Unique graphics display the night sky, then travel *
* to any star and view the night sky of that ALIEN planet. 16K *
* *
* YG/1-Players may challenge the TRS-80 to a game of YAHTZEE. 16K *
* *
* CARTOON-Special graphics commands allow you to create and run *
* ANIMATED PICTURES on your screen. 16K *
* *
* CP/1-Randomly generate and solve CROSSWORD PUZZLES - graphics. 16K *
* *
* BSGG/1-A total simulation of the TV show BATTLESTAR GALACTICA *
* gives you command of either the Colonials or the Cylons. 16K *
* *
* CHECKERS-Challenge your TRS-80 to a game of CHECKERS-graphics. 16K *
* *
* LND/1-Buy and manage properties as you build your REAL ESTATE *
* empire. But beware, your tenants may give you trouble! 4K *
* *
* MNF/1-You and your friends can challenge the TRS-80 to a game of *
* MONOPOLY. 16K *
* *
* SWG/1-Challenge your TRS-80 to a game of SCRABBLE. 4K *
* *
* TTT/1-Challenge your TRS-80 to a game of TIC-TAC-TOE. 4K *
* *
* POKER-Challenge your TRS-80 to a game of POKER. 4K *
* *
* BWL/1-Challenge your TRS-80 to a BOWLING match. 4K *
* *
* CAL/1-Turn your TRS-80 into a powerful CALCULATOR for use in *
* personal finance or homework. 4K *
* *
* TMT/1-Chase a madman forward and backward in TIME in an attempt *
* to save the Earth from destruction. 4K *
* *
* CLUE-Become a master DETECTIVE and solve the murder mysteries this *
* program will confront you with. 4K *
* *
* NB/1-Command subs, destroyers and aircraft carriers as you hunt *
* down the enemy's fleet in this exciting NAVAL BATTLE. 4K *
* *
* AR/1-Test your skill in driving a wrecked car in a DEMOLITION *
* DERBY. 4K *
* *
* BB/1-Challenge your TRS-80 to a BASEBALL game. 4K *
* *
* CS/1-Manage a nuclear power plant. But beware, things can get out *
* of hand and produce a CHINA SYNDROME. 4K *
* *
* LL/1-Attempt to land an extraterrestrial SPACE CRAFT on its first *
* trip to Earth. 4K *
* *
* ENV/1-Test your knowledge of ECOLOGY as you try to bring a *
* polluted, over-populated, resource strained world back to a *
* natural environment. 4K *
* *
* RBT/1-Guide a series of bombs in an attempt to blow up a group of *
* invading ANDROIDS. 4K *
* *
* WT/1-Lead a WAGON TRAIN safely across the prairie, avoiding the *
* Indians and finding food and water. 4K *
* *
* WAR/1-Command airplanes, TANKS and ARMIES as you try to defeat *
* the enemy. 4K *
* *
* MS/1-Test your MATH SKILLS at various levels of complexity. 4K *
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* *
* Written in LEVEL 2 BASIC with complete instructions, they are *
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* LISTINGS for \$1.95 each. Orders for 2 or more programs get a 10% *
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ACCOUNTS PAYABLE/ACCOUNTS RECEIVABLE/ GENERAL LEDGER package by SBSG. 32K/3 drives fully interactive. Based on the Osborne method tested on the WANG for 5 years - a well documented proven system. Write or call for details.....\$350.00
NOTE: PAYROLL can also be added to this package for an additional cost.

NOTE: Above A/P, A/R, and G/L packages can be purchased individually for \$125.00 each module requiring only 2 drives to run. You can trade back for the full interactive system at any time.

SMALL BUSINESS BOOKKEEPING from HHS - Based upon the popular "Dome Simplified Weekly Bookkeeping Record" categorizes deductions for fancy home accounting or small business uses. Requires 32K RAM, at least one disk drive, and optional printer.....\$25.00
Dome Simplified Weekly Bookkeeping Record.....\$5.95

ELECTRIC PENCIL by Michael Shrayer - NOW ON DISK as well as cassette - a fine word processor with block movement and search plus more - instructions for modifying keyboard to get lower/upper case - cassette.....\$9.00
New Diskette Version.....\$150.00

MAILING LIST SYSTEM - NAME & ADDRESS II by SBSG requires 32K/2 disks/printer. Sophisticated mailing list program. Use with Electric Pencil files for automatic insertion of name, address and greetings in letters. Has ability to print envelopes. Separate files can be set up or all names can be contained on one file. You can enter, delete, update, search, sort, merge and print. Super fast zip code sort for bulk mail. Extract by category and record code. You can store up to 1000 names per drive. Contains program to automatically convert data entered into Radio Shack mailing list program. System is menu driven. Comes with 40 page manual.....\$129.00

INVENTORY II by SBSG: 3K/2disk drives - will handle up to 1000 inventory items per drive. Reports incl. Activity, complete or selected inventory listing, minimum quantity search.....diskette 99.00

PROGRAM CATALOG SYSTEM by SBSG: Keep track of all the programs and data files you own. Details each program by name, size, version, level, creation date, last date updated, and a brief function description.....diskette 39.00

FILE MANAGEMENT SYSTEM by SBSG - Ideal for anyone with specialized storage needs. Sorts files in ascending or descending order on 3 separate fields, scanable. Some applications have been fixed assets, phone #'s, names, slides, albums.....diskette 49.00

THE CPU SHOP

Dept. CIE, 39 Pleasant st.
Charleston MA 02129 (617) 242-3350

Double-density 8" floppy, hard disk available

Micromation has introduced its double-density Megabox 8" floppy disk, as well as its hard-disk systems, to TRS-80.

The floppy system allows TRS-80 users access to two megabytes of high-speed disk storage. The hard-disk version stores 10 or 20 megabytes.

The Megabox TRS-80 version plugs directly into the TRS-80 keyboard unit. A buffered interface adapter allows Megabox to be used in conjunction with the TRS-80 expansion interface, which is not needed by Megabox. The expansion box might be needed only to service TRS-80 peripherals.

CAN HOLD 32 K OF RAM

Megabox includes provision to add 32 K of RAM and a UART with RS-232 interface, so the Megabox can be used with an "unexpanded" TRS-80 to provide a complete 48K system, capable of supporting a printer.

Single-headed-drive systems have Shugart drives of over a megabyte capacity. Double-headed systems are available with over two megabytes of storage.

Hard-disk drives are the Shugart 4000 series of Winchester-technology systems.

Megabox uses Micromation's unique double-density floppy controller, the doubler. This controller ensures fast, reliable operation in single or double density.

Operation in single or double-density modes is completely transparent to the user. The system automatically determines the proper density of the diskette and operates in the appropriate mode. Files can be easily transferred between single and double-density diskettes.

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Quarterly & annual federal forms (optional)
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- BONUS PAY ENTRY FEATURE
- END USER DOCUMENTATION - End-user support
- PAYSOFT DISKETTE AND MANUAL \$125.*
ANNUAL REVISION SUBSCRIPTION OPTIONAL

CIRCLE 53 ON FREE INFORMATION FORM

BAC/VISA/MC
accepted

TRS-80 is a registered
trademark of Radio Shack

The controller is mounted inside the enclosure, and the cable to connect to TRS-80 is included. Enclosure is painted in TRS-80 un-colors. Drives are stacked on top of each other, to minimize space use.

USES CP/M OPERATING SYSTEM

Micromation's Megabox for TRS-80 is designed to use the industry-standard CP/M operating sys-

tem. A special TRS-80-compatible version of CP/M is used. Also available is a Microsoft disk Basic which utilizes Level II Basic resident in TRS-80 ROM, and allows TRS-80 disk Basic programs to be run with Megabox.

Megabox interfaces to TRS-80 via a special buffered interface.

The "doubler" double-density controller is designed so as not to interfere with dynamic-memory refresh. The system includes a PROM bootstrap and complete system software.

The controller does not require any memory space in RAM, so a full 48K of user memory is available. Hard-disk controllers have a 1K-byte RAM buffer which stores data for transfer to or from disk.

Prices are \$2,295 for the single-sided, megabyte-capacity MB-II-80, and \$3,095 for the double-sided two megabyte MB-IV-80. Megadrive hard-disk They are available from dealers, or Micromation, 1620 Montgomery, San Francisco CA 94111, (415) 398-0289, or circle number 86.

CIRCLE 45 ON FREE INFORMATION FORM

MICROMATION MEGABOX II-80

8" dual-drive double-density
disk system for TRS-80
is available at
COMPUTER MART
1395 Main st., Waltham MA
02154, New England's largest
full-service computer store
Call (617) 899-4540
to reserve yours at our low
introductory prices today!

Copy system shows loads on CTR

By JOSEPH E. LYNCH

There are several ways to make copies of data contained on TRS-80 cassette tapes. The method chosen will usually depend on the type of data that is to be copied.

If the cassette tape contains a BASIC program, the most common method used to make copies is to CLOAD the original program and CSAVE it to another cassette.

If the tape contains a machine-language program, it is quite a different problem. You can load a machine language program with the SYSTEM command, but there is no provision in the operating system that will allow you to make a tape copy of the program.

One method for making tape copies of machine language programs is to connect two tape recorders together in such a way that one is playing and the other is recording. This is something like taking a picture of a picture. The problem is that it requires a second tape recorder and the copy will not only contain all of the defects of the original, but it will have added considerably more noise during the copy process.

