SUPERLETTER

Serving SuperBrain® Owners and Users Around the World

June/July 1982
Vol. 2 No. 3

SuperBrain news continues to pour in from all directions.

New Intertec models have been introduced. New lower prices are staying in effect. And, a working 96 MB CDC hard-disk has finally appeared in the marketplace for the CompuStar computer line.

In our continuing series of articles bringing you up-to-date about various enhanced BIOS packages, this month we introduce SUPER-IOS from Systems Integration, Inc., which leads us to further happily report that our CP/M Users Group software search has ended successfully.

Systems Integration will down-load any of the public-domain CP/MUG programs. Single-sided diskettes are $15; $10 for the double-sided. This "mix-down" service is also available for all general purposes as well. See their ad for the address and phone number.

Dr. George Corliss in Milwaukee is also considering initiating a SuperBrain mix-down service. You may reach him at (414) 224-6340 during the day, or (414) 691-9239 in the evenings.

All of the CP/MUG volumes and directory of programs are available from the CP/M Users Group, 1651 Third Avenue, New York, NY 10028.

This is "show" month, and we thank Telecompute Integrated Systems of Toronto, the makers of TIS-APL for the SuperBrain, for their help in distributing Superletter at the NCC.

We'll also be visiting Comdex. If you're going to be at either show, and you see something that would be of interest to our readers, please let us know. We'll be sure to pass on the information in our next issue.

Thanks again for all your continuing comments and articles. We certainly benefit from them, and we know our many readers do too.

Albert Abrams
EDITOR

Technical Corner

HARDWARE INFORMATION ON THE SUPERBRAIN

Last in a Series

by Jonathan W. Platt

Special thanks to
Paul L. Kelley, Ph.D.

Copyright Jonathan Platt, 1982

The Floppy Disk System

This system is the most important aspect of the SuperBrain and also the most varied of all the subsystems of the SuperBrain. There are at least three major versions of the SuperBrain by Intertec and other companies; all recognized by their differences in this subsystem. There is one version, however, where the user is supplied hardware mods and the software needed to give the SuperBrain graphics capability. The three most marketed versions are:

I Single-sided; 35 tracks; 30 sectors/track; 128 bytes/sector
II Single-sided; 35 + tracks; 10 sectors/track; 512 bytes/sector
III Double-sided; 35 + tracks; 10 sectors/track; 512 bytes/sector

In keeping with CP/M's standard, version I is officially 26 sectors/track. The other four sectors on each track are undocumented, but are used. The 35 + is because Intertec has equipped the SuperBrain with drives from several different sources. Except for the Shugart drives, most of the drives now implemented in the SuperBrain will operate using either 35 or 40 tracks per side. If you wish to use all 40 tracks on your drive, then the PROM must be able to accomplish that also; it is not enough that a BIOS can handle it.

The floppy disk system is comprised of three main chips and memory. They are the second CPU, a Floppy Disk Controller (FD1791-B01), a Hex D Flip-Flop and the 2K PROM and 1K of static RAM. The second CPU (CPU-2) of the SuperBrain controls all the operations of the disk interface.

Upon the commencement of a disk operation, CPU-1 obtains CPU-2's bus and places all necessary parameters (function, unit, track and sector) into CPU-2's static RAM at a pre-specified location. It then sets a status word in CPU-2's memory which CPU-2 continually checks. After CPU-2 gets its bus back, it sees that the status word is set, sets the 'disk busy' (PPIB-5), disseminates all the information given and sends the appropriate control signals to the FDC. Any errors encountered are recorded into an error byte set up by CPU-2. CPU-2 gets its programming from the 2K PROM.

If a write operation is done, CPU-1 also puts one sector of data into the static RAM and CPU-2 instructs the FDC to put that data onto disk. If a read is done, CPU-2 instructs the FDC to retrieve one sector of data, byte by byte, and put it into the static RAM; DMA is not done by the FDC.

After an operation is completed, CPU-2 resets the 'disk busy'. When CPU-1 sees this, it gets CPU-2's bus and either transfers the data from the static RAM to the DMA address specified by a program and retrieves the error byte or just retrieves the error byte, depending on whether a read or write was done.

If a DMA address is specified which either begins in, or extends into bank 2 of memory (8000H-BFFFH) a small problem arises since that bank is switched out to access CPU-2's static RAM. The reason it is switched out is because the amount of memory used on CPU-1 is the maximum that the Z80 can support. The SuperBrain's monitor deals with this by setting up a temporary DMA address in high memory. Data to be written is transferred here before switching if that data is in bank 2. Data which was read is sent to the temporary address and then transferred to the real DMA address after

Continued on Page 4

Superletter is published, bi-monthly, by Abrams Creative Services. Mailing address: P.O. Box 3121, Beverly Hills, CA 90212. Phone: (213) 277-2410. Copyright © 1982 by Abrams Creative Services. All Rights Reserved. No part of this newsletter can be copied by any means without prior written permission from the publisher. Editor: Albert Abrams. Advertising & Subscription: Linda Patchell. (SuperBrain® is a registered trademark of Intertec Data Systems, Inc. CP/M® is a registered trademark of Digital Research, Inc.)

