M4-34

CHARACTERISTICS

Microprocessor	AMD 80386 SX
Clock	40 MHz
Architecture	AT
Memory	2 MB to 16 MB on the motherboard, without parity circuitry **Bank 0**: 2 MB soldered **Banks 1and 2**: Four sockets that can host the following SIMMs: **EXM 27-820** - 2 MB - Two 1MBx9 SIMMs **EXM 27-821** - 8 MB - Two 4MBx9 SIMMs When installing the SIMMs, always begin from Bank 1.
Cache memory	16 KB
Memory access	70 ns
Video memory	512 KB expandible to 1 MB Expansion to 1 MB is obtained through kit **VGA-MEM/02** - One VRAM 256x16 chip
Coprocessor	40 MHz CYRIX 80387 SX
Floppy Disk	1.44 MB 3.5" Panasonic JU 257 A 1.44 MB 3.5" Sony MP-F17 W 1.44 MB 3.5" Mitsubishi MF 355 1.44 MB 3.5" Epson SMD 1040-418 1.2 MB 5.25" Panasonic JU475-3 - JU475-4 1.2 MB 5.25" Toshiba ND 08 DE 1.2 MB 5.25" Panasonic JU475-5
Hard Disk	85 MB CONNER CP30084E 85 MB W.D. Caviar 280 85 MB Quantum ELS 85 AT 170 MB CONNER CP30174E 170 MB Quantum ELS 170 AT 240 MB CONNER CP30254 240 MB Quantum LPS 240 AT
Streaming Tape	80/120 MB **Irwin 31250A** with floppy disk interface
Slots	Two 16-bit connectors on the expansion bus
Video controller	Integrated Enhanced VGA CL-GF5422
HDU and FDU controllers	Integrated floppy disk controller: 87310 HDU interface: MSI buffer and logic gates
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key ANK 27-101/N, ANK 27-102/N

MOTHERBOARD

BA2012 2 MB

BIOS

Last Lev. 1.05

EXPANSION BUS

POWER SUPPLY

MINEBA
NMB SPE 1095
LA/11 BNMB 110 V
LA/16 BNMB 220 V

CONSOLE BOARD

MOTHERBOARD

	LEVEL	D.R.S. CODE	ROM BIOS	NOTES
BA2012	Nasc.	5579 75 Z	Rev. 1.01	System board with 2 MB of soldered memory
	Lev. 01		Rev. 1.02	New BIOS to solve resolution problems when using Windows.
	Lev. 01*		Rev. 1.03	BIOS revision 1.03 is used on systems which host video memory with an 80 ns. access time.
	Lev. 02		Rev. 1.04	This BIOS revision solves the problems encountered when different work sessions run simultaneously under Windows.
	Lev. 02*		Rev. 1.05	BIOS revision 1.05 is used on systems which host video memory with an 80 ns access time.

* = Board versions with an 80 ns video RAM instead of a 70 ns memory access.

MOTHERBOARD INTEGRATED COMPONENTS

MOTHERBOARD	INTEGRATED COMPONENTS
	CPU 40 MHz AMD 80386 SX **Math coprocessor socket** 40 MHz CYRIX 80387 SX **82C390SX** Integrates the following functions: - RESET signal generator - Clock generator - System and CPU bus controller - Control of the arbitration between Device MAsters, DMA and memory refresh - Control port B and NMI logic registers - Management of the A20 GATE signal - Cache controller - Memory controller - BIOS shadow control - Memory relocation control - Control of concurrent memory refresh and normal PC refresh - Management of the interface between the three system buses: CPU data bus (16-bit), memory data bus (16-bit), I/O peripheral data bus (16-bit) - Math coprocessor interface - Generation of the system sync signals **MCM6264** Components implementing 16 KB cache memory **83C206Q** Integrates the following functions: - 114 bytes of CMOS RAM backed up by a lithium battery to maintain the data stored even after the system is powered off. - Real Time Clock - DMA controller - Interrupt controller **27C010** 128 Kb x 8 ROM BIOS **87310** Integrates the following functions - Floppy disk controller - Interface for two serial ports - Interface for the parallel port - Interface for intelligent hard disk drives **8042** Keyboard and mouse controller **CL-GD5422** Super VGA controller **ICD2027** System programmable clock generator **74LS293** Speaker volume control

