

WESTERN DIGITAL

C O R P O R A T I O N

Pascal MICROENGINE™ Product

NEWSLETTER

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Introduction This is the first Quarterly MICROENGINE Newsletter. Our intent is to form a communication link between Western Digital and MICROENGINE users. There will be four major categories in each issue: Current Events, Technical Notes, Product News, and a USER Forum for such things as requests, ads, or announcements.

This Newsletter is published by the Computer Products Division of Western Digital Corporation.

For MICROENGINE information contact:

<u>Name</u>	<u>Title</u>
Scott Hills	Microcomputer Product Marketing Manager
Mary Beth Thorne	Microcomputer Product Marketing Analyst
Kurt Wiechert	Customer Technical Support Manager
Robert McAuley	Software Engineer, Customer Support
Starr Cash	Sales Support Administrator

We look forward to working with all of you.

Current News We have begun shipping upgraded (F3) boards back to customers. Upgrades of MICROENGINES are still in progress and available at a flat rate charge of \$125.00. This update will give the user the ability to double the memory and program using interrupts plus several additional enhancements.

Product News GO Operating System is now available. GO gives the user such features as the Debugger and Double Sided Diskette Support.

HO is also available and has the above features plus concurrent programming capability, type ahead, and interrupt handling. HO operates only on upgraded (F3) MICROENGINES.

64K Byte expansion memory board is now available for the Western Digital Pascal MICROENGINE. Price of the additional memory has been set at \$1585 single quantities. This option doubles the size of current memory increasing system throughput by eliminating "swapping". The Model number is WD0902. See the attached press release for more details.

Product News (Continued)

Western Digital now has source available for the UCSD Pascal OPERATING SYSTEM at a cost of \$500.00. A License agreement must be signed. Contact Western Digital Customer Service to place your order for this product, model WD9820 (X). Specify diskette option.*

Six utility programs are available on disk under product number WD9802 (X) for \$100.00. The disk includes source code for: MAPPER converts between single density MICROENGINE and UCSD floppy disk formats; PRINT transfers files to console, remote, or printer with pagination; RIMARGIN right - justifies text; OCOMPARE compares two text files or code files; IRAND and RRAND are integer and real random number generators. (Specify diskette option)*

Tech Notes Many users have code files that need to be executed every time the booting procedure is performed. The file SYSTEM.STARTUP is used for this purpose. A user can store a code file under the name SYSTEM.STARTUP. The boot program will reach this file and execute the program automatically.

USER Forum We would like to make all of our customers aware of USUS. USUS stands for UCSD System User's Society and its function is to represent the USERS and UCSD Pascal. They serve as the chief information and software exchange body for the UCSD System Community. They also maintain a software exchange library from which software packages may be obtained. More information may be obtained by writing to:

UCSD System USER's Society
Chip Chapman Secretary
c/o LMR
4805 Mercury, Suite A
San Diego, CA 92111

* Diskette Type Options - Replace (X) with one of the following:

- | | |
|---------------------------------------|---------------------------------------|
| A. 8 inch Single Density Single Sided | C. 8 inch Double Density Single Sided |
| B. 8 inch Single Density Double Sided | D. 8 inch Double Density Double Sided |

Making the leading edge work for you.

INTRODUCTION

This second edition of the Western Digital/Advanced Systems Division's quarterly newsletter provides information to you on our products and plans. To help us improve this newsletter we request that you take a minute to fill out and send back the attached tear out form. Thus, we can determine who you are and how we can best serve your needs. If you have a friend who would like to receive the newsletter, please include his/her name also.

In addition, attached for software developers is an explanation of our new software catalog, *The Software Stack*.

ANNOUNCEMENT: CORPORATE REORGANIZATION

Western Digital recently has reorganized to devote more corporate resources and management attention to our growing systems business. Significant aspects of the reorganization are formation of a new division for Advanced Systems; creation of a separate systems sales organization; and separate systems manufacturing and quality control operations.

The Advanced Systems Division is chartered to plan, develop, introduce, and support all computer systems products. The MicroEngine and related products are included in this Division.

William E. Carlson has joined Western Digital as Vice-President and General Manager of the Division. Mr. Carlson formerly was with the U.S. Government Defense Advanced Research Projects Agency where he was responsible for the Ada program and a variety of distributed systems applications on the ARPANET.

Robert Van Steenberg, formerly Director of Marketing for Western Digital Computer Products Division is Director of Marketing; George White, formerly with Computer Automation is Director of Engineering for the Division.

Our corporate sales organization has been augmented by the addition of a new systems oriented group.

Mark Ludwig is Director of Systems Sales, and Don Sanborn has returned to the position of Sales Manager from his position in Government Marketing. Mark and Don are establishing an international network of systems representatives to sell and service our system-level products.