Letters to the Editor

DEAR SUPERLETTER:

I recently installed IE's SB/E Prom on our SuperBrain and encountered a problem with the automatic spindle motor shut off. After connecting the wire between the 7405 IC and the appropriate hole in the PC board, the computer would not boot up. Mark Kline of IE Systems, Inc. suggested a solution that solved the problem. I connected a 1-ohm, 5-watt resistor in series on the 12-volt power line to the Shugart disk drive motors. This dropped the voltage to 11.1 but the motors appear to start and run properly and the computer boots up at all times except when it is initially turned on. Pressing the red buttons executes the cold boot.

Gene Maas
CompuType Business Services
P. O. Box 3052
Riverside, California 92519

DEAR SUPERLETTER:

I note that in your April/May copy of Superletter you have a reader, Elvin Park, who is having problems with a Microline 83.

We have been using Microline 83 and Microline 83A printers for some time with the SuperBrain at 1200 baud without difficulty. In fact, the manual we print is made on one of these printers using the SuperBrain.

The only modification these printers have is the Serial Interface Board option which allows the SuperBrain to run at 9600 Baud with handshaking.

Mike Alford
Syntax Software Limited
16 Leyland Avenue
Enfield Middlesex

Editor's Note: *We received many responses on this subject. Dave Smith of CSC informed us that the new Intertec DOS 3.2 enables a Microline 83A to run at high-speed with no trouble. The older DOS's are where the problems arise. Pin connection with DOS 3.2 should go 1 to 1, 3 to 2, 7 to 7, and SB pin #20 to Microline #11. Change switch 2 to ON, 3 to OFF, and 4 to ON for the higher baud rate. And, switch #1 is on the A side, not on the B side.*

DEAR SUPERLETTER:

I just received my first subscription issue of "Superletter". I found it quite informative.

I own a "SUPERBRAIN" 0.4 which I believe must have been one of the early models that Intertec produced.

The DOS is 64K SuperBrain DOS 1.0. I would like to know if I can run CP/M 2.2 on this machine? I was told by someone that I cannot. Do you know a way of upgrading it? Does anyone out there in "SuperBrain" world have a similar problem? I would like to hear from them.

Arthur Lichtenstein
11 Duncan Street
Toronto Ont. M5H 3G6

YOU'VE got a BRAIN
USE IT!

SYSTEMS INTEGRATION sets new standards with SUPER-IOS™ , AN ADVANCED CPM* compatible operating system, designed specifically to take advantage of the SUPERBRAIN ± hardware.

STANDARD FEATURES INCLUDE:

DISK ENHANCEMENTS: 30%-50% FASTER DISKIO THAN CPM. UFI PROM supports 35 to 80 tracks per side, variable seek rates, variable motor turnoff delay; Alternate Side Interleave; AUTO sizing; up to 254 Directory Entries; Full File control; Link to program; Auto Search. Auto Load User program or batch file.

COMMUNICATION ENHANCEMENTS: LST and RDR Devices are user assignable to MAIN or AUX ports. PROTOCOLS: None, DSR high, DSR low, ETX/ACK, XON-XOFF, End of line timeout. Remote Terminal and Remote Computer. Half and Full Duplex.

ADVANCED KEYBOARD FEATURES: FULL TYPOMATIC action on ALL KEYS, TYPEAHEAD, STRING PROGRAMMABLE KEYPAD, user programmable KEYCLICK, DELAY AND REPEAT RATES.

ADVANCED SCREEN FEATURES: BLINKING CURSOR. Character and Line Insert/Delete, Read Cursor, Read Character at Cursor, Read CRT Pointer. SCROLL UP/DOWN, WINDOWED SCREEN CONTROL, SET TOP/BOTTOM.

REAL TIME CLOCK: SET/READ DATE/TIME. User interrupt routines supported. SCREEN DISPLAY of time.

HLLI: HIGH LEVEL LANGUAGE INTERFACE is Standard.

SPOOLING is Standard.

SCREEN PRINTER is Standard.

Plus over TWO DOZEN Utility Programs including Disk and Memory Diagnostics.

Also available with **SUPER-NET** for the CompuStar.

RECORD/FILE LOCKOUT
SUB-DIRECTORIES
PASS-WORD Protection
Much More

SYSTEMS INTEGRATION also provides custom programming services and customized systems for OEM distribution. We also carry the full line of LIFEBOAT and CPMUG software.

Brochure available on request. Call or write for further information. Dealer inquiries invited.

SYSTEMS INTEGRATION INC.

1623 Third Avenue - 24FW, NY, NY 10028 (212) 831-5229

IOS Is a Trademark of Infosoft • *Trademark of Digital Research • †Trademark of Intertec

Potpourri

WordStar 3.0 on SuperBrain DOS 3.1 Patch Sheet

To allow WordStar 3.0 to run on SuperBrain DOS 3.1, install for SuperBrain (selection '+' on Terminal Menu #3); then, using Install's label patcher, change location 02EDH to 00H; location 02F1H to 1DH; and location 02F2H to E7H. Be sure to disable the clock function (I don't know if this is possible) before invoking WordStar, or it could appear anywhere on the screen, causing obliteration of help menus or text.

Fix for CONTROL-W Problem in WS/SuperBrain CP/M 3.0 Systems

In a number of the WordStar's for SuperBrain 3.0 (and all WordStar's down-loaded from the SuperBrain DOS 1.x and 2.x to 3.0 versions) the CONTROL-W cursor motion keying sequence will be unresponsive. The following patch will correct this condition. This patch also eliminates the AUTO-BAUD SET routine since this "enhancement" has proven to be more satisfactorily managed with the CONFIG.COM utility provided by Intertec on the CP/M system disk.