A more practical method of making tape copies is to use a special program to load the data into the computer then copy it out by a blank tape. This is similar to the CLOAD and CSAVE functions in the operating system.

There are several software systems available to do this, including multi-purpose systems that will not only copy machine language but will also copy BASIC and data tapes.

FOR FURTHER INFORMATION CIRCLE NUMBER 50

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If you read our ad now, you might notice some changes. Our prices are continually coming down and our warranty and customer satisfaction is steadily going up. In addition, if you compare the total value of our products with that of our competition, you will see that we clearly stand out in the marketplace. The products we offer have been thoroughly tested and have proven their reliability. We don't want to play games with gimmicks or impossible-to-install devices that do not do what you expect of them.

We market our products throughout the world and we think we have the best track record for customer satisfaction of anyone in the business.

If you have taken the trouble to read this far, our way of thanking you is to offer you a one time only special on our diskettes. \$3.00 each, 10 for \$27.00, 50 for \$130.00, or 100 for \$250.00. All we add is U.P.S. charges and 6% tax if you order from California.

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Westminster, CA 92683

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DISK DRIVES
\$399.00

Shugart 8" floppy disk drive with a power supply that outlasts most other than Radio Shack. Fully compatible with Radio Shack drives. Includes ☐ Power supply ☐ silver case ☐ 4 drive connector cable ☐ verbatim diskette with test program and user op. system ☐ 90 day warranty ☐ complete user instructions

16K RAM SETS
\$80.00

200KS 16K Dynamic RAM Memory Kit. NEC chips. Includes jumpers and instructions for installing in TRS-80 keyboard unit or expansion interface. (Specify keyboard or interface) 90 day warranty.

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Library cassettes also available.

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THIS OFFER EXPIRES AUGUST 31, 1979

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SPECIAL OFFER COUPON

What makes the TRcopy system especially unique is that it displays every byte of data on the CRT screen in real time as it is being loaded. The most current 320 bytes are displayed in hexadecimal code and ASCII characters where applicable. What this means is that if the block of data contains any alphabetic or numeric data, you will be able to read it right from the screen as it is being input.

Although much of the data is pure code, the display of alphabetic and numeric characters offers a tremendous advantage in the identification of tape data. For example, you can see the program or file name as it is stored on the tape. You can also read other alphabetic data that may not be otherwise accessible.

The TRcopy system does not require a technical knowledge of digital storage but the information is there if you need it. For example, the starting address for execution of a machine language program can be especially helpful at times. This is ordinarily quite difficult to obtain but the TRcopy system readily provides this and other such information.

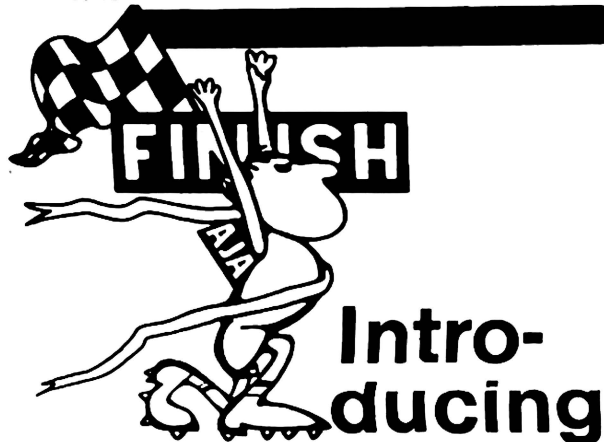
A complete explanation of these functions and much more is provided in a quality 38-page manual that accompanies the program tape. You can actually get quite an education from the manual itself because much of the information has never been published before.

The TRcopy system is primarily used for duplicating cassette tapes.

TRcopy does far more, however, than just tape copying. A verification system is included that provides 100% accuracy for every copy. Once the original is loaded, you can produce as many copies as you want — all 100% accurate.

Some other functions of the system are: the entire tape data block can be printed out if your

CIRCLE 8 ON FREE INFORMATION FORM



Introducing

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The TRS-80 Word Processing System that really does the job!

If you've been looking for a *true* word processing capability for your TRS-80... STOP! WORDP II is it!

WORDP II allows you to enter, edit, and print various amounts of text (with right margin justification) in one program. The EDIT program permits addition, insertion, and deletion of whole lines and characters within lines. The TYPESET program fills and right justifies paragraphs automatically.

Other features include: indent, center, right justify non-paragraph text, count and label pages by number or without headings, and lots more.

SPECIAL INTRODUCTORY PRICE

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Send \$1 for operating manual — see what the system will/will not do before you buy!

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AJA SOFTWARE
P.O. Box 2528 • Orange, CA 92669

system includes a line printer; a running byte count is displayed on the screen as the tape is loaded, to provide you with the exact length of the data; instructions are provided to show you how to determine the high and low volume range for any particular cassette tape; troubleshooting includes instructions on how to determine whether it is the tape or the tape recorder that is at fault, and what effect the starting and stopping of the reader has on the data signals.

The TRcopy system is a versatile utility that provides many educational side benefits on the operation of digital computers. And the real-time graphics are not only practical, they are fascinating. With the TRcopy system, you can really see what you are doing.

Priced at \$39.95 postpaid, TRcopy is available from Data/Print Publishing, dept TB, Box 903, Fargo N.D. 58107. The system has a money-back guarantee. Try it for 10 days. If not completely satisfied, return it for full refund. Circle #12.

CIRCLE 38 ON FREE INFORMATION FORM

TRS-80™ FREE graphics GAME!!

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Has TVI problem

When my Level II TRS-80 is operating it disrupts the picture on our TV sets.

I tried attaching an interference filter, both the type that hooks up to the antenna, and the AC line filter. Nothing helps! Has anyone solved the problem?

— JOHN M. DELANEY Jr., 860 Penning av.,
Wood River IL 62095.

CIRCLE 19 ON FREE INFORMATION FORM

DATA PROCESSING SUPPLIES

Std. or Mini Floppy... 2.98 ea.
TRS-80 Cassette... 1.49 ea.
ANSI (notch)
Cassette... 4.90 ea.

Qume or IBM 6240
Ribbon... 29.95 dz.

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AT SIMILAR BARGAINS

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(512) 443-1347

All products from major manufacturers, fully guaranteed. No limit while quantities last!

Cryptext secures data privacy

Persons wishing to ensure the privacy of data used on their TRS-80 microcomputer can now buy an encryption device that plugs directly into the back of the keyboard unit, or the expansion interface via optional cable.

Cryptext allows business users and computer hobbyists to quickly secure virtually any data, including inventory and financial data, technical and proprietary information, graphics, programs or text.

The encrypted information can be stored on cassette tapes or on disks, secure against unauthorized access.

SECURE WIRE TRANSMISSION

Used with a modem, Cryptext allows data or messages to be transmitted by telephone or other communication channels in complete privacy.

Other uses include generating pseudorandom numbers for games or scientific programs.

Prior to encoding data, the Cryptext operator enters a 10-character key — each of the two-to-the-eightieth-power possible keys results in a different and completely incoherent (cryptographically-secure) version of the data.

Additionally, a 'code branch' feature allows Cryptext's internal code generator to modify its code sequence dramatically, resulting in well over two-to-the-three-hundred-fiftieth-power possible code sequences.

DECODING PROCEDURE

To decode Cryptext-secured data, four elements are essential: the encrypted data, the Cryptext unit, the software, and the correct user-supplied key. Lacking any of these elements, access to the original data is denied.

CIRCLE 26 ON FREE INFORMATION FORM

NEW FAMILY OF DISK DRIVES FOR THE TRS-80

We are the first manufacturer to offer you a complete family of add-on disk drives for your TRS-80. Select from single head or dual head units. Each comes complete with Power Supply and Chassis.

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TFC-2 two drive cable \$25, TFC-4 four drive cable \$35

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LP779TR Centronics Model 779 with tractors \$1179
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Integral Data w/tract. \$949