Sel Handler has joined the System Sales team as Director of Sales Development. Sel will use his 20 year's experience in communications and Product Marketing to provide sales-support promotions to the distributor network. He is the new editor of this newsletter.

Memory Expansion Board

Syed Hashmi also has joined to System Sales Group as Manager of Field Applications and Service. He will be our first line of customer-support contact.

Within Manufacturing, Joe DeVita has established a systems manufacturing organization; and a separate system quality control function also has been established.

This reorganization positions Western Digital for significant advances in the systems area.

PRODUCT NEWS

As announced in our last newsletter, there is now a memory expansion board for the Pascal MicroEngine; this product adds 64-K bytes to the existing memory. The benefits of expansion to 128-K bytes are:

- 1) Overall system performance is increased because less swapping is needed during compilations.
- 2) Added memory space allows users to write larger application programs.
- 3) The "Stack and Heap": space has been increased.
- 4) No changes have been made to the operating system (i.e., editor, compiler, filer). The only change is the software boot program. As a user, you will declare the system type (64K or 128K) and install the correct software boot through the Bootmake program.

A common-level III.0 Operating System for both the Single-Board Pascal MicroEngine and the Modular MicroEngine has been released. Releases G1 and H1 support nine user segments and 128-K bytes of memory.

Because of a difference in system architecture, the "object code is not compatible between machines; thus, any program written and compiled on previous operating systems will require recompilation to run on the new system. Once recompiled, the software is executable on either machine.

Pascal IV.0

Some inquiries have been received concerning the differences between UCSD level III.0 and IV.0. We have found through our evaluation that the functionality of IV.0 is the same as III.0 except for the additional languages available and the increase in user segments. Version IV.0 would require us to change hardware and firmware, making all new systems incompatible with older systems. We have increased the number of user segments to nine in release G1 and H1 and will support 128K in a future release. We are also investigating Ada and BASIC compilers for the MicroEngine.

Modular MicroEngine Brochure

Western Digital has announced a new product called the "Modular MicroEngine." The attached brochure describes its features. 128K bytes of memory is standard on the Modular machine. It operates on UCSD level III.0 Pascal software. The Modular system is available now in production quantities per the price list. It is a bus-oriented, "individual-function-per-board" system, as opposed to the single-board computer where all junctions are integrated onto a single board.

Enhancements to Single-Board Computer

We are evaluating several enhancements to the single board computer. Some enhancements being considered include:

- 1) Shugart-compatible floppy disk connector
- 2) 50-pin, Parallel-port connectors
- 3) Programmable baud rates for both ports.

Please send your opinions and suggestions to Scott Hills. We at Western Digital value your inputs.

CUSTOMER SUPPORT

MicroEngine Upgrade

Our turnaround time for upgrading MicroEngines is currently 40 days. This time frame is required for increased testing to improve reliability. Most boards are being returned in less time and some, due to shipping credit, or repair problems are taking longer. So far, 168 boards have been upgraded and returned. We are working to reduce the turnaround time to less than 30 days.

Compiler Bug Fix

Customers who received their upgraded boards before February 20 received an operating system (GO or HO) with a bug in the Compiler. We have sent fixed (new GO or HO Compilers) at no charge to all customers. The Compiler bug was fixed on all operating systems for boards shipped after February 20, 1981. If you have not received your copy of the fix, please contact Ms. Starr Cash at 557-3550.

Advanced Programming Package

We have prepared a Technical Note (M0013) describing how to utilize the more advanced features of our UCSD Level III.0 operating system. Included in this package are:

- 1) Descriptions of operating systems tables & globals
- 2) An explanation of concurrency
- 3) A sample program

The Advanced Programming Package is available at no charge.

Please contact Ms. Starr Cash if you would like to receive this package.

Switch Settings

A few customers had problems booting their systems after upgrade. To solve this apparent problem, the dip switches in the middle of the board should be set as follows:

5, 6, 7 all should be set "on." All others are set "off."

Instructions in the manual or any previous settings you may have used are now outdated.

Known Bugs

The following bugs have been reported to us and are being corrected:

- 1) "Break and Flush" commands don't work under HO.
- 2) Serial port-B printers are not functioning under HO. They work on GO.
- 3) The Yaloe editor can create files larger than those that can be read back in.

WD90 MicroEngine Reference Manual Errata

Errata for the WD90 Pascal MicroEngine Reference Manual (Document 80-013002-00A0) have been printed and are currently available. Holders of the manual can obtain a copy by contacting the Western Digital Literature Department. Reference the document by the title and number.

WESTERN DIGITAL CORPORATION

THE SOFTWARE STACK

3128 RED HILL AVENUE, BOX 2180
NEWPORT BEACH, CALIFORNIA 92663
(714) 557-3550 TWX 910-595-1139

Dear MicroEngine User:

Western Digital is proud to announce the Software Stack, an opportunity to market Pascal and Ada software directly to other MicroEngine users.