For WordStar Version 2.0, 2.1, and 2.25 replace existing code starting at 02A4H (INISUB:) with the following hexadecimal values:

C3, E0, 02, C3, E9, 02

Starting at location 02E0 (MORPAT:) replace the existing code with the following hexadecimal values:

3E, 00, 32, 17, E5, 32, 18, E5, C9, 3E, FE, 32, 17, E5, 3E, 17, 32, 18, E5, C9

Either the LABEL PATCHER in INSTALL.COM or the Substitute command in DDT, SID or DEBUG may be utilized to effect these code changes.

Patches for DataStar and Formgen using SuperBrain DOS 3.0/DOS 3.1 for WordStar 3.0 and Earlier

In the file DATASTAR.COM and FORMGEN.COM make the following changes:

	For DOS 3.0	DOS 3.1	DOS 3.2
Location	Change to	Change to	
2A7	C3	C3	
2A8	DC	DC	
2A9	02	02	
2DC	3E	3E	
2DE	FF	FF	
2DF	32	32	
2E0	18	1D	20
2E1	E5	E7	
2E2	C9	C9	

—Guest Article—

My Experience with Super-IOS

by Brent Brolin
New York City

I came to Super-IOS as a professional writer, rather than as a programmer, a novice at word processing, whose only "technical" qualification consisted of having used Magic Wand-CP/M for a little more than a year. Having been pleased with the change from typewriter to word processor—my friends would probably say ecstatic—I could not imagine that the switch to Super-IOS would produce a change of any great magnitude. But, in all fairness, I must admit that the feeling I got when I changed from Wand-CP/M to Wand-IOS was—with only a slight exaggeration—very much like that sense of new-found power I had originally experienced when I went from my plodding old correcting Olympia typewriter to the SuperBrain.

I do not hesitate to say that my heartfelt thanks first went out to Super-IOS when I discovered how easy it was to "un-erase" a file that had been killed accidentally. When I began working with the SuperBrain, I never imagined I would be so stupid as to erase a valuable file. But, as I soon found out, I was. Under CP/M, these lost files were no more than fond memories for a novice like myself. And for that reason, I have come to love the miraculous little Super-IOS program called **Recover**. With fewer than half a dozen keystrokes, it "un-erases" lost files and saves countless hours of laborious reconstruction.

Being a writer, and not a "computer person" (whoever they are), one of the more appealing aspects of Super-IOS was the options it offered for customizing the video display. Knowing so little about the whole business to begin with, it seemed to add insult to injury to be tied to someone else's idea of how soon a key should begin repeating once depressed, or how fast the cursor should find its way to the other side of the screen. And why, if I prefer silence when writing, should I be forced to listen to "beeping" keys, or be tied forever to a black or a white background. Under Super-IOS I am able to fine-tune these and more system attributes, with **CONFIGOS**. When I first tried Super-IOS, I found the default, fast-blinking cursor disturbing. I was not guilt-ridden because of writer's block, but when that little white square winked at me every second, I felt like my word-per-minute output was being monitored. So I told it to remain "on" for three seconds, and to blink "off" for a discreet 2 milli-seconds. In these days of automation, it warms the heart to be able to control even a small part of the technology you come up against.

For me, one of the most valuable features of Super-IOS is what the manual calls the "user-programmable keypad." I call it a remarkably convenient tool, which I would never again want to be without. It lets me program the 18 keypad keys to enter anything I want—from "A:" for the A drive, to complete sentences (up to 184 characters)—in one key stroke. A key can be re-programmed in seconds, and there is no limit to the number of different "keypads" you can have. I use three regularly; one linked to EDIT/IOS, one to PRINT/IOS, and one unlinked, or "general service" keypad (Startup.Com).

Magic Wand users know that if you don't want to have things like sub-section headings or beginnings of lists or tables left at the bottom of a page, you must insert conditional commands (IF %LINES<15, NP). Wand users also know that when you insert them individually, you almost invariable mistype one or two of them, which means that the machine stops during the printing of that file, asks what the problem is, and you must retype the corrected command. I am no longer bothered by this particular problem because the "IF" commands are now part of my EDIT/IOS keypad. I also use the keypad to insert centered breaks between sections (three asterisks separated by four "hard" spaces), standard headings and footings, and other embedded Print commands.

The PRINT/IOS keypad contains, among other things, all the basic Wand formatting commands (top, bottom, left and right margins, line spacing, indentations, intensity of bold face, conditional page command, etc.), which means I need not bother to embed these in a short-term, temporary file. Instead, I enter them at print time—with two key strokes.

If **KEYPAD** is the feature I find most useful, **SPLIT** probably takes the "sleeper" prize; I thought I would have little or no use for it, and find out that I use it almost daily. **SPLIT** chops large files into small, equal pieces, neatly labeling them with the filename of the original, followed by 1, 2, 3, etc. (If you don't specify how big you want the chunks, it makes them 16K, or one extent). Like many Super-IOS features, I find that this one makes it easier for me to pay attention to what I'm doing, without having to worry about the nuts and bolts of things—is the file I'm working on becoming too unwieldy, and how will I go about adding all the files together for a chapter that may be as long as 250 pages? My writing is done in small sections, which end up as files ranging from 20K to 32K. When the time is right, I **XFER** these into one mega-file, then **SPLIT** it into trim, consecutively numbered files such as STORY1, STORY2, STORY3, etc., ready for the next round of editing.

