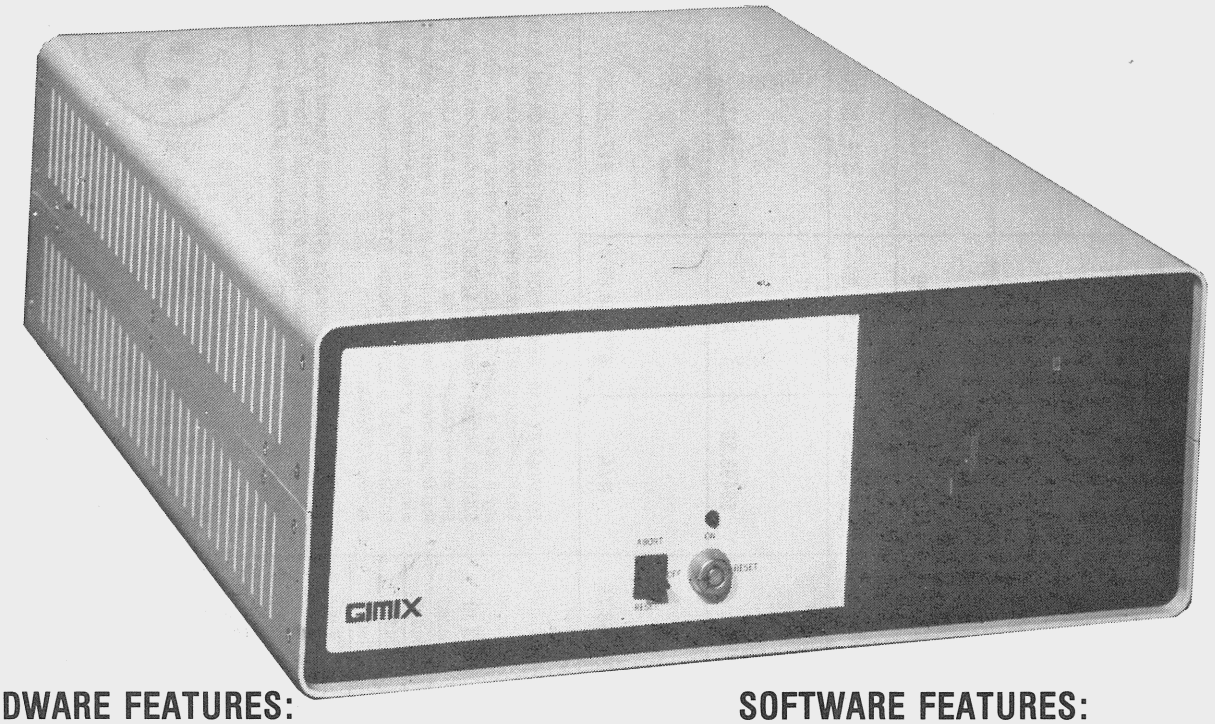
GMX 68020 DEVELOPMENT SYSTEM

A Multi-user, Multi-tasking software development system for use with all 68000 family processors.



HARDWARE FEATURES:

- The GMX-020 CPU board has: the MC68020 32-bit processor, a 4K Byte no wait-state instruction cache, high-speed MMU, and a full-featured hardware time of day clock/calendar with battery back-up. It also provides for an optional 68881 floating point co-processor.
- 1 Megabyte of high speed static RAM.
- Intelligent Serial and Parallel I/O Processor boards significantly reduce system overhead by handling routine I/O functions. This frees up the host CPU for running user programs. The result is a speed up of system performance and allows all terminals to run at up to 19.2K baud.
- The system hardware will support up to 42 terminals.
- Powered by a constant voltage ferro-resonant power supply that insures proper system operation under adverse AC power input conditions.
- DMA hard disk interface and DMA double density floppy disk controller are used for data transfers at full bus speed. The DMA hard disk drive controller provides automatic 22-bit burst data error detection and 11-bit burst error correction.
- A selection of hard disk drives with capacities from 19 to 85 Megabytes, removeable pack hard disk drives, streaming tape drives, and floppy disk drives is available.