Our users have invested their time and energy in the creation of Pascal software that is of interest to all Pascal MicroEngine users. Western Digital recognizes this and would like to provide a way for our customers to realize a return on that investment.

The Software Stack will put software developers in direct contact with a broad marketplace of potential buyers: our customer base. Further exposure will be provided through Western Digital's worldwide network of sales representatives.

In addition, the Software Stack greatly expands every Pascal and Ada MicroEngine user's capabilities by offering a collection of available and varied software.

The first Software Stack will be published next quarter and updated periodically thereafter. Software programs will be divided into the following categories:

Business	Games	Word Processing	Miscellaneous
Data Management	Programming Tools	Systems Software	

Each software entry will consist of the program description, the type of operating system and memory size required, the type of diskette, and the price.

In addition to the Software Stack as a marketing tool for user-developed software, Western Digital Corporation will accept manuals, documentation, promotional material and product information describing user software for the MicroEngine. These items will be added to a software product manual: a high exposure item in the sales representative's sales package. Our sales force will avail your software literature to our worldwide base of customers.

Purchases will not be made from or through Western Digital Corporation, but by user contacting user. We will inform our users and prospects of programs that other users have for sale. Western Digital will not support user written software; users that provide software must be prepared to support it.

We invite you to submit your program descriptions to be included in the Software Stack. Please complete the attached form and send it to the attention of Mary Beth Thorne at Western Digital. Each program must be entered on a separate form. The deadline for the first Software Stack which will be mailed in June is May 31, 1981.

Sincerely,

Mary Beth Thorne

Mary Beth Thorne
Product Marketing Analyst

Microengine Repair Procedure

If you need repair service for your MicroEngine, contact the Customer Support Group. They will provide you with a Service Authorization (SA) number that must be clearly marked on the outside of the package. It is Western Digital's policy to refuse unauthorized returns. Starr Cash normally handles the SAs.

The following information is needed for an SA:

- Customer contact, company name, billing and shipping addresses, and phone number
- Payment method, if out of warranty. You may:
 - a. Issue purchase order, if you have established credit with Western Digital
 - b. Pay in advance
 - c. Request return collect
- Return shipping instructions: Western Digital will ship UPS—freight collect—unless other arrangements have been made
- Description and serial number of equipment to be returned
- Brief description of the problem. If you can be very specific, it will help us expedite the return of your machine

The Customer Support Group will check the warranty status of your equipment, provide the SA number and, if the machine is not under warranty, the cost of the repair. They will also give you the shipping address and the estimated turnaround time. The Customer Support Group may be reached at (714) 557-3550.

H1 Software To Be Shipped

The latest software release, H1, will be shipped later this quarter along with detailed tech notes.

H1 has corrected a number of problems in the Operating System. These include the following:

- In a program with two tasks both reading from the same console, it now correctly inputs the characters.
- Start/stop now works when more than one task is writing output to the console.
- Nine rather than seven user segments are available on the H1 release.
- The number of procedures or functions per segment has been increased to 255 from 149.
- The filer now prompts for confirmation when a single file is to be removed. This protects against accidentally removing a file.

The tech notes go into much greater detail and cover many other areas.

Hashmi Joins Division



Syed Hashmi

Syed Hashmi, previously of Western Digital's Corporate Sales Division, has accepted a position with the Advanced Systems Division as Manager of the Customer Service Group. Hashmi will specialize in providing day-to-day presales/postsales customer support and will devote his energies to solving customer/representative/distributor problems.

Syed's background includes Engineering, Product Marketing, and Field Service Management posts with Texas Instruments, Four-Phase systems, Ampex (Computer Products Division), and Digital Scientific Corporation.

Syed and his staff (Robert McAuley, Kurt Wiechert, and Starr Cash) are dedicated to customer support activities.

If you need help in the area of product support, our Customer Service Group may be reached at (714) 966-7746.

MicroEngine Subscription Renewal

A MicroEnginews order form is enclosed again in this issue. If you have not specifically asked to receive the MicroEnginews, please return the form or call the Customer Service Group immediately to insure that you will continue to receive the newsletter.

The advantages to you in providing us with the detailed information on your hardware and software configuration are numerous. The information supplied on the subscription forms will be used internally to plan product enhancements and insure that new products are compatible with our current customers' configurations.

Software Stack Arrives

Enclosed with this issue of the MicroEnginews is Western Digital's first software catalog, "The Software Stack." The catalog lists a varied collection of useful software written by MicroEngine users. The software should be ordered directly from the vendor listed in the catalog.