One of the first things I discovered when I began working with Super-IOS was that in certain cases I could double the number of files on a single-sided disk. Since I started out with Wand, I have been collecting Print routines that I find especially useful: to print envelopes of various sizes (with and without return addresses), postcards (individually or from a master address file), labels, invoices, letterheads, type out address files, and so on. (Some of these have been gathered together and are available through Systems Integration as "Magic Formats".) These are usually small files—1K or less—

Continued on Page 7

CUSTOMIZE YOUR KEYBOARD

We maintain a large stock of blank keytops that can be custom engraved for:

★ **Video Display Terminals** ★

★ **Point of Sale Terminals** ★

★ **& Computers** ★

Replacement keytop kits for Word Processing Software packages configured for popular terminals.

OEM PROTOTYPES AND PRODUCTION RUNS

— Call or Write —

ARKAY ENGRAVERS, INC.

2073 Newbridge Road
Bellmore, New York 11710

(516) 781-9859 (516) 781-9343

Technical Corner, *continued from page 1*

CPU-1 switches bank 2 back in. In Intertec DOS versions 2.x and lower, a temporary DMA address is only set up if any part of the DMA area reaches into bank 2. In later versions (which includes QD machines) this checking is done away with and a temporary DMA area is always set up.

The Hex D Flip-Flop sends drive, side and head load select signals to the disk drives and sends the 'disk busy' line to PPIB-5 on a clock pulse generated by setting address line 3 (8 hex) on an 'OUT' from CPU-2. The FDC handles all other signals except MOTOR ON which is hard wired to +5V by Intertec. IE Systems, Inc. offers a very fine package including a PROM and one hardware mod to automatically shut off the drive motors after 10 seconds of idle time–the way it should be done.

FDC Interfacing Signals

The following describes the signals and protocol involved with using the Floppy Disk Controller. The 1791 is the successor of two previous versions–the 1771 and the 1781. The 1781 was the first to use either single density or double density formats. This would be how some companies make the first two tracks (the system boot tracks) single density while the rest of the disk is double density. Intertec (bless their hearts) does not do this.

The Type I commands cause the read/write head to be moved from one track to another across the diskette surface. All Type I commands expect the track register to hold the address of the current track. The track register is updated automatically with each command. The Restore command directs the disk drive to move the head to track zero. The seek command seeks a track number which has been loaded into the data register. The Step In/Out commands move the head a distance of one track towards the center or towards the outer edge, respectively.

The two Type II commands read or write a sector to disk. Both commands assume that the sector register has been loaded with the desired sector address prior to the point when the Read or Write Sector command is loaded into the command register.

The Type III commands are special purpose read and write commands that will typically be used when performing diagnostics or initializing a diskette. The Read Address command simply reads an unspecified sector ID from the diskette at its current position and transfers the contents of that field to the microprocessor. The Read and Write Track commands read/write an entire track of information from/to the disk–including gaps, the ID field and CRC characters. The Write Track command is used primarily to do the initial formatting of a new diskette.

The single Type IV command is the Force Interrupt Command. This command performs two functions: It terminates any command that is already in progress; and it causes a conditional interrupt to be generated depending on the lower four bits of the command.

FDC Command Summary

Stepping Motor Rate at 2MHz
r1,r0 — 00 = 6 ms; 01 = 6 ms; 10 = 10 ms; 11 = 20 ms
Times are double if CLK = 1 MHz (5" disks) instead of 2 MHz (8" disks)

Verify Flag
V — 0 = Do not verify; 1 = Verify destination track

Head Load Flag
H — 0 = Do not load head; 1 = Load head at beginning of command

Update Flag
U — 0 = Do not update track register; 1 = Update track register as head is moved

Data Mark
A0 — 0 = Data mark of FBH is written; 1 = Deleted data mark of F8H is written

Multiple Record Flag
M — 0 = Single record; 1 = Multiple record

Enable HLD and Delay
E — 0 = Head assumed engaged. No delay; 1 = Enable HLD, HLT and 10 ms delay

Interrupt Conditionally
I — Interrupt generated by bit set if:
I0 = Not Ready-to-Ready transition
I1 = Ready-to-Not Ready transition
I2 = Every index pulse
I3 = Immediate interrupt
X = Don't care

		Bits							
Type	Command	7	6	5	4	3	2	1	0
I	Restore	0	0	0	0	H	V	r1	r0
I	Seek	0	0	0	1	H	V	r1	r0
I	Step	0	0	1	U	H	V	r1	r0
I	Step In	0	1	0	U	H	V	r1	r0
I	Step Out	0	1	1	U	H	V	r1	r0
II	Read Sector(s)	1	0	0	M	X	E	0	0
II	Write Sector(s)	1	0	1	M	X	E	X	A0
II	Read Address	1	1	0	0	0	1	0	0
III	Read Track	1	1	1	0	0	1	0	X
III	Write Track	1	1	1	1	0	1	0	0
IV	Force Interrupt	1	1	0	1	I3	I2	I1	I0

Continued on Page 8

SUPERBRAIN II

PRICE BREAKTHROUGH

Intertec Data Systems' new SuperBrain II has all the features of the former SuperBrain, plus:

- Impressive Graphics capability
- Below-the-line descenders and reverse video
- Faster, enhanced disk operating system
- Battery operated real-time clock
- Microsoft Basic at no extra charge