MEMORY

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NEW PRODUCTS

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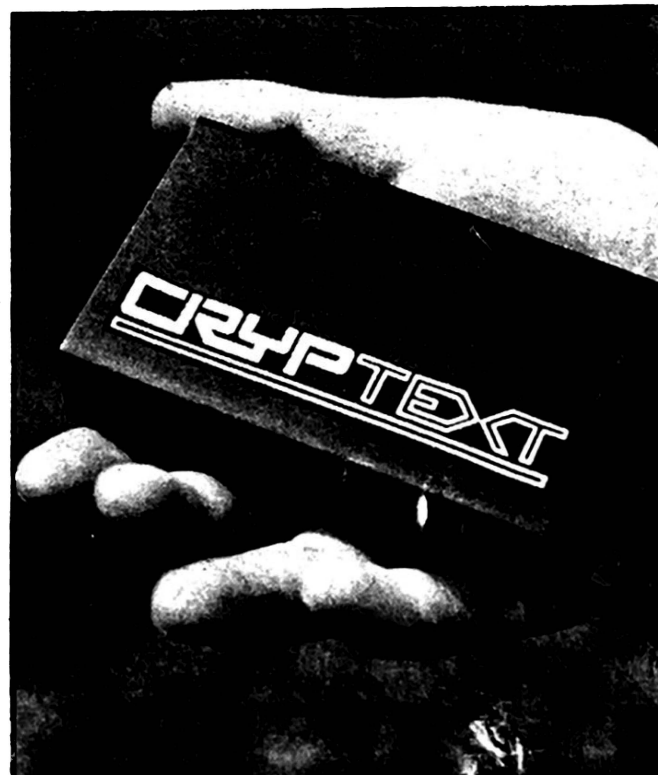
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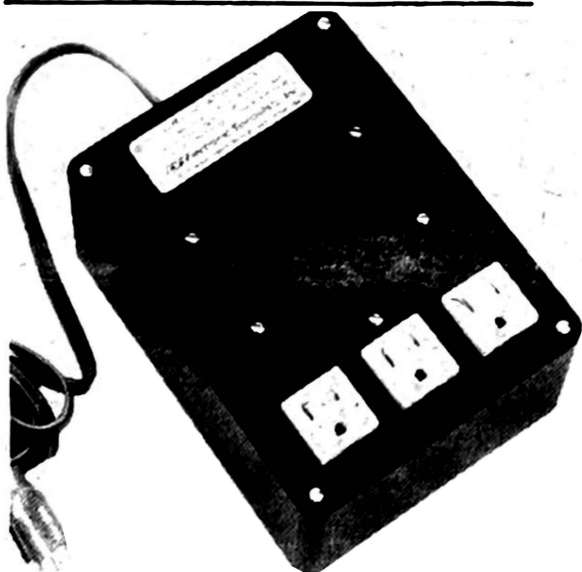
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ORDERING INFORMATION: Cash, check, Money Order or Credit Card (MC or VISA). COD's require 20% deposit. Orders will be processed and shipped within 3 to 10 days of receipt of order. Customers will be notified of any delay over 30 days.

Data throughput is greater than 15 K-bytes/sec and power consumption is less than 100 milliwatts. Cryptext is encased in tough epoxy, is slightly larger than a cigarette package, and thus slips easily into pocket or briefcase.

Supplied with demonstration software and user-oriented documentation, the device is priced at less than \$300, from Cryptext Corp., Box 425, Northgate Station, Seattle, or circle #75.





ISOLATOR—Smothes power input.

CIRCLE 27 ON FREE INFORMATION FORM

Firm announces super isolator

Electronic Specialists has expanded its line of power isolators to include what it calls its super isolator.

Model ISO-3 comprises individual super filtering for each of three three-prong sockets. Heavy duty spike and surge suppression is also included.

Intended for microprocessor installations in industrial or severe interference-prone environments, the super isolator also provides protection against damage from lightning and electrical machinery spikes and surges.

Connecting to the AC line with a standard three-prong plug, the Model ISO-3 can isolate and protect an 1875-Watt total load, with each socket capable of isolating a 1,000-Watt load.

Priced at \$72.95, it is available from Electronic Specialists, 171 S. Main st., Natick MA 01760, phone (617) 655-1532, or circle #18.

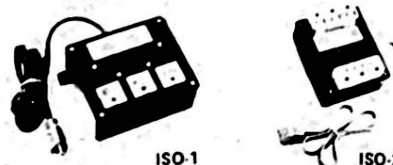
SBS Group catalog available

A catalog of software from the Small Business Systems Group is available from the CPU Shop. SBSG has available on minidisk for TRS-80 the major programs published by Osborne Associates. These include accounts receivables/payables, general ledger and payroll.

The group also has two inventory systems that handle up to 1,000 inventory items per floppy. For information, contact the CPU Shop, see ad on page 14 and 15.

CIRCLE 62 ON FREE INFORMATION FORM

DISK DRIVE WOES? PRINTER INTERACTION? MEMORY LOSS? ERRATIC OPERATION? DON'T BLAME THE SOFTWARE!



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- *ISOLATOR (ISO-ICB/-2CB) 15 A Circuit Brkr \$57.95
- *ISOLATOR (ISO-ICBS/-2CBS) Brkr-switch/lite \$62.95
- *SUPPRESSOR/FILTER (SFK-33) three 3-prong sockets, 1250 Watt Maximum load \$32.50
- *SUPPRESSOR/FILTER (SFK-31) 3-prong socket; KW \$24.50

PHONE ORDERS 1-617-655-1532
Dept. CIE

Electronic Specialists, Inc.
171 South Main Street, Natick, Mass. 01760

CIRCLE 18 ON FREE INFORMATION FORM

LENCO has TRS-80 MiniDOS

LENCO MiniDOS for TRS-80 is a disk-based program management tool that can handle from one to four drives.

Upon power-up it automatically goes to Basic, reads the directory and displays a complete menu of user programs, both machine language and Basic.

With a one-stroke INKEY function, the user may then select any program.

After the program has been used another one-stroke action returns to the main menu for another selection.

CIRCLE 64 ON FREE INFORMATION FORM

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CIRCLE 40 ON FREE INFORMATION FORM

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Machine language modules linking with T-BUG

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 - b) Single Stepper. Displays the 6502 Processor Programming Model in a before/after format, including expanded Reg configuration and top six stack elements. All updated after each instruction is SPACE ed
 - c) 4 Speed TRACE mode. Animates the Programming Models, activates a keyboard scan port accessible to 6502 instructions. User ENTER/PT
 - d) Fast Interpretive RUN mode. Realistic execution of 6502 programs
 - e) 13 Key Implicit Keypad. Backspace, Relative Space, many more
- How to have a 6502 without having a 6502! Compare, contrast, work in a powerful programming language distinct from BASIC or Z-80 machine code. EMU #2 opens the way to software communication with Apple II and PET. Comes with 10 pages of directions, examples, 6502 Instruction Set Summary card
- 16K Level II EMU #2 No. BL 1 24 95
- Super TLEBS: Onboard relocater for T-BUG, ends revolving coincidences. Moves T-BUG to your choice of high RAM, goes along so you can move again. Generate multiple T-BUGs in your RAM for experimentation with custom monitors. Super TLEGS will also relocate TSTEP and IN LOCO pak
- 16K Level II Super TLEGS No. LL 0 9 95
- TSTEP: Single Stepper for T-BUG. Actually see everything you must imagine as you SPACE through ROM or RAM. Indispensable for debugging, analyzing alien program material or learning the large Z-80 instruction set
- Some features:
 - a) Before/after display of CPU registers in #B like format, completely user accessible independent of T-BUG registers
 - b) Before/after testable Reg configuration
 - c) Before/after top six stack elements, as initialized by the user or the program being examined
 - d) 8 Key Implicit Keypad, including Backspace, CLEAR, Zero registers, more
- Subroutines can be single stepped or run directly, control remaining with TSTEP. Comes with 114 pages of directions, examples, TLEGS relocates
- 16K Level II TSTEP No. LL 1 11 95
- IN LOCO pak: Minimal complete set of on site hand assembly tools for T-BUG. Includes Backspace, Relative Space, Delete byte, Insert byte, CLEAR, Relative Space completely defers the Relative Addressing mode. TLEGS relocates
- 4K Level II IN LOCO pak No. LL 2 9 95
- 75 mailing for each program. CA add 6%



ALLEN GILDER
P.O. Box 11721
San Francisco, CA 94101

T-BUG TRS-80 Im Radio Shack, Apple II Im Apple Computer, PET Im Commodore Corp

NEW ● FOR TRS-80™ OWNERS ● NEW PAYROLL PROGRAM FOR LEVEL II, 16K COMPUTERS

UP TO 100 EMPLOYEES
SALARIED • HOURLY • COMMISSIONED
WEEKLY • BIWEEKLY
SEMIMONTHLY • MONTHLY
CAN BE USED WITH OR WITHOUT
LINE PRINTER

The package consists of three cassette tapes in a three-ring binder with complete instructions including output examples of:

- Initialization, additions, new employees, and correction of company data
- Check computation
- Summary, correction individual data, and retrieval of data information

Computes all deductions, accumulates quarter and year-to-date information for Federal, State and City payroll tax reports including W-2 data.

Designed and tested by Certified Public Accountant.

Price of entire package is \$69.00.

VISA, M/C, M/O, Check
Illinois residents please add 5% sales tax.



Software Unlimited, inc.

5404 LYMAN AVENUE, DOWNERS GROVE, IL 60515
(312) 969-0239

Ups reliability of Level II tape

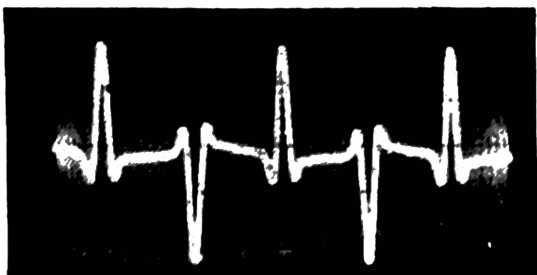
Jim Rollinson of Cook Laboratories reports that in program and data transfer the major problem with cassette is not dropouts if best tape is used, but head azimuth drift on the user's tape deck.

Cook Labs has developed an extended format for duplication of TRS-80 Level II cassettes.

Regular format source tapes are automatically converted into bi-polarity (bits one way, clocks another way, see picture).

The resulting product will often accomplish good loads, Rollinson reports, even when the azimuth of the user's cassette deck is noticeably off.

For more information write Cook Laboratories, Inc., 375 Ely av., Norwalk CT 06854, or circle #79.