BOARDS

FUNCTION	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
Motherboard	2012	557975 Z	40 MHz i386 SX CPU with
LA/16 BNMB power supply	220 V	151950 D	2 MB of RAM
LA/11 BNMB power supply	110 V	151951 S	
BUS Adapter board		030099 W	
Console board		030787 U	

USER PROGRAM

This program is stored in the system regions of the hard disk drive.

LEVEL	NOTES
Rel. 1.00	Requires BIOS release 1.01 or later. This release has the following restrictions: - The Hard Disk parking utility is not present. - The "Monitor Utility" includes the "Video Refresh Rate: 75 Hz" and "High Vertical Refresh" options that the BIOS is not yet capable of supporting correctly - The video tests of release 1.01 do not support the "high resolution graphics" video mode
Rel. 1.01	Requires BIOS release 1.02 or later. The following modifications are made with respect to the previous release: - The Setup utility has been modified so as to be able to configure the system board's parallel port and to either enable or disable the second serial port. - The video test has been modified to support the new vertical refresh rates. - The floppy disk test has been modified so that it can work correctly on 1.2 MB drives - The Monitor Utility has been modified to support the new vertical refresh rates. This release has the following restrictions: - The graphics accelerator subtests are not supported by this system's video controller. - The TrueColor subtest does not work correctly if video RAM has a capacity of less than 1 MB.

SYSTEM TEST

LEVEL	NOTES
Rel. 1.01	Requires BIOS release 1.01 or later. This release has the following restrictions: - The Hard Disk parking utility is not present. - The "Monitor Utility" includes the "Video Refresh Rate: 75 Hz" and "High Vertical Refresh" options that the BIOS is not yet capable of supporting correctly - The video tests of release 1.01 do not support the "high resolution graphics" video mode
Rel. 1.02	Requires BIOS release 1.02 or later. The following modifications are made with respect to the previous release: - The Setup utility has been modified so as to be able to configure the system board's parallel port and to either enable or disable the second serial port. - The video test has been modified to support the new vertical refresh rates. - The floppy disk test has been modified so that it can work correctly on 1.2 MB drives - The Monitor Utility has been modified to support the new vertical refresh rates. This release has the following restrictions: - The graphics accelerator subtests are not supported by this system's video controller. - The TrueColor subtest does not work correctly if video RAM has a capacity of less than 1 MB.

SYSTEM REGION SET UP

LEVEL	NOTES
Rel. 1.00	This System Region Setup version allows User Disk rel. 1.00 to be automatically installed in the system regions of the hard disk drive. This release requires BIOS release 1.01 or later, and has the following restrictions: - The Hard Disk parking utility is not present. - The "Monitor Utility" includes the "Video Refresh Rate: 75 Hz" and "High Vertical Refresh" options that the BIOS is not yet capable of supporting correctly
Rel. 1.01	This System Region Setup version allows User Disk rel. 1.01 to be automatically installed in the system regions of the hard disk drive This release requires BIOS release 1.02 or later, and incorporates the following modifications with respect to the previous release: - The Setup utility has been modified so as to be able to configure the system board's parallel port and to either enable or disable the second serial port. - The video test has been modified to support the new vertical refresh rates. - The floppy disk test has been modified so that it can work correctly on 1.2 MB drives - The Monitor Utility has been modified to support the new vertical refresh rates. This release has the following restrictions: - The graphics accelerator subtests are not supported by this system's video controller. - The TrueColor subtest does not work correctly if video RAM has a capacity of less than 1 MB.