NEW **SUPERBRAIN II Jr. . . . $1,895**
350K Disk–64 RAM

NEW **SUPERBRAIN II QD . . . $2,275**
700K Disk–64KRAM

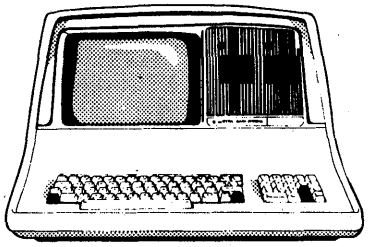
NEW **SUPERBRAIN II SD . . . $2,655**
1.5 MB Disk–64K RAM

Upgrade your SuperBrain to a CompuStar™ Compatable Network. (Includes All Hardware and Software)

NEW **DAZY CHAINER** List $ 495 $ 350

NEW **STARGRAPH** List $3,890 $ Call
Includes 350K Disk–64K RAM.

Emulates Tektronix™ 4010 Graphics Terminal, Supports SAS-Graph and all Tektronix Plot 10 Software.



90 Day Money Back Guarantee*

120 Day Extended Warranty**

Ordering Information: Money Orders, Cashier Checks or Bank Wires Welcome. Personal or Company Checks, allow 15 days to clear. Surface Freight Standard FOB Origin. Include your telephone number. No COD's, Please. Prices are subject to change without notice. Order desk hours are 9 to 5 CST.

CALL OR WRITE
(214) 931-9069

WESTSTAR MICRO

16990 Dallas Parkway • Suite 151
Dallas, Texas 75248

SuperBrain is a Registered Trademark of Intertec Data Systems.
Dazy Chainer is a Registered Trademark of Gemini Computer, Inc.
Tektronix is a Registered Trademark of Tektronix.

* Refunds are Prorated.
** Extended Warranty offered by WestStar.

-Factory News-

Effective immediately, the Intertec SuperBrain becomes SuperBrain II. The new SuperBrain II features include a faster, enhanced disk operating system, a library of new visual attributes including below-the-line descenders, reverse video, and impressive graphics capabilities. And there are a variety of other hardware enhancements including a battery operated real-time clock. In addition, a copy of MicroSoft Basic will be included with each unit at no extra charge. Also, SuperBrain II's internal circuitry has been completely redesigned and will be computer tested to ensure optimum field reliability.

There are four SuperBrain II Models.

Model	Manufacturer's Suggested List
SuperBrain II (For domestic customers only)	
Jr. Model (w/2 double-density drives)	$2495
QD Model (w/2 double-sided drives)	$2995
SD Model (w/2 96 TPI drives)	$3495

Sr. Model – Specifications and prices to be announced in about 90 days. Intertec is planning for this unit to incorporate some sort of Winchester storage, probably 5 MB. No orders are being accepted for this unit until an actual delivery date and pricing are determined.

TriStar Cited as a Flagship Distributor for Intertec

Tristar Data Systems of Cherry Hill, N.J. (formerly CompuDial) has agreed to purchase over $1 million worth of Intertec Data Systems Corp. products during 1982. With the signing of this agreement, TriStar nearly doubles the number of Intertec units it will handle during 1982 and will become one of the microcomputer manufacturer's largest dealers.

CONTACT: Dan Brown, (609) 424-4700

Back Issues/Classified

Back Issues $3.50 – 8 available
Feb/March '81 through April/May '82

Write To:

SUPERLETTER, Circulation Dept.
P. O. Box 3121
Beverly Hills, California 90212

SuperClassified rates are:

$4.00 per line
(3 line minimum – 5 words per line.
Please note: Publication of all Super-Classifieds are dependent on dates of receipt of copy and payment and space availability.)

THE INTERTEC DOCTOR

MMI = 2 yrs. exp. sell/serv. Super-Brains & Compustars. "We make them work."

MMI UPGRADE: Reduces readwrite and bdos errors to 1/20th, accesses programs 50% faster, auto disk drive on/off control.

SUPERBRAIN & COMPUSTAR UPGRADE 500.
Modified user upgrade kit & inst. 175.

COMPUSTAR HARD DISK DSS10 UPGRADE 600.
We upgrade only those machines with new controller boards that arrive unopened from the Intertec factory.

DISK DRIVE ALIGNMENT KIT & INST. 150.

PHONE CONSULTING AVAILABLE

MMI OFFICE MANAGERS PROGRAM:
Modules are: correspondence, sales & customer history, accounting, job costing, & inventory. Call for details.

NEED ADDITIONAL COMPUTERS?
BUY A NORTHSTAR **HONEY** COMPUTER FROM MMI. **ONE YEAR WARRANTEE PARTS,** 120 DAYS LABOR. HONEY will run your existing standard or graphics software programs. It features 620 x 240 high res. graphics, 64K ram + 20K graphics ram, upper and lower case descenders, 60 user-definable graphic characters, and a reliable linear power supply. Ask about P.E.P. w/Graphics, Plain English Programming with Graphics. A computer assisted programming system for programming machine tools.

MEASUREMENT MASTERS INC. 714 754-0528
2740 SO. HARBOR BLVD. #H, SANTA ANA, CA

-New Products-

THE CP/M TUTOR DISK

Syntax Software Limited
16 Leyland Avenue
Enfield Middlesex ENGLAND
Contact: Mike Alford

SOFTWARE: This is a very special product, the first CP/M self-teaching software package we've seen designed especially for the SuperBrain. It will necessitate writing away to England, but we think it's worth it.