SOFTWARE FEATURES:

The UniFLEX VM Operating System is a demand-paged, virtual memory operating system written in 68020 Assembler code for compactness and efficiency. Any UniFLEX system will run faster than a comparable system written in a higher level language. This is important in such areas as context switching, disk I/O, and system call handling. Other features include:

- compact, efficient Kernel and modules allows handling more users more effectively than UNIX systems, using much less disk space.
- UNIX system V compatibility at the C source code level.
- C Compiler optimized in 68020 code (optional).
- Record locking for shared files.
- Users can share programs in memory.
- Modeled after UNIX systems, with similar commands.
- System accounting facilities.
- Sequential and random file access.
- Maximum record size limited only by the disk size.
- Multiple Level Directories.
- Up to 4 Megabytes of Virtual Memory per user.
- Optional Languages available are: C, BASIC, COBOL, FORTRAN, LISP, PROLOG, SCULPTOR, and ASSEMBLER. In development are ADA, PASCAL, and FORTH.

Included with the UniFLEX Operating System are a Utilities package, editor, relocating assembler, linking loader, and printer spooler. Options inlcude a fast floating point package, library generator, and a sort-merge package.

The GMX version of the MOTOROLA 020 BUG is included with the system.

GIMIX, Inc., a Chicago based microcomputer company established in 1975, has produced state of the art microcomputer systems based on Motorola 6800 and 6809 microprocessors. GIMIX systems are in use in Industry, Hospitals, Universities, Research Organizations, and by Software Developers. GIMIX was awarded the prestigious President's "E" Certificate for Exports in 1984.

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ALL SYSTEMS INCLUDE:

* The CLASSY CHASSIS with a ferro-resonant, constant voltage power supply that provides + 8 volts at 30 Amps, + 16 volts at 5 Amps, and − 16 volts at 5 Amps.
* Gold plated bus connectors.
* Double density DMA floppy disk controllers.
* Complete hardware and software documentation.
* Necessary cables, filler plates.

YOU CAN EXPAND YOUR SYSTEM WITH:

MASS STORAGE

Dual 8'' DSDD Floppies, Cabinet & Power Supply **$1698.88**
60MB Streamer (UniFLEX-020 only) **$2400.00**
1.6MB Dual Speed Floppy ..... (under development)

MEMORY

#67 Static RAM-64K NMOS (6809 Only) **$349.67**
#64 Static RAM-64K CMOS w/battery (6809 Only) **$398.64**
#72 256K CMOS Static RAM w/battery **$998.72**
#31 16 Socket PROM/ROM/RAM Board (6809 only) **$268.31**

INTELLIGENT I/O PROCESSOR BOARDS

significantly reduce systems overhead by handling routine I/O functions; freeing the host CPU for running user programs. This improves overall system performance and allows user terminals to be run at up to 19.2K baud. For use with GMX III and 020 systems.

#11 3 Port Serial-30 Pin (OS9) **$498.11**
#14 3 Port Serial-30 Pin (UniFLEX) **$498.14**
#12 Parallel-50 Pin (UniFLEX-020) **$538.12**
#13 4 Port Serial-50 Pin (OS9 & UniFLEX-020) **$618.13**

I/O BOARDS (6809 SYSTEMS ONLY)

#41 Serial, 1 Port **$88.41**
#43 Serial, 2 Port **$128.43**
#46 Serial, 8 Port (OS9/FLEX only) **$318.46**
#42 Parallel, 2 Port **$88.42**
#44 Parallel, 2 Port (Centronics pinout) **$128.44**
#45 Parallel, 8 Port (OS9/FLEX only) **$198.45**

CABLES FOR I/O BOARDS—SPECIFY BOARD

#95 Cable sets (1 needed per port) **$24.95**
#51 Cent. B.P. Cable for #12 & #44 ..... **$34.51**
#53 Cent. Cable Set **$36.53**

OTHER BOARDS

#66 Prototyping Board-50 Pin **$56.66**
#33 Prototyping Board-30 Pin **$38.33**
Windrush EPROM Programmer S30 (OS9/FLEX 6809 only) **$545.00**

CONTACT GIMIX FOR FURTHER DETAILS ON THESE AND OTHER BOARDS AND OPTIONS.