POWER SUPPLY

POWER SUPPLY	LEVEL	DESCRIPTION
MINEBA NMB SPE 1095 LA/16 BNMB	Nasc.	220 V
MINEBA NMB SPE 1095 LA/11 BNMB	Nasc.	110 V

COMPATIBILITY NOTES

BOARD OR HW/SW DEVICE	DESCRIPTION

SOFTWARE DRIVERS

DRIVER	NOTES
Enhanced Video Drivers EVD Rel. 1.00	

BIOS

LEVEL	NOTES
Rev. 1.01	
Rev. 1.02	- This release allows the following video vertical refresh rates to be used: 56, 84, 75, 87 Hz - Solves the problem with Windows in the 800x600 and 256-color 1024x768 video modes. - Introduces the new 16-color 800x600 and 1024x768 video modes. - New ways to configure the parallel and serial ports - Solves the problem of the optional ROM not allowing the correct management of the CPU cache.
Rev. 1.03	This BIOS release supports 80 ns video RAM chips instead of the 70 ns video RAM chips which are no longer available on the market.

SOFTWARE COMPATIBILITY

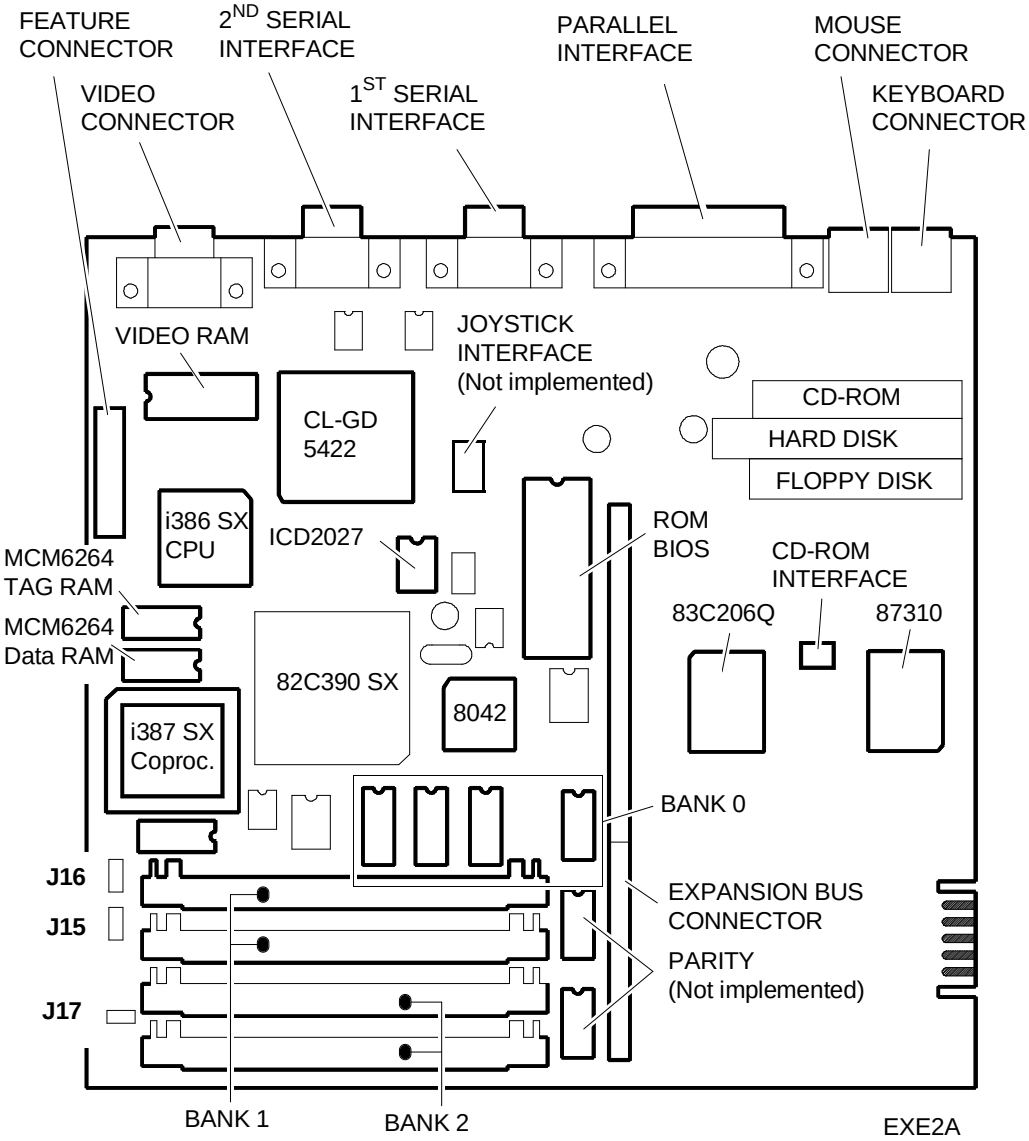
OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Ver. 3.30 MS-DOS (Compaq) IBM DISK Operating System, Ver. 4.01 MS-DOS Release 5.0 OS/2 Release 2.0 OS/2 Release 1.3 SE IBM Operating System/2, Ver. 1.10 and 1.20 IBM Operating System/2 Extended Edition, Ver. 1.10 and 1.20 INTERACTIVE 386/ix, Ver. 2.02 SCO UNIX System V/386, Rev. 3.2.4 SCO XENIX 386, Rev. 2.3	 Requests for a formatted DSDD diskette during installation on hard disk. The PS/2 mouse is not recognized. The PS/2 mouse is not recognized.
WINDOWS	
GEM/3 Desktop, IBM-PC Ver. 3.02 MS-WINDOWS /286 Ver. 2.11	MS-WINDOWS /386 Ver. 2.11 MS-WINDOWS 3 Ver. 3.0