After you insert the diskette, the software assumes complete control of the computer. It then takes you through friendly step-by-step instruction in the workings of PIP (*all* the uses), SYSGEN, ED, CONFIGUR, STAT, SUBMIT, FILE HANDLING, CONTROL KEYS, and general DISKETTE CARE.

It is ideal for first-time users, for new office personnel, for trade shows and seminars, dealer and distributor demos, and for SuperBrain users who just want to journey into areas of CP/M they've never used before.

The product teaches a lot of information and facts in a brief, easy and imaginative style. It asks questions, gives hints to answers, both visually and aurally (using changing screens and beeps), to help you come up with the correct responses.

The CP/M Tutor Disk opens up an exciting, uncharted area of fun and educational use of the SuperBrain. CP/M may be the software-maker's first area of self-teaching study. But we're already curious to see what's coming next.

BRITISH DICTIONARY AVAILABLE FOR SPELLGUARD

Innovative Software Applications
The Plaza Building
1150 Chestnut Lane
Menlo Park, California 94025
(415) 326-0805
Contact: Marketing Department

Innovative Software Applications has announced the availability of a British dictionary for Spellguard, the original CP/M spelling checker. The British dictionary contains the British spelling for words frequently used throughout the United Kingdom and British Commonwealth countries and international vocabulary. The British dictionary initially comes with 23,000 words, and the Spellguard system allows the user to expand the dictionary to the limit of available disk storage space. Currently, the British dictionary requires about 57K of disk storage.

Currently registered Spellguard users can purchase the British dictionary for $35.00 until June 30, 1982. After this time, the British dictionary will cost $125.00

SUPERLETTER SUBSCRIPTION FORM

Name (Please print) _____

Street/Apartment Number _____

City _____ State/Province/Country _____ Zip/Postal Code _____

☐ U.S. 1 yr. (bi-monthly) $20.00
☐ Canada & Mexico $20.00
☐ All other Foreign $35.00 Airmail Only. (To expedite service, remit in U.S. funds drawn on a U.S. Bank.)
☐ Enclosed is my check. ☐ Bill VISA ☐ Bill MasterCard

Card Number _____ Expiration _____

Signature _____ Date _____

Mail To:
SUPERLETTER
Circulation Dept., P. O. Box 3121, Beverly Hills, California 90212
(You may XEROX THIS FORM to keep your SUPERLETTER intact.)

✓ NEW PRODUCTS!

ABRAMS
CREATIVE SERVICES

SOFTWARE DISCOUNTS!

dBASE II $549! WordStar $310! SuperCalc $258!
Spellbinder $345! CBASIC-2 $96! SpellGuard $221!

Welcome to the world of super low software prices! The lowest prices **anywhere** on nationally advertised CP/M software. For any computer and any format. You can even use your VISA or MasterCard to pay for it. The only thing we won't discount is **quality.** Every software package you buy is guaranteed to be factory-fresh, pre-tested and shipped to you quickly and carefully. We're adding to our large list of products each day, so if you don't see what you've been looking for, call us. Chances are we've already begun to sell it at a lower than discount price.