EXPORT MODELS: ADD $30 FOR 50Hz. POWER SUPPLIES.
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GIMIX 2MHZ 6809 SYSTEMS

GMX 68020 SYSTEMS

Operating Systems Included	#49 OS9 GMX I/ and FLEX	#39 OS9 GMX II/ and FLEX	#79 OS9 GMX III/ and FLEX	#39 UniFLEX	#89 UniFLEX III	#020 UniFLEX VM
CPU included	#05	#05	GMX III	#05	GMX III	GMX 020 + MMU
Serial Ports Included	2	2	3 Intelligent	2	3 Intelligent	3 Intelligent
High Speed Static RAM	64KB	256KB	256KB	256KB	256KB	1 Megabyte
PRICES OF SYSTEMS WITH: Dual 80 Track DSDD Drives	$2998.49	$3398.39	$4898.79	N/A	N/A	N/A
25MB Hard Disk and one 80 track Floppy Disk	$5598.49	$5998.39	$7798.79	$5998.39	$8098.89	$13,680.20
72 MB Hard Disk and one 80 track	$7598.49	$7998.39	$9798.79	$7998.39	$10,098.89	$15,680.20
a 72MB + a 6MB removable pack hard disk and one 80 track floppy	$9098.49	$9498.30	N/A	$9498.39	N/A	N/A
a 72MB + a 12MB removable pack hard disk and one 80 track floppy	N/A	N/A	$11,298.79	N/A	$11,598.89	$17,180.20
GMX 6809 OS9/ FLEX SYSTEMS SOFTWARE OS9 + Editor, Assembler, Debugger	GMX I Included	GMX II Included	GMX III Included			
FLEX	Included	Included	Included			
GMXBUG Monitor	Included	Included	Included			
Basic 09, RunB (OS9)	Included	Included	Included			
RMS (OS9)	Included	Included	Included			
DO (OS9)	Included	Included	Included			
VDisk for FLEX	N/A	Included	Included			
RAMDisk for OS9	N/A	$125 option	Included			
0-FLEX	N/A	$250 option	Included			
Support ROM	N/A	N/A	Included			
Hardware CRC	N/A	N/A	Included			

Available: Wide variety of languages and other software for use with either OS-9 or FLEX.

All GIMIX versions of OS9 can read and write RS color computer format OS9 disks, as well as the Microware/GIMIX standard format.

All OS9/FLEX systems allow you to software select either operating system.

TO ORDER BY MAIL: SEND CHECK OR MONEY ORDER OR USE YOUR VISA OR MASTER CHARGE. Please allow 3 weeks for personal checks to clear. U.S. orders add $5 handling if order is under $200.00. Foreign orders add $10 handling if order is under $200.00. Foreign orders over $200.00 will be shipped via Emery Air Freight COLLECT, and we will charge no handling. All orders must be prepaid in U.S. funds. Please note that foreign checks have been taking about 8 weeks for collection so we would advise wiring money, or checks drawn on a bank account in the U.S. Our bank is the Continental Illinois National Bank of Chicago, 231 S. LaSalle Street, Chicago, IL 60693, account number 73-32033.

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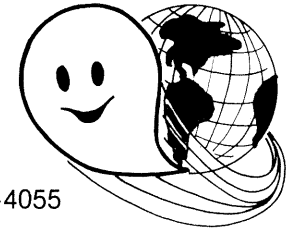

BOARDS & PARTS FOR GIMIX SYSTEMS

CONTACT GIMIX FOR PRICES, DETAILS, AND REQUIRMENTS FOR HARD DISK AND OTHER MASS STORAGE UPGRADES.

THE GIMIX CLASSY CHASSIS #19 consists of a heavyweight aluminum cabinet, constant voltage ferro-resonant power supply, and SS50 Mother board with baud rate generator board **$1498.19**
#22 Triple Disk Regulator Card **$88.22**
#93 Baud Rate Generator Board **$88.93**
#23 Missing Cycle Detector **$38.23**
#92 Filler Plate ..... **$14.92** 50 Hz Option **$30.00**
Cable sets: 8'' with Back Panel connector **$29.25**
for two 8'' external drives ..... **$44.26** for two 5'' drives **$34.96**

CPU BOARDS

#01 GMX III CPU & OS-9-GMX III **$1698.01**
#02 GMX III CPU & UniFLEX III **$1998.02**
The #05 GIMIX 6809 PLUS CPU Board **$578.05**
Options: GIMIX DAT ..... **$35.00** 9511A **$312.00**
SWTP Dat ..... **$15.00** 9512 ..... **$265.00**
#03 6800 CPU **$224.03**
#06 6800 CPU w/Timers **$288.06**
6800 Baud Rate Option ..... **Add $30.00**