For those who missed the first deadline for submitting software, an update will be published regularly. Submittal forms (provided on the last page of "The Software Stack") must be returned by November 1, 1981 (rather than September 1, 1981 as listed in the catalog).

In an effort to provide the highest quality software, Western Digital will thoroughly test programs which are submitted to us. Software meeting our standards for reliability, documentation, and ease of use will be recognized via our "Top-of-the-Stack" award.

To apply for Western Digital's "Top-of-the-Stack" award, send your software program on an 8-inch, single-sided, floppy diskette with user documentation, a thorough test procedure and the submittal form to the Advanced Systems Division Marketing Department. Mary Beth Thorne manages "The Software Stack" for us.

Mounting Kits

Western Digital has received a number of requests from users asking for an easy way to mount the extended memory addition into the WD90 or WD95 black boxes. A kit has been designed to allow the power supply to be turned on its side, thus providing more room for the memory board. The kit consists of two brackets and one bar with complete instructions for remounting. Users needing the mounting kit should contact Customer Support.

System Software Tidbits

Programmers using the G0, H0, and H1 Operating systems should be aware of the following special situations that can arise:

Occasionally the system will not reinitialize automatically after stack overflow. Also, there are other situations when the system cannot reinitialize itself after the user hits the break key.

The P-code operation "mod" returns x rather than 0 for $(-x) \bmod x$. The following Pascal statement achieves the desired result: "If $-x \bmod x = x$ then $x := 0$."

To insure that the Compiler generates correct code for character comparison, place the constant to the right of the character comparison operator. For example, use `character_variable <= 'A'` logically equivalent `'A' > character_variable`.

Systems running H0 and H1 (Interrupt Systems) and using serial port B can hang during port B communications. If you have experienced this, it can be avoided by using the G0 Operating system (non-interrupt).

The Editor does not properly report I/O errors which occur during an attempt to close a work file.

In Patch, when using unit level I/O, entering a non-numeric value for a unit number (typically '5' instead of '5') causes a fatal error. Avoid prefacing unit numbers with the pound sign.

In Yaloe, the user is not warned that a file being edited is too large to be read back by Yaloe.

MicroEngine is a trademark of Western Digital Corporation.
Ada is a trademark of the U.S. Department of Defense.
QUEST is a trademark of Software Products International.
LogiCalc is a trademark of Software Products International.
VisiCalc is a trademark of Personal Software Incorporated.

Tax Planning Package

Aardvark Software, Inc. is offering the Tax Planning Package listed in the Software Stack at the special introductory price of \$250. This unique time-saving program was developed by certified public accountants specifically for professional use.

Don Cook, President of Aardvark, has provided the following summary of its key features:

- Accepts up to 72 different inputs.
- Selects lowest tax liability using all conventional methods, including income averaging and maximum tax on earned personal service income.
- Calculates minimum and alternative minimum tax.
- Does ten year averaging for lump sum distributions.
- Automatically determines limitations such as those on charitable contributions and capital loss.
- Calculates ten alternatives in less than one minute.
- Provides professional quality printout.
- Is fully supported by Aardvark's tax experts.

Contact Aardvark directly at 783 N. Water St., Milwaukee, WI, 53202 or phone (414) 289-9988.

Carlson Attends USUS Conference



Bill Carlson

Bill Carlson, Vice President and General Manager of the Advanced Systems Division, discussed the new products listed above and pledged Western Digital's continuing support for the MicroEngine at the UCSD p-System Users Society (USUS) conference on June 27 in Philadelphia.

Carlson participated in the major vendors' panel. The other two panelists were Dr. John Brackett, President of SofTech Micro Systems, and Robert Martin, Manager of OEM and Vendor Technical Support for Apple Computer Incorporated.

Carlson also told the USUS members that Western Digital is working on an Ada compiler for the MicroEngine. He explained that the work is progressing well, but Western Digital has not yet established its delivery schedule or prices. The MicroEngine p-system is proving to be a very good environment in which to implement the compiler, since it can compile more than 1000 Pascal statements per minute.

Information about USUS can be obtained by writing: USUS, P.O. Box 1148, San Diego, California, 92038.

WD Participates In Trade Shows



Bob Van Steenberg

Advanced Systems Division (ASD) and Computer Products Division customers had the opportunity to meet with the divisions' technical and marketing personnel at the recent Comdex—Spring '81 trade show and exposition at the New York Coliseum. ASD Marketing Manager, Bob Van Steenberg and Robert McAuley of the ASD Marketing staff demonstrated the new Modular MicroEngine. Many of the 5,000 people who passed by the company booth at the June 23-25 show stopped to watch the system run LogiCalc and QUEST.

Western Digital will show its MicroEngine products at the Munich, Germany Systems Trade Fair in October and at the Fall '81 Comdex show in Las Vegas, Nevada on November 19-22.