Manufacturer/Product	Your Price
ARTIFICIAL INTELLIGENCE	
Medical	$820
Dental	$820
ASPEN SOFTWARE	
✓ **Grammatik**	$140
✓ **Proofreader**	$125
Both	$250
BYROM SOFTWARE	
BSTAM	$145
BSTMS	$145
CHANG LABS	
✓ **Microplan**	$350
COMPUTER CONTROL	
Fabs	$155
Ultrasort	$155
CONDOR COMPUTER CORP.	
Condor I	$595
Condor II	$849
DESIGNER SOFTWARE	
✓ **Palantir Word Processing**	$365
DIGITAL RESEARCH PRODUCTS	
CP/M (INTEL MDS-800)	$150
PL/1-80	$450
MAC	$83
SID	$63
Z-SID	$88
TEX	$88
DeSpool	$48
BT-80	$175
ECOSOFT	
Microstat	$219
EPIC COMPUTER	
✓ **Supervyz**	$90
FOX AND GELLER	
✓ **Quickscreen**	$145
✓ **dUtil**	$95
✓ **Quikcode**	$249
GRAHAM DORIAN	
Apartment Management	$485
Cash Register	$485
Inventory I	$485
Payroll I	$485
Dental	$719
Medical	$719
Surveying	$719
Accounts Payable	$719
Accounts Receivable	$719
General Ledger	$719
Inventory II	$719
Order Entry/Invoicing	$719
Payroll II	$719
INTERNATIONAL SOFTWARE	
✓ **Mathe-Magic**	$95
ITHICA INTERSYSTEMS	
Pascal Z	$345
KEY BITS	
WordSearch	$175
String 80	$82
String 80 (Source)	$275
LIFEBOAT	
✓ **T/Maker**	$249
MICROPRO PRODUCTS	
WordStar	$310
Mail-Merge	$99
WordStar/Mail-Merge	$400
DataStar	$239
WordMaster	$115
SuperSort I	$195
SpellStar	$169
CalcStar	$225
✓ **Customization Notes**	$350
MICROSOFT PRODUCTS	
Microsoft Basic 80	$285
Microsoft Basic Compiler	$324
Fortran 80	$345
Cobol 80	$569
Macro 80	$170
Mu Math/Mu Simp	$219
Mu Lisp/Mu Star	$170
M-Sort	$121
Edit 80	$100
MICROSTUF	
✓ **Crosstalk**	$139
MICROTAX	
Level I (Individual)	$225
Level II (Professional)	$925
Level III (Partnership)	$700
Combined package (II and III)	$1,500
MT MICROSYSTEMS	
Pascal MT+	$419
NEXUS	
✓ **Zip**	$149
OASIS	
✓ **The Word**	$70
ORGANIC SOFTWARE	
Textwriter III	$105
Datebook	$259
Milestone	$259
PRO/TEM SOFTWARE	
✓ **Synopsis**	$120
✓ **Footnote**	$120
SORCIM	
Pascal/M	$349
Pascal/M (8086)	$425
STRUCTURED SYSTEMS	
GL or AR or AP or Payroll or Inventory	$819
Letteright	$175
Analyst	$189
NAD	$85
QSORT	$85
SUPERSOFT	
Diagnostic II	$82
Forth (Z80 or 8080)	$145
Fortran	$215
Fortran w/Ratfor	$287
Tiny Pascal	$84
Disk Doctor	$84
Utilities I	$54
Utilities II	$54
✓ **Nemesis**	$40
✓ **Dungeon Master**	$40
✓ **Analiza II**	$45
✓ **Scratch Pad**	$175
✓ **Data View**	$175
✓ **Stats Graph**	$175
UNICORN	
Mince	$145
Scribble	$145
Both packages	$245
A POTPOURRI OF EXTRAS	
Plan 80 (Financial Modeling)	$259
CB-80 (A True compiler for C-BASIC 2)	$450
Access 80, Level I (Report generator)	$241
Access 80, Level II (Output processor)	$400
Spellguard for Lawyers	$100
Statpak	$429
Lynx	$219
Quic-N-Easi (Business Applications)	$319
Mailman (Mail List Manager)	$100
ZED	$195
✓ **SB/E PROM and BIOS**	$165
✓ **SB/E Diagnostic**	$165
✓ **SuperBrain Graphics**	Call for Discount!

Please add $3.50 **per product** for shipping and handling. VISA, MasterCard, and money orders are accepted. Checks OK but require 10 working days to clear. **International orders:** please add $10 and provide for additional postage. All checks must be drawn in U.S. dollars from American banks. California residents: add 6% sales tax to total.

To order, call or write:

ABRAMS CREATIVE SERVICES
369 South Crescent Drive
Beverly Hills, California 90212
(213) 277-2410

VISA MasterCard

Guest Article, *continued from Page 3*

but I discovered that even the smallest of them took up 2K worth of space under CP/M; so 20 files used up a valuable and unnecessary 40K space on a single-sided, CP/M diskette. Under Super-IOS, a 1K file uses 1K of disk space.

Super-IOS offered so many little "extras" that, as a "civilian" (one who knows little or nothing about the insides of a computer) I assumed they were aimed primarily at the erudite programmer, and as such would be excess baggage as far as I was concerned. I was surprised to discover that this was not so, and soon found myself making use of a number of these gadgets, for the simple reason that they were easy to use—even for me—and made my everyday work a little easier. To give you an example, I have a general-work disk, which I use for writing letters and doing odd jobs, and it periodically gets overloaded with left-over, temporary files. Erasing them under CP/M was something of a chore. I would print a copy of the directory, check off those to be deleted, then return to the screen and enter "ERA" commands for each file I no longer needed. This became a one-step process with the Super-IOS program called **ERASE;** you tell it to "erase" all the files of a certain type (*.BAK, for instance), and it lists each one, asks you if you want it erased, and you simply enter "Y" or "N." I now zip down a line of fifteen or twenty BAK files in a matter of seconds, saving the important ones and killing the others.

Other Super-IOS refinements made my work considerably easier in other ways. Finding one file on a disk which has 90 or 100 others was a bit of a needle-in-a-haystack operation under CP/M. Now I invoke **XDIR**. It lists the files alphabetically (and/or in numerical order), so it is a simple matter to find the one I'm interested in. I have also become fond of the program that allows me to **LABEL** a disk, giving it a name that is then displayed whenever a **DIR** or **XSTAT** is requested. The disk that has my most recent revisions of Chapter One is labeled ONE, its backup is labeled ONE/COPY. Thus, although the directories may be identical, the label removes any doubt as to which one is the up-to-date version.

COPY also gives me useful options: I can copy an entire disk, or copy only those tracks that are in use. Either option can be executed *from* any drive, *to* any drive, according to your specifications.

XFER, the program that transfers files, has its own helpful options. You can **XFER** with or without on-screen verification, link files together, even compare two files to see if they are the same—**XFER** will even list the bytes that are different if you like.

"Typeahead" is also invaluable. I often enter a half-dozen commands while EDIT/IOS is loading a large file, and then go off to pour myself a cup of tea while the machine finishes loading the file and then executes the series of commands.

XSTAT too goes beyond the bare essentials of its CP/M counterpart, showing the disk label, type of directory (single- or double-sided), size of the user memory, total disk space, how much is used and how much remains, total number of directory entries available, how many are used and how many left, etc. And I get all this information with the stroke of a key, **XSTAT** being one of the 18 commands in my "Startup.Com" keypad.