FLOPPY DISK CONTROLLER

#68 DMA **$588.68**

MEMORY BOARDS FOR 6809/68020 SYSTEMS

#72 256KB CMOS STATIC RAM board with battery back up (specify system) **$998.72**

MEMORY BOARDS (6800/6809 SYSTEMS ONLY)

#67 Static RAM-64K NMOS **$349.07**
#64 Static RAM-64K CMOS w/Battery **$398.64**
#34 8K PROM Card **$98.34**
#32 16 Socket PROM/ROM/RAM Board, 24 pin **$238.32**
#31 16 Socket Universal Memory Board, 24/28 pin **$268.31**

INTELLIGENT I/O PROCESSOR BOARDS

significantly reduce systems overhead by handling routine I/O functions; freeing the host CPU for running user programs. This improves overall system performance and allows user terminals to be run at up to 19.2K baud. For use with GMX III and 020 systems.

#11 3 Port Serial-30 Pin (OS9) **$498.11**
#14 3 Port Serial-30 Pin (UniFLEX) **$498.14**
#12 Parallel-50 Pin (UniFLEX-020) **$538.12**
#13 4 Port Serial-50 Pin (OS9 & UniFLEX-020) **$618.13**
#15 24K Version of **#11**, with either large input or output buffers (specify) **$648.15**

I/O BOARDS (6800/6809 SYSTEMS ONLY)

#41 Serial, 1 Port **$88.41**
#43 Serial, 2 Port **$128.43**
#46 Serial, 8 Port (OS9/FLEX only) **$318.46**
#42 Parallel, 2 Port **$88.42**
#44 Parallel, 2 Port (Centronics pinout) **$128.44**
#45 Parallel, 8 Port (OS9/FLEX only) **$198.45**
#50 I/O for RS-232C, 423, 422-w/6850 ..... **$244.50**
#52 SSDA with 6852 ..... **$254.52**
#54 ADLC with 6854 ..... **$268.54**

CABLES FOR I/O BOARDS — SPECIFY BOARD

#95 Cable sets (1 needed per port) **$24.95**
#51 Cent. B.P. Cable for **#12 & #44** **$34.51**
#53 Cent. Cable Set **$36.53**

OTHER BOARDS & PARTS

#66 Prototyping Board-50 Pin **$56.66**
#33 Prototyping Board-30 Pin **$38.33**
Windrush EPROM Programmer S30 (OS9/FLEX 6809 only) **$545.00**
#76 Video Board-80 x 24 ..... **$398.76**
#08 Relay Driver Package **$1128.08**
#86 Above without Relays **$538.86**
Opto Board **$348.85**
Binder, 3'' **$12.00**
Binder, 2'' **$9.00**

8'' DRIVE CABINET & PARTS

2 8'' DSDD Drives, Cabinet & Cables **$1698.88**
Cabinet Only for 8'' Drive **$848.18**
220v/50 Hz. Option Add **$30.00**
Cable Set-Internal for 2 Drives **$44.82**
Cable Set-Internal for 4 Drives **$67.84**
Cable from 8'' Cab. to Mainframe **$45.81**
8'' Filler Plate **$14.83**

SOFTWARE:

GIMIX exclusive versions of OS-9/GMX I, II, III & FLEX are for GIMIX hardware only. All versions of OS-9 require the **#68** controller. When ordered with controller, FLEX is **$30.00**
GIMIX versions of FLEX **$90.00**
GMX VDisk for FLEX 09 ..... **$100.00**
GMXBUG: PROMs & Manual **$148.65**
Boot or Video/Boot PROMS (6809) **$30.00**
GIMIX Boot PROM for UNIFLEX **$50.00**
RMS (OS9) **$250.00**
DO (OS9) **$70.00**
OS-9 GMX III Update w/CPU SPPTROM **$125.00**
I/O PROMS w/Update **$40.00**
GMXBUG/FLEX/VDISK w/OS-9 III update ..... **Add $175.00**
RAM Disk for OS-9 ..... **$125.00**
O-FLEX **$250.00**
OS9 GMX I **$250.00**
OS9 GMX II **$500.00**
SCULPTOR-6809 (UniFLEX/OS-9) **$995.00**
SCULPTOR—68020 (UniFLEX) **$1595.00**

CONTACT GIMIX FOR PRICES AND AVAILABILITY OF OPTIONAL UNIFLEX AND OS9 LANGUAGES AND OTHER SOFTWARE.