Above: Cook Extended format

Below: Conventional format



Best Sellers from dilithium Press

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Essential information on the microcomputer revolution. The ideal volume for the new kid on the block who wants to know all about computers and their uses. A great introduction for the initiated

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Acclaimed by educators and users alike, this easy-to-read, informal approach to DEC's BASIC PLUS language is the painless way to learn BASIC. Prolusely illustrated and designed for self-instruction with your home computer, this is the simple, fun way to approach the first encounter with programming language

ISBN 0-918387-21-5 \$9.95 paper

California residents add 6% Tax with your order.

Order your dilithium Press books and tapes directly from:

TRS-80 COMPUTING
P.O. Box 158
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BOWLING LEAGUE STATISTICS

BOWLSTAT is a comprehensive disk based software package that calculates team and player stats, handicaps, points, leaders, etc. Input of weekly scores is fast and the software has extensive error detection and prompting to guide the user. Full league stats are printed on a standing sheet suitable for posting, and blank scoring sheets are also printed.

TRS-80 Minimum — 32 K, one drive, Printer
BOWLSTAT on Diskette with user's manual \$34.95

REAL-LIFE SIMULATIONS Also other programs
3107 Ridge Rd. including sound - pac
Warren, Ohio 44484 Send for free brochure

Add \$1.00 Shipping — Ohio Res. add 4% Sales Tax

CIRCLE 24 ON FREE INFORMATION FORM

Cory Sound offers duplication

Cory Sound Company is prime supplier of cassette software for the home computer industry.

Our duplication technique is the result of many dollars and hours spent working closely with the engineering departments of two major manufacturers of personal computers.

This, coupled with our rigid quality control, results in a product that meets manufacturer's exact specifications.

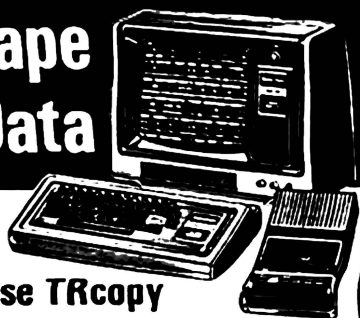
We are also suppliers of duplicated products and blanks for many other programmers here and abroad.

Cory Sound also offers labeling, packaging and drop shipment.

—WILLIAM J. HORN, assoc. partner, Cory Sound Co., 440 Brannan, San Francisco CA 94107.

CIRCLE 12 ON FREE INFORMATION FORM

See and Copy Tape Data



use TRcopy

WITH YOUR LEVEL II TRS-80*

TRcopy is a cassette tape copying system that lets you SEE what your computer is reading.

COPY ANY CASSETTE TAPE**

With the TRcopy system you can copy any TRS-80 Level II cassette tape whether it is coded in Basic or in machine language. You can also copy data created by programs and you can copy assembler listings.

YOU CAN SEE THE DATA

As the tape is being loaded, you can SEE the actual data byte-for-byte from the beginning to the end of the program. Up to 320 bytes are displayed at one time. ASCII characters are displayed on the first line and hexadecimal code is displayed on the following two lines. Data is displayed exactly as it is input including memory locations and check sums.

IDENTIFY PROGRAMS

With TRcopy you can identify programs on cassette tapes without written documentation because you can SEE the filename. If you forget to label a tape, you can use TRcopy to display the tape contents and identify the cassette.

VERIFY CASSETTE TAPES

With TRcopy you can verify both the original tape and the tape copies. You can make certain that your machine reads the original tape correctly and that it makes byte-for-byte copies. TRcopy also counts as it reads giving you the exact length of the data.

MAKE BACKUPS FOR YOUR PROGRAMS

Now you can make backup copies of your valuable programs. Many times a cassette that you make will load better than one that is mass produced. The original can then be kept as a backup in case the copy is damaged.

MAKE COPIES OF YOUR SOFTWARE

If you are in the software business you can use TRcopy to make tested copies of your programs for sales distribution. TRcopy produces machine language tapes that are more efficient than those produced by the assembler itself.

RECOVER FAULTY DATA

With TRcopy you can experiment with the volume and level controls and you can SEE what the computer is reading—even if your computer will not read the data through normal read instructions! In this way it is possible to read and copy faulty tapes by adjusting the volume control until you SEE that the data is input properly.

SIMPLE — FASCINATING — FUN

TRcopy is not only a practical utility program. It is also a fascinating graphics program that lets you SEE, for the first time, cassette data as your computer is reading it. And it's as simple as 1-2-3. Just load, verify and copy. You will now be able to use cassette tapes with confidence knowing that TRcopy is there when you need it.

The TRcopy system is a machine language program with documentation explaining tape leaders, sync bytes, check sums and other formatting conventions. With the TRcopy system, you can SEE what you are doing!

TRcopy System including
Cassette Tape and Documentation

39.95

Orders accompanied by money order or cashiers' check mailed same day.
Orders paid by other check shipped in 14 days. No COD's. Return within 10 days for a full refund if you are not satisfied.

N.D. Orders Add 3% Sales Tax. *TRS-80 is a trademark of the Tandy Corporation. **You cannot copy the TRcopy cassette.

ORDER FROM

Data/Print

DEPT. TB, BOX 903, FARGO, N.D. 58107

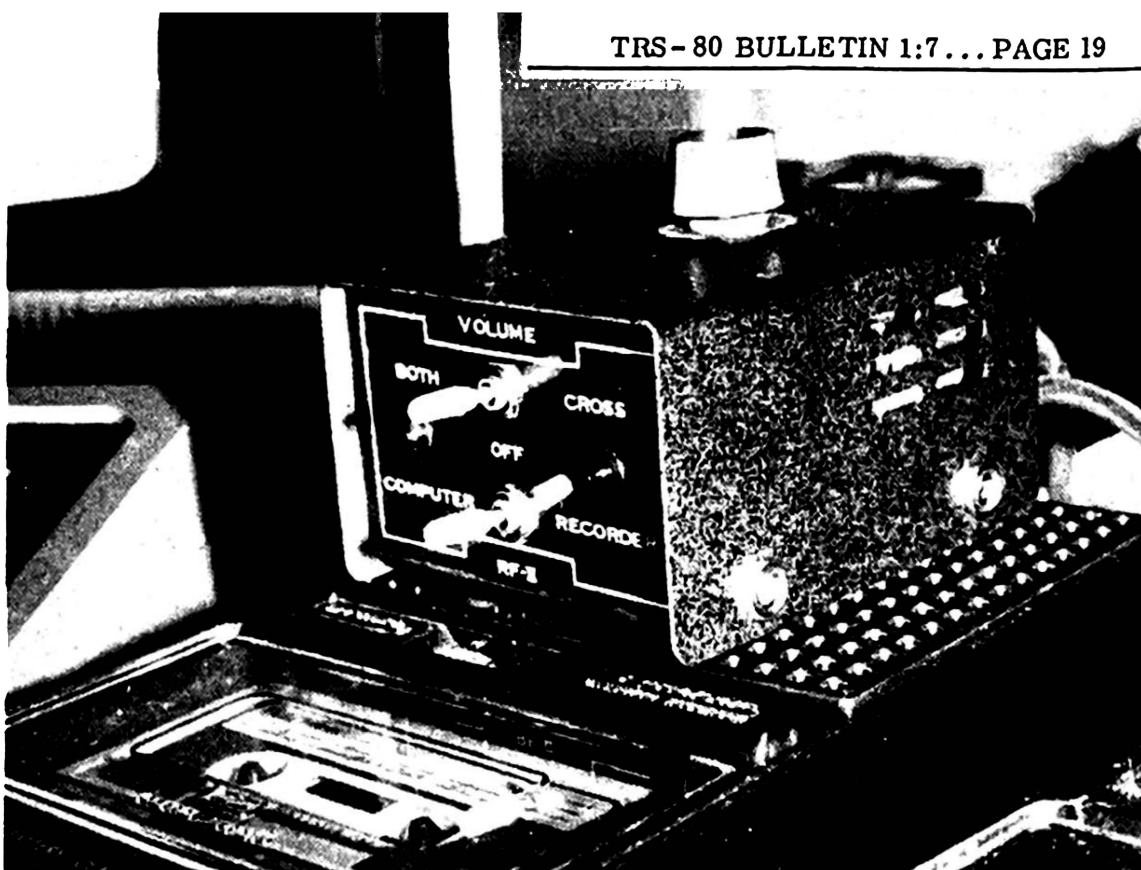
CALL IN YOUR ORDER Now!

—Call Toll-Free 24 Hours—
If you have a Master Charge or a Visa credit card, you can call toll-free from the nearest telephone and have your TRcopy system on its way to you today.
Call 1-800-437-4144 anytime — 24 hours a day.
For calls from N.D., Houston or Alaska call collect 1-701-237-6111.
CALL RIGHT NOW!



NOW USE TRCOPY WITH YOUR PRINTER
Included at no extra cost — Now you can use the TRcopy system to output tape data to a line printer or a quick printer. The data is printed exactly as it is input from the tape including file names, memory locations and check sums. A printed copy can be especially helpful in the analysis or recovery of records contained in tape data files.
ORDER YOUR TRCOPY SYSTEM NOW!

**TOLL FREE
24
Hours
SAME DAY
SHIPMENT**



SWITCH BOX—Fuller Electronics' unit solves many problems inherent in the TRS-80 cassette system.