When I switched from single- to double-sided drives recently, I was pleased to see that IOS continued to offer easily understandable, useful tools that simplified my work. Super-IOS automatically differentiates between different disk formats, so I can work from my old, single-sided disks and the new double-sided ones at the same time. Super-IOS's **FORMAT** program has an option that lets me *interleave* the tracks on my double-sided drives; it formats the outside tracks first, leaving the inner tracks till last, to be used only if you want to pack the diskette 340K bytes-full. These inside tracks are the ones that most often give problems in terms of reading and writing. Other systems fill one side of a double-sided disk, and then the other; which means that half of this problem area falls right smack in the middle of your usable storage space. A program called **CONVERT** not only converts files from CP/M to IOS (and back again, if you please), but also lays single-sided files down on double-sided diskettes.

If good, solid CP/M could be called the Volkswagen of operating systems, I would have to say that Super-IOS comes close to being the Rolls Royce.

SuperClassifieds

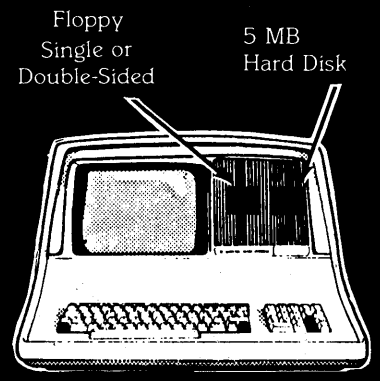
QD & DD SUPERBRAINS WANTED. Call Neil at (305) 392-6740.

COMMUNICATIONS—Transfer file via modem or direct wire between Data General & SuperBrain, Altos & SuperBrain, MP/M and SuperBrain, SuperBrain to SuperBrain. Speeds up to 19,200 band. Single CPU license $295. & Dual CPU $425. Send check to Latham Software, 16 Maple Street, Latham, NY 12110 or call (518) 785-3333.

SUPERBRAIN™
5 MB Plus
(K System Five)

Now available INTERTEC's amazing SUPERBRAIN with built-in 5MB Hard Disk Storage. The K SYSTEM FIVE looks and operates like a normal SUPERBRAIN but with the advantage of 5 MB hard disk storage and hard disk speed that are immediately available to the operator.

Kramer Systems International, Inc. has successfully installed **COMPUSTAR™** and **SUPERBRAIN™** Systems worldwide.



Kramer Systems International, Inc. is an authorized established distributor for the complete Intertec Data Systems product line. We have a proven record of providing full support and service to all of our customers.

Superbrains
Compustars
Disk Storage Systems
Printers
Software

Maintenance & Support
Modular replacement is available to all customers with 48-hour response in most cases. Our maintenance personnel are experienced professionals who have trained government and commercial technicians in the repair and maintenance of the Superbrain and Compustar.

Dealer and International inquiries invited.
Available on the GSA schedule.

Kramer Systems International, Inc.
8403 Dixon Avenue
Silver Spring, Maryland 20910
(301) 585-7480

Call today for additional information.

SPECIAL NCC and COMDEX ISSUE!

FIRST CLASS

SUPERLETTER
P.O. Box 3121
Beverly Hills, CA 90212

Continued from Page 4

The FDC Status Register

When a command is received, the busy status bit is set and the rest of the bits in the status register are updated or cleared for the new command. The format of the status register for each command type follows:

Type I Status

Bit	Name	Description
0	Busy	Set while command is in progress. Reset when completed.
1	Index	Set when an index mark was detected on the diskette.
2	Track 00	Set when head is positioned over track zero
3	CRC Error	Set when a CRC error is detected. Reset upon new command.
4	Seek Error	Set when designated track could not be verified. Reset upon new command.
5	Head Loaded	Set when head is loaded against the diskette surface
6	Protected	Set when diskette is write protected
7	Not Ready	Set when disk drive is not ready to do a read/write

Type II and III Status

Bit	Name	Description
0	Busy	Same as Type I
1	Data Request	Set when data register is ready to be read or written
2	Lost Data	Set when data register is not read within one byte time
3	CRC Error	If bit 4 is also set, this bit indicates that an error was found in an ID field; otherwise error in data field
4	Record Not Found	Set when desired sector or track not found
5	Record Type/ Write Fault	On a read command, this bit indicates the type of data address mark that was read. Not used on Read Track. On a write command, this bit indicates that the write fault input from the disk drive was detected.
6	Write Protect	This bit indicates that the diskette is write protected.
7	Not Ready	Same as Type I except that Type II and III commands will not execute unless drive is ready.

CORRECTION: We noticed a typographical error which may mislead the readers. On page 2, paragraph 3, line 10 of the Feb/March, '82 issue it reads, "The CRTC data lines are A0. All of the CPU's. . .". It should read, "The CRTC *date* lines are A0. All of the CPU's. . .". **Editor**

COMPUSTAR 96 MB

CDC 96 MB DISK DRIVES FOR INTERTEC COMPUSTAR SYSTEM

Industry standard fixed/removable disk drive provides large system disk performance and backup capability for your COMPUSTAR system.

Disk drive is available with or without INTERTEC disk controller and can be rail mounted in standard 19-inch wide computer cabinets.

Single unit price
$7,200
Quantity prices available

EQUIPMENT RESOURCES, INC.

P. O. Box 723368
Atlanta, Georgia 30339

800/241-3574 404/955-0313 (in Georgia)