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Repair charges for GIMIX products after warranty period will be $35.00 per hour per board (minimum $35.00) plus parts. Customer pays freight charges both ways. If GIMIX determines that replacement is desirable instead, we will notify you. Charges for checking out complete system will be $500.00 plus parts, freight, and necessary board repairs.

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GMX-020 PROCESSOR BOARD

The GMX-020 CPU Board is designed for maximum utilization of the power of the MC68020, while retaining compatibility with the already proven GIMIX line of peripherals such as DMA disk controllers and intelligent I/O processors. The board features:

- An MC68020 processor operating at 12.5 MHz clock rate (16.5 MHz optional when available).

The MC68020 is a full 32-bit processor with separate 32-bit address and data buses, an on-chip instruction cache, and a coprocessor interface. The MC68020 is object-code compatible with earlier members of the M68000 family, with enhancements to the instruction set providing additional support for high-level languages and systems software. The processor also supports demand-paged virtual memory.

The pipelined internal architecture of the MC68020 allows overlapping execution of instructions, and can result in a net instruction execution time of zero under certain circumstances. This, along with the on-chip cache and other enhancements make the processor typically 400% more powerful than its predecessors.

- A 4K byte (1K long word) instruction-only physical address cache operating at full processor speed (no wait-states). The on-board cache can be operated in any one of four modes to optimize cache utilization for a particular operating system or application. The cache RAM can also be used as high-speed (no wait-state) RAM when the cache is not enabled.
- A high-speed, discrete Memory Management Unit (MMU) that supports multi-user, multi-tasking operation and demand-paged virtual memory environments. Use of the MMU causes no increase in memory access time. In addition to dynamic address translation, the MMU associates four separate attributes with each 4K segment of memory: a write-enable bit to protect shared text, a ''valid'' bit to flag segments that have been modified, and an ''access'' bit to indicate that a segment has been used. The standard MMU configuration supports 4 Megabytes of virtual memory with up to 16 separate segment maps. Other configurations can allow up to 8 Mbytes of virtual memory, or up to 64 separate maps.
- An optional floating-point coprocessor (MC68881) that directly extends the architecture and the instruction set of the processor to include floating-point data types, full support for IEEE Rev 10.0 high level math functions, and also transcendental and other standard math functions. All coprocessor calculations are performed to 80 bits of precision.
- Six levels of prioritized autovector interrupts from seven sources. Two interrupt sources are internal to the board, three are from the bus, and two (non-maskable) are from sources connected directly to the CPU board.
- Three separate hardware prioritized channels for external DMA devices. Simultaneous DMA requests on different channels are arbitrated by the board on a channel priority basis.
- A 20-bit external address bus for up to 1 Megabyte of physical memory space (RAM and I/O). The I/O devices occupy the upper 4K bytes of the 1 Mbyte address space. Two separate areas are defined within the I/O space, each with optimum timing for particular I/O devices. (Note: The I/O timing will not support any 6800/6809 peripheral devices such as the 6850 or 6821. Serial and parallel I/O is supported only through GIMIX intelligent I/O processors).
- Two EPROM sockets that accept 8K, 16K, 32K, or 64K x 8-bit industry standard devices for up to 128K bytes of on-board filmware. The EPROMs are addressed above the 1 Mbyte RAM space, with auto-mapping of the restart vectors to low memory on power-up or reset.
- A full-featured hardware time-of-day clock/calendar with battery backup, which can also generate interrupts at one second intervals.
- A separate ''tick'' generator that can generate interrupts at precise, jumper selectable intervals ranging from 10 microseconds to 20 minutes. Interrupts from the ''tick'' generator can be enabled or disabled under program control, and have their own priority level to minimize overhead during context switching.
- A separate voltage regulator board that powers the board and provides standby battery power for the TOD clock. The regulator board receives its input from the standard power supply in the GIMIX mainframe.

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