Fuller has switch box

Fuller Electronics has a cassette-recorder switch box with:

- internal speaker that allows monitoring CLOAD and CSAVE.
- also monitor fast forward and rewind, with CTR-41 or similar recorders,
- volume control adjusts monitor volume without affecting data volume,
- two LEDs indicate status of computer and recorder. Recorder LED won't light unless the cassette has power applied and the push button is depressed,
- allows simultaneous CSAVE with two cassette recorders,
- allows CLOAD with either of two recorders, without pulling cables,
- cross tapping can be done from recorder-one to recorder-two or vice versa,
- permits use of all functions of the recorder without pulling any cables,
- case matches TRS-80's,
- compact, can be placed on top of master cassette,
- most parts available from Radio Shack,
- includes money-back satisfaction guarantee.

Called the RF-II, the Fuller switch box has uncovered a small problem with the CTR-80 tape recorder now supplied with TRS-80s.

Unlike the older CTR-41, CTR-80 is wired with a positive ground on the earphone, and negative ground on the remote jack.

'This is much like wiring a car half positive ground and half negative. It doesn't make any sense.

'In the case of the RF-II, which combines all grounds, it means the grounds MUST be uncombined.

'As a result, the RF-II for the CTR-80 costs an additional \$5, proprietor Dick Fuller writes. The extra \$5 is for both kit and assembled versions.

As an alternative, Fuller suggests converting the CTR-80 to look like a CTR-41. Fuller offers instructions on how to do that.

The Fuller RF-II is priced at \$49.95 assembled, \$34.95 kit, plus \$2 postage. Californians should add \$3 and \$2.10 sales tax, respectively, and CTR-80 models are \$5 more (plus 30¢ tax).

Fuller Electronics is at 7455 Hollister, suite 232, Goleta CA 93017, or circle #71.

Computer Bugs has editor, inventory, rent control systems

A new text editor, inventory and rent control systems, and Verbatim minidisks for TRS-80 have been introduced by The Computer Bugs, a Florida-based systems group.

The text editor, with 32K capacity and disk drive, sells for \$29.

It is designed to turn the TRS-80 into a word processor, and offers a 15-line-by-50-column "window" of your document which is always visible on the TRS-80 display.

This "window" may be scrolled forward, backward, right or left by means of simple command.

The top line of the display is used to enter commands to the editor. Highlights of these are:

- 1) Copy, move, or delete line/paragraph;
- 2) Find or change a word/phrase;
- 1) Merge multiple documents/paragraphs;
- 1) Insert or replace a line(s).

The text editor features print control commands capability which results in several different formats for the same document such as: righthand justification for professional-looking letters/documents, varying line lengths and indentions within one document, single or double spacing, headings, and varying page lengths.

INVENTORY, RENT CONTROL

Computer Bugs' inventory control system with 48K capacity and two-disk drives sells for \$95. It will handle up to 1200 12-character alphanumeric part numbers on a single minidisk.

Parts may be added in any sequence, but the reports will print them out in part-number sequence without sorting.

Among the type data stored is:

- 1) Description, quantity on hand, quantity sold year-to-date;
- 2) Cost, markup percent, selling price;
- 3) Reorder point and reorder quantity;
- 4) Date updated, three-character supplier code.

Among the highlights of this system are: personalized report headings, out-of-stock and reorder items flagged; quick data entry of sales and supplier receipts; and quick data entry of physical inventory with printed summary.

The Computer Bugs' rent control system, with 48K-plus-two-disk capacity, sells for \$250.

Of particular interest to businesses such as warehouses, marinas, apartments, etc. are the following features:

- Report of overdue tenants, including optional late charges;
- Detailed summary and totals for rents collected;
- Complete billing statement generation;
- Detailed tenant summary reports;
- Alphabetic tenant list;
- Automatic receipt generation.

Verbatim minidisks are priced at 10 for \$30, and plastic minidisk cases are \$4.75 each.

Orders may be sent to The Computer Bugs, Box 789, Boynton Beach FL 33435, (305) 734-2367 or 737-4738, Visa and MasterCard accepted. For information circle #32.

CIRCLE 23 ON FREE INFORMATION FORM

THE CODE ROOM

MICROCOMPUTER SERVICES
18216 GENVILLE LANE-EDEN, MINNESOTA 55344 - (612) 934-1826

POKE-POINT

This Level II Basic USR function call enables a blinking cursor on your CRT. The cursor is automatically advanced to locations identified by "Item" symbols using the left/right arrow keys. The Enter key returns the cursor position code and character string to your program. With all other keys on the keyboard disabled, operator errors are almost impossible.

AUTOLOAD

Each time you Power-on or Reset, your chosen program can appear immediately without any intermediate steps or questions to answer. Customizations permit this routine to be tailored to your application and provides a "hands off" system start up.

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

AUTOLOAD ONLY: CIRCLE ONE DISKETTE (\$17.00) CASSETTE (\$13.00)
POKE-POINT ONLY: DISKETTE (\$17.00) CASSETTE (\$13.00)
AUTOLOAD & POKE-POINT: DISKETTE (\$25.00) CASSETTE (\$20.00)

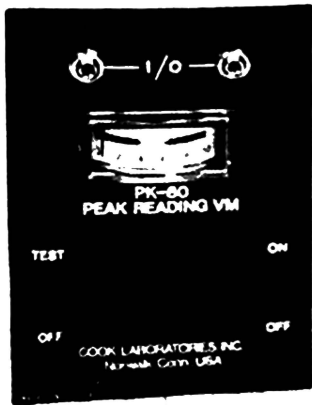
System Size? 16K 32K 48K
Ant. of reserved RAM? 0 _____
"ITEM" symbol? _____

Basic USR number: 0 1 2 3 4 5 6 7 8 9

In ordering AUTOLOAD, specify on separate sheet of paper commands normally typed at system start up. Unless specified, the following are used—

BASIC, number of files? 1. RUN=INITIAL/BASIC

CIRCLE 16 ON FREE INFORMATION FORM



CIRCLE 42 ON FREE INFORMATION FORM
TRS-80 TRS-80
SOFTWARE FOR SALE
BUSINESS * GAMES
UTILITIES
PROGRAM LENDING LIBRARY
 Write today for all details:
 Program LL, 611N2
 Cabot, AR 72023

Peak-reading meter monitors cassette

Cook Laboratories' peak-reading volume meter can eliminate uncertainties associated with loading program and data from cassette, according to the manufacturer.

The PK-80 peak-reading VM reads cassette output on a bi-polarity basis, buffered by a battery-operated dual op-amp.

The PK-80 also provides means for restoring the all-important cassette deck head azimuth, a common source of malfunction for the higher-baud-rate formats, such as Level II.

The instrument is furnished assembled, along with an azimuth adjustment tool, a precise pulsed-azimuth calibration cassette in chrome dioxide, jumper cord, and instructions.

PK-80 is \$49.50, with battery, from Cook Laboratories, Inc., 375 Ely av., Norwalk CT 06854. For more information circle #79.

\$50.00 value **750 NAMES *16K Tape ALSO**
per Disk
Satisfaction
Mail-\$19.95 OR Refund
TRS-80list **GUARANTEE**

We have decided to offer our \$50.00 value MAILLIST Program for only \$19.95! HERE'S WHY -

It is a known fact - the lower the price, the more sales! We want VOLUME!!!

For only \$19.95 you'll command more than 750 names and addresses on a single diskette! Using the Special Selection Code, you'll recall the entire list or any part of it! FAST!

(PRINT onto labels or just LIST!)

And the Best Part - This program works great on either 32K Diskette (only one drive needed!!!) or 16K II level tape! Both versions are provided on tape which you may save onto your own disk.

This program offers so many outstanding features - "Full Screen Recall" "Easy editing" "Zip-code Sort" "Name Search" - ***Plus, many more!!!

To prove to you that this is the very best - Try our program with this guarantee.

Try our MAILLIST Program. If for any reason, you do not think it is worth at least \$50 or more! - Just return it within 30 days for a full refund!

Send the coupon today with your payment and get a special Bonus!

*BONUS: Order right away and get our Free Report: How to Earn Extra Cash With Your Computer.

DAR Sales - 3110 Fulton - Sacramento, CA 95821

TRS-80 is a registered trademark of the Tandy Corp.

DAR Sales - 3110 Fulton - Sacramento, CA 95821

Okay! Enclosed is \$19.95 - (CA res. add 6% - \$21.15 total)

Rush the MAILLIST Program under the 30-day refund guarantee.

I have (circle one): 16K level II 32K DISK (only 1 drive needed)

Name _____ Charge to: Circle One VISA Mastercharge
 Street _____ Expires _____ Card# _____
 City _____ State _____ Zip _____ Mastercharge Interbank # (small digits under main#)
 Signature _____

CIRCLE 41 ON FREE INFORMATION FORM

TRS-80 OWNERS

ATTENTION CIVIL ENGINEERS

TRAVERSE

COMPUTES LATITUDES, DEPARTURES, POINT COORDINATES, LINEAR ERROR OF CLOSURE, RATIO OF ERROR, AND AREA WITHIN THE TRAVERSE. LII/16 CASSETTE W/DOCUMENTATION \$24.95

TRAVERSE AS PRESENTLY DIMENSIONED WILL ACCOMMODATE ANY CLOSED TRAVERSE CONTAINING UP TO 30 SIDES. THE INPUT DATA REQUIRED ARE THE NUMBER OF SIDES OF THE TRAVERSE AS WELL AS THE LENGTH AND BEARING OF EACH COURSE.

IN ONE YEAR'S USAGE, THE USER CAN SAVE HUNDREDS OF DOLLARS NOW BEING SPENT ON TIME-SHARING SYSTEMS. SCIENTIFIC SOFTWARE WILL SOON OFFER OTHER ENGINEERING ORIENTED PROGRAMS, SO THE USER CAN BUILD A COMPLETE LIBRARY.

COMING SOON - STARSHOT - A SURVEYING PACKAGE - AVAILABLE JULY

VOLUME

CALCULATE STOCKPILE QUANTITIES, WEIGHT AND AREA THROUGH CROSS-SECTION METHOD. ALSO USEFUL FOR CUT/FILL CALCULATIONS USED IN SITE PREPARATIONS. LEVEL II 16K CASSETTE W/ DOCUMENTATION \$24.95

VOLUME AS PRESENTLY DIMENSIONED, WILL ACCOMMODATE A STOCKPILE WITH 50 CROSS SECTIONS & 50 ELEVATIONS PER SECTION. VOLUME CALCULATES AREA, VOLUME (CU. FT/ CU. YDS) AND WEIGHT.

FOR LEVEL II ONLY
 SOFTWARE TECHNIQUES
 P.O. BOX 472
 FORT PAYNE, AL 35967

DEBOUNCE

DO KEYBOARD PROBLEMS HAVE YOU BUGGED?

MULTIPLE CHARACTERS CAUSED BY DIRTY KEYS CAN CAUSE FPUSTRATIONS AND PROGRAM BUGS. SURE, YOU CAN CLEAN THE KEYS (FREQUENTLY) BUT WHY GO THROUGH THE HASSLE.

THIS SHORT PROGRAM WRITTEN IN BASIC WILL "CLOAD" IN 6 SECONDS. RECORD THE LISTING ON TAPE AND LOAD UP BEFORE EVERY SESSION. TYPING "NEW" WILL HAVE NO EFFECT ON THE KEYBOARD ROUTINE AS THIS LOADS INTO HIGH MEMORY AND COMPLETELY ELIMINATES MULTIPLE CHARACTERS CAUSED BY CONTACT BOUNCE.

LISTING \$3.00

CIRCLE 28 ON FREE INFORMATION FORM

FOR TRS-80™ OWNERS

T-PAL T.M.

Programming Amateur's Letter

THE "DO-IT-YOURSELF" SOFTWARE NEWSLETTER
LEVEL II FROM THE BOTTOM UP

BUSINESS
 PERSONAL
 HOBBY

There's Nothing Else Like It!

\$24 per year... or send \$1 for sample

☐ Here's my check for \$24. Please enter my subscription for one year.

☐ I have enclosed \$1.00 Please send me a sample copy of T-PAL.

NAME _____

ADDRESS _____

CITY/STATE _____ ZIP _____

THE MAIL MART

Dept. CE, BOX 11102, San Francisco, CA 94101

PEAK METER-Aids loading.

Classic games written in fast machine code

The Software Association has released three new machine language programs, which load under the SYSTEM command on 16K Level II computers.

Z-Chess is a fast, easy-to-use chess program which includes all regulation chess features (black or white piece selection, castling, and En Passant captures).

A complete board is displayed along with square numbers which are used for selecting moves. Move inputs are checked for legality, and the computer warns when it 'checks'.

Z-Chess plays at seven difficulty levels, and is said to be a challenge even at the fastest level, where computer moves average less than 10 seconds.

A special feature is the board editor, which allows the board to be altered either at the beginning of the game or at any time during play (which makes possible "recalling" moves).

Back-40 is said to set a new standard in full-featured computer backgammon. Good strategy, all regulation backgammon features, and superb graphics are all claimed.

Back-40 features quick moves (within seconds), computer or player opening depending on dice roll, computer and player doubling, and scoring of all regular, gammon, and backgammon endings.

The display contains a complete board with numbered points, a graphic dice roll representation, the value and possession of the doubling cube, and the cumulative score.

Dr. Chips is a conversational "psychoanalyst" who is the ultimate introduction to TRS-80 for family and friends, says SA. Based on the well-known "Doctor" and "Eliza" programs, Dr. Chips is said to respond with greater variety than any of its type available, and has faster response.

Introductory prices are \$17.95 for Z-Chess, \$14.95 for Back-40 and Dr. Chips. TX residents must add 5% tax. Orders may be placed with the Software Association, Box 58365, Houston TX 77058. Dealer inquiries are invited. Circle 79 for information.

Thousands attend All-Clubs Faire

The first Orange County TRS-80 User Group (OCTUG) All-Clubs Computer Faire was held June 9th and was a huge success.



FAIRE CROWD—Visitors fill space at Los-Angeles-area All Clubs Faire.

More than 950 admissions were paid, and over 30 exhibited.

Seminars were held on education, games, business, amateur radio, data communications, etc.

More than \$1,200 in prizes were raffled off, including a complete, new, TRS-80 system, and a disk drive.

OCTUG newsletter editor Bill Barden compared the faire to the big one in San Francisco a month earlier, and said it was just as exciting.

micro squared

Specializing in hardware and software for the TRS-80 user

Suite 5B, 7131 Owensmouth Avenue, Canoga Park, CA 91303 (213) 883-1993



SUPPORT EQUIPMENT FOR THE TRS-80

DISC DRIVES

BUY COMPLETE, READY TO PLUG IN AND RUN

OR
SEPARATELY

DUAL power supply for 5 1/4" mini-floppy disk drives (Can also be used with single drives—add on later 'at no cost!!!) **\$85**
Dual chassis—holds 2 drives, power supply, cable **\$45**
Single chassis—holds 1 drive, power supply, cable **\$29**
Interface cable for dual drive **\$25**
5 1/4" disk drive—capable of 40 tracks—decreased track access time! 5 milliseconds! **\$299**

SOFTWARE PROGRAMS ON DISKETTE
Comparable to \$250 programs!

accounts payable
accounts receivable
invoice/billing
payroll
inventory control & pricing **\$99.50 ea.**
Also available: Custom business software. Inquiries invited.

SPECIAL

COMPLETE SYSTEMS—SHIPPED TO YOU READY TO PLUG IN AND RUN

Dual power supply, chassis, interface cable and 2 disk drives
COMPLETE ... **\$749**

Single power supply, chassis, interface cable and 1 disk drive
COMPLETE ... **\$429**

DISCOUNTS !!!!

All prices per items ordered in quantity 1 - 4
4% discount on quantities 5 - 10
7% discount on quantities 11+

Praises 232 interface

I am pleased to be writing to you from the keyboard of a TRS-80 Level II 16K machine.

As you can see from this copy, BOTH upper and lowercase are available to me. This results from using other than an RS interface. Specifically, I have interfaced the TRS-80 with a Teletype Model 43, using a Small Systems Hardware "TRS232" printer interface.

This gem installs in 6 seconds and completes the printer drive through standard cables.

Unlike the Radio Shack expansion interface, the Small Systems unit comes complete with an interface program on cassette tape, in Basic.

In fact, my reason for considering this equipment was my disappointment when I found that the RS-232-C interface from Radio Shack had no driver (that I've been able to make work) for a unit as common as the Teletype.

Getting the upper-and-lowercase was serendipitous, as I only set out to get something to make the TTY print.

Two disadvantages are present:

- all entry lists on the CRT as uppercase,
- keying is reversed, with Shift key used to get lowercase.

Since the TRS232 is so inexpensive, I can live with both problems.

— DENNIS R. KELLEY, Glenview IL.

(We suspect, Dennis, you'd still have both your problems with the Radio Shack serial port. These must be solved both in hardware (lowercase display) and software (the Shift mess). Anyone wishing information about Small Systems Hardware/Software, circle #84.

County Attorney wants evidence on World Power

Law enforcement officials are asking people who lost money dealing with World Power Systems, Inc., to send evidence that may be used in trials of the participants.

World Power for a number of months ran multi-page advertisements in the computer magazines offering good prices on a TRS-80 expansion interface, EPROM burners, S-100 interface, and other goodies for TRS-80.

Published reports indicate none of the merchandise existed, although CIE has had phone calls from people who claimed to have received memory chips.

Computerworld, the weekly trade newspaper, says the person suspected of having organized the business is believed to be Norman Henry Hunt, who in 1977 established Datasynch, a mail-order firm which offered for sale terminals and related equipment. The photographs in the ads turned out to be mockups, and Hunt was serving a three-year sentence at Chino (CA) State Prison, but escaped.

In the World Power scheme, Hunt was going under the name Jim Anderson, with wife Lee. In the 1977 fraud he used the name Winthrop Hunt, and has also called himself Col. David Winthrop, Harold Bender, Robert Renfro and William Scoville, according to reports.

Hunt is said to be a very persuasive talker, and apparently convinced a Chino prison guard he needed to get out to solve the world energy problem.

Arrested in the investigation was George P. Pollock, 22, of Tucson, who was featured in a World Power ad and was an officer in the company.

Anyone having evidence relating to the case should contact investigators, giving copies of letters, cancelled checks, charge-card receipts, etc. This information should go to Susan Moore, Pima County Attorney's Office, 111 W. Congress St., Tucson AZ 85701.

User group devastated

In the recent tornado which wreaked unholy havoc on our city, many of us in the Wichita Valley TRS-80 Users Group lost our computers, our tape and disk library of software, and our library of computer books and periodicals.

Even our club's own library of software and publications was destroyed.

We all have plans to replace our personal computers and software, but at this time I am

particularly interested in trying to help our club replace its loss.

Any club, publisher, software producer, or individual who wishes to do so, may contribute non-cash items, such as software, back issues of computer publications, and books on computers. Our club will be immensely grateful.

—J. WESLEY B. TAYLOR, club secretary, Wichita Valley TRS-80 Users Group, Wichita Falls TX 76308.

EDITORIAL:

World Power case shakes industry

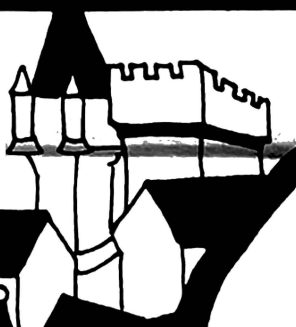
Confidence in small companies serving the TRS-80 user has been severely shaken by the World Power Systems' apparent fraud, and the failure of TapeTalk magazine.

CIE receives frequent telephone calls asking us if one or another company "is legitimate".

It is unsettling that an allegedly-fraudulent operation was able to place four to six pages of advertising in many of the major computer magazines, running them in some for four or five months—apparently without paying for any of them.

Advertising is essential if computer magazines are to prosper. Yet advertising cannot be effective if readers do not believe it. A crisis in confidence, obviously, would be very serious.

CIE, therefore, plans to take very seriously our payment policies, and absolutely require that first advertisers pay in advance. We also will refuse advertising to firms for which there have been too many complaints.



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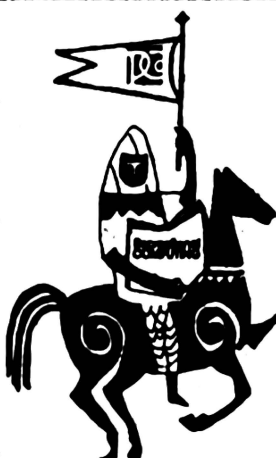
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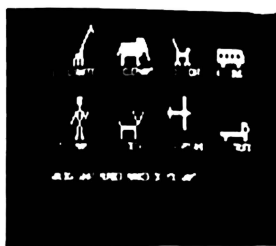
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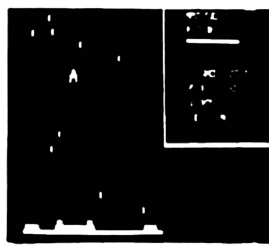
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Creative Computing Software should be stocked by your local retail computer store. If your favorite outlet doesn't yet offer it, have him call C.J. at 800-631-8112. (In NJ, 201-540-0445).

Or you can order directly from Creative Computing. Send your check for tapes plus \$1.00 shipping and handling per order to Creative Computing Software, P.O. Box 789-M, Morristown, NJ 07960. NJ residents add 5% sales tax. Visa or Master Charge are acceptable also. For faster service, call in your bank card order toll free to 800-631-8112. (In NJ, 201-540-0445).

BACK ISSUES to TRS-80 BULLETIN are NOT available. The Bulletin's large press runs of up to 100,000 copies are fully circulated

Level II Manual by Lev. -I author due in September

Computerists who admired the Level I manual probably will be happy to know CompuSoft Publishing expects its "TRS-80 Level II User's Manual" by David A. Lien to be released in September.

Dr. Lien is author of the widely-acclaimed Level I manual from Radio Shack, as well as "The Basic handbook, an encyclopedia of the Basic language."

The new book, "Learning Level II", picks up where the Level I manual left off, according to CompuSoft, and is written in the same easy-to-understand style that made the Level I manual so popular.

A special section includes replacement pages for the Level I manual, adapting it to match Level II machine capabilities.

Details and ordering information is available from CompuSoft, 8643 Navajo rd., San Diego CA 92119, (714) 465-3322, or circle #35.

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CIRCLE 34 ON FREE INFORMATION FORM

In a one-drive system.

—RONALD C. WAGENER, TARZAC/Computer Products, Box 10203, Norfolk VA 23513, or circle number 56.

Data enhancer buffers cassette

Microsette Data Enhancer, attached between the TRS-80 and its cassette player, enables reading marginally-recorded data over a wide range of volume settings on the recorder.

The DE-80 will allow reading either Level I or Level II cassettes from a volume setting anywhere between 4 and 10 on the Radio Shack recorders, as compared to between 5 and 6.5 if no enhancer is used between them.

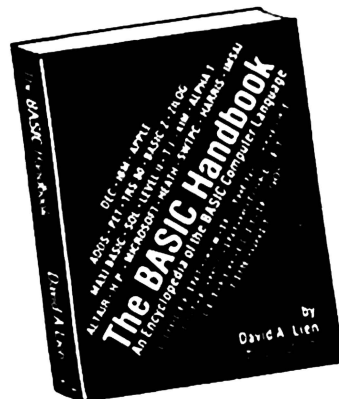
The DE-80 cannot, however, make up for bad recordings or major tape dropouts where data has distorted playback waveforms, hum and variations in amplitude.

The DE-80 consists of a small 4" x 2.5" box with only the read wire coming in and out of the box. It is inserted between the recorder and TRS-80, so there is no warranty violation from this improvement.

Data Enhancer also has a LED lamp which glows when data is being detected. The LED is useful for locating programs on a cassette.

Price is \$45, including power supply and shipping. It is warrantied 90 days, and carries a 30-day moneyback guarantee, less shipping cost. CA residents add tax. Microsette is at 777 Palomar av., Sunnyvale CA 94086, or circle #70.

The Missing Link



that helps convert programs from magazines and other computers to RUN on yours. Written by the author of the widely acclaimed TRS 80 Users/Learners Manual, it explains in detail over 250 BASIC words, statements and symbols used in over 50 micros, minis and mainframes. Already in its second big printing. 360 pages.

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CIRCLE 35 ON FREE INFORMATION FORM

Software Factory has education tapes

The Software Factory offers educational software for the classroom Level II TRS-80.

Designed for educators utilizing computer-assisted instruction, current guided-drill, practice, and instruction programs include:

- Introduction to Microcomputers, 6 programs, 3 tapes plus teacher's guide, grades 1-8, at \$49.95.
- Basic Math Skill Games, 12 programs, 6 tapes plus teacher's guide, grades 1-8, at \$89.95.
- Word Problems, 6 programs, 3 tapes plus teacher's guide, primary grades, \$54.95.
- Spelling I and II, 12 programs, 6 tapes, plus teacher's guide, primary grades, \$54.95.

These programs make use of the microcomputers' graphic capabilities and contain safeguards to minimize accidental program loss.

All programs are loaded on individual cassette tapes and stored with support materials in a snap-in, snap-out, three-ring notebook. Future software packages include: math regrouping, word attack skills, and metrics.

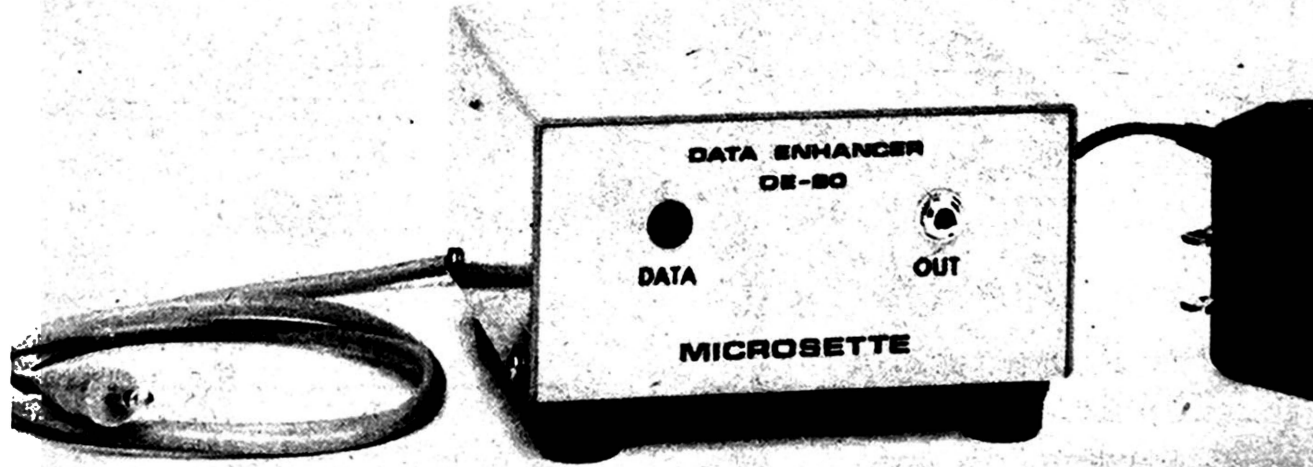
For information, write The Software Factory, 515 Park St., Anoka MN 55303, or circle #83.

Here's update on ultimail

I would like to make two corrections that were left out of the May Bulletin release on our Ultramail mailing program for TRS-80.

First, the program is supplied on cassette, not on disk.

Second, in a 48K machine the program will hold a maximum of 430 records per file. By using three file names it is therefore possible to store over 1,000 names and addresses on a DOS diskette



CIRCLE 25 ON FREE INFORMATION FORM

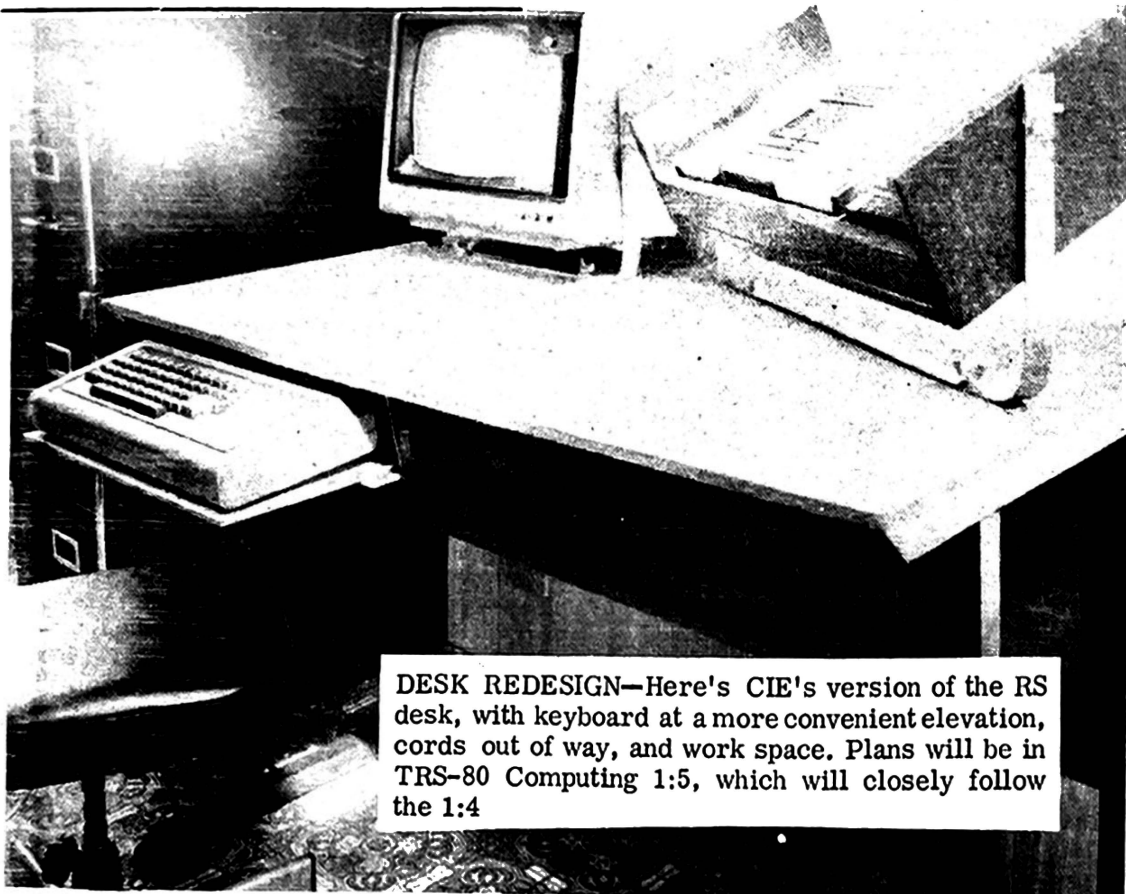
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DESK REDESIGN—Here's CIE's version of the RS desk, with keyboard at a more convenient elevation, cords out of way, and work space. Plans will be in TRS-80 Computing 1:5, which will closely follow the 1:4

CIRCLE 61 ON FREE INFORMATION FORM

DOS 3.0 now out for TRS-80 disk

Automated Computer Software Service division of Computer World has announced a new disk operating system for TRS-80 by the author of TRSDOS versions 2.0 and 2.1, Randolph V. Cook. Called DOS 3.0, the new disk operating system includes:

- o no key bounce,
- o automatic key repeat,
- o expanded debug,
- o no "lost data during read",
- o no parity error during read,
- o printer driver,
- o no "silent death".

Most of the problems that existed with TRSDOS 2.1 do not come with 3.0, according to Automated Computer Software Service.

New commands include:

- SEEK Will search for a given record.
- REREAD Gives the option of rereading the disk in event of error.
- REWRITE Gives the option of rewriting a file or record in event of error.
- CHECK EOF Check for end of file.
- WRITE EOF Forces end of file.
- LOC Returns current record number.
- SKIP Gives option of skipping any number of records.
- BOOT Complete restart as in power-up.
- CHAIN Allows chaining any number of commands
- PAUSE Forces computer to stop and wait for C/R.
- PURGE Allows you to erase any or all files from disk including system files.
- SET Allows setting of any current or user device driver.

RESET—Will reset any or all device drivers.

ROUTE—Allows routing of any peripheral to any peripheral.

XFER—Allows copying of disk files on one-drive system.

PATCH—A special routine that allows patching of system files or any other disk file automatically.

LINK—Allows tying together of any two or more devices.

FORMAT W/O ERASE—Allows formatting of diskette without erasing data.

RUN & LOAD FOR ONE-DRIVE SYSTEMS—Allows loading of machine-language programs from diskettes without SYSTEM.

DISK LOGGING OF MESSAGES—JOB-LOG creates a file on disk. Then it stores every operation performed with the computer and the time that it was performed. This is done as a background task, and the person initiating it need be the only person knowing it is on.

VARIABLE - LENGTH RECORDS—Allows defining the length of a record.

DIR FROM BASIC—Allows looking at the directory when in Basic.

USER-DEFINED KEYS—Allows user to define the value of any shifted-letter key (can be any length up to the end of free memory or disk space).

UPPER & LOWERCASE DRIVER—Still requires minor hardware modification, but supplies the software driver necessary for the computer to understand the lowercase letters that are used in commands.

SHIFT LOCK—For lowercase users to lock the keyboard into upper case.

RS-232-C DRIVER—This communications driver will allow the TRS-80 to talk to another TRS-80 via direct connection, or allow it to send out any information including Basic programs over the telephone. Can also be set to the printer driver for RS232 printers (will work with LPRINT and LLIST).

MULTI-PROTOCOL COMMUNICATIONS—This is a strong communications program for the TRS-80. It will allow you to communicate over the telephone with other users for program transfer.

DOS 3.0 is \$39.95 plus \$1.50 postage & handling, exclusively from Automated Computer Software Service, division of Computer World, 625 Main St., Nashville TN 37206, (615) 244-2798, or circle number 61.

TRSDOS 3.0
Disc Operating System
by the Original Author

DOS 3.0
Check out DOS 3.0 features...
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XFER • FORMAT W/O ERASE • DIR FROM BASIC • PATCH • LINK
USER DEFINED KEYS • KEY AUTO REPEAT • UPPER AND LOWER
CASE DRIVER • SHIFT LOCK • RS-232-C DRIVERS
MULTI PROTOCOL COMMUNICATIONS

HARDWARE FOR TRS-80®

- ☐ **Portec Disc Drives FD-200** \$375.00 ea.
These are 40-track Drives that are completely compatible with the TRS-80 and Radio Shack Drives. 3.0 DOS included. Will allow Turning Diskette over and Write on other side.
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SOFTWARE BY ACS

- ☐ **Monitor No. 3** \$ 39.95
Complete Machine Language Monitor for TRS-80 Features: Find, EDIT, Relocate, Symbolic Dump to Tape, etc.
- ☐ **Trash DATA BASE Management System** \$ 89.95
A complete all around DBMS for business or home. Information can be stored in any fashion. Comes on Disk with Documentation.
- ☐ **PLCEND** \$ 15.95
Will Patch ASCII files of Basic Programs or text or DATA FILES so that they may be loaded into the Disk Version of the Electric Pencil for Editing purposes comes on Cassette that will automatically create a Disk file of PLCEND.
- ☐ **MAKE TAPE AND MAKE DISK for Cassette Dealers** \$ 89.95
These are two programs that will allow you to take any type of Program from Disk and store it on tape for mailing purposes. When the user receives the program in the mail on cassette, it is loaded into the computer which will automatically make a Disk file of the program.
- ☐ **CP/M & C BASIC for the TRS-80®**
CP/M Includes: MOVCPM, STAT, PIP, Dump, DDT, ASM (8080), ED, plus 6 user manuals.
CP/M \$150.00
C Basic-2 Includes: XREF2, CBA52, and manuals.
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- ☐ **TELCOM - Telecommunications for the TRS-80®** \$ 29.95
Telecommunications for the TRS-80 allows one TRS-80® to communicate with another through the RS-232-C over the phone line.

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- () Tape 1, Level II, 34 programs, \$7.50
- () Tape 1, Level II, 24 programs, \$7.50
- () Tape 2, Level II, 'Common Basic Programs (77)', \$7.50
- () Book, Osborne & Associates, "Common Basic Programs", \$9.50 post-paid, via UPS (book-rate posting to P.O. boxholders)
- () Tape 3, Level II 16 K, PEOPLE'S PASCAL program development system, \$15, available August 15 (estimate)
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