HARDWARE COMPATIBILITY

MODEM	**I/O INTERFACE PRODUCTS**
Hayes Smart modem 2400B FAXY PC MAXTER FURY 2400 PC MODEM AT&T 2224 CEO MODEM FURY 2400 MAXTER MODEM FURY 2400 TI/MNP Hayes Smart modem 1200 B	IBM PRINTER ADAPTER (1505200) STB 4-ON THE FLOOR
MULTIPORT	**MOUSE**
CHASE AT8 COMPUTONE AT 8 COMPUTONE AT 16 INTEL Bell ICC.6 SPECIALIX SI / 8	IBM PS/2 Mouse (6450350) IBM PS/2 Mouse Serial Logitech Bus Mouse (PF-3F) Logitech 3 button mouse MS-BUS mouse MS-MOUSE serial
GRAPHICS PRODUCTS	**NETWORKING AND LAN PRODUCTS**
AST VGA plus FASTWRITE 1024i FASTWRITE VGA HERCULES GRAPHICS CARD IBM VGA Adapter MATROX PG - 1281 MAXON MVGA-16 Adapter ORCHID PRODESIGNER VGA PLUS HERCULES INCOLOR CARD (GB222) PARADISE VGA PRO CARD	10 NET INTERFACE BOARD 200 series 3COM Etherlink adapter 3C501 3COM Etherlink II adapter 3C503 3COM Etherlink plus adapter 3C505 3COM Etherlink plus adapter 3C505 DECNET PCSA adapter IBM PC NETWORK adapter II IBM TOKEN RING 16/4 adapter IBM TOKEN RING adapter II MADGE AT RING NODE adapter MICOM NP1000 adapter NOVELL NE1000 adapter NOVELL NE2000 adapter
DISPLAY UNITS	
IBM enhanced graphics monitor 5151 IBM color graphics monitor 5153 IBM PS/2 Monochrome display 8503 IBM PS/2 color display 8512 IBM PS/2 color display 8513 IBM PS/2 color display 8514 NEC MULTISYNC II	NEC MULTISYNC 2A NEC MULTISYNC 3D NEC MULTISYNC 4D NEC MULTISYNC 5D PHILIPS 7BM749 PHILIPS 9CM082

MOTHERBOARD COMPONENTS AND JUMPERS

Components on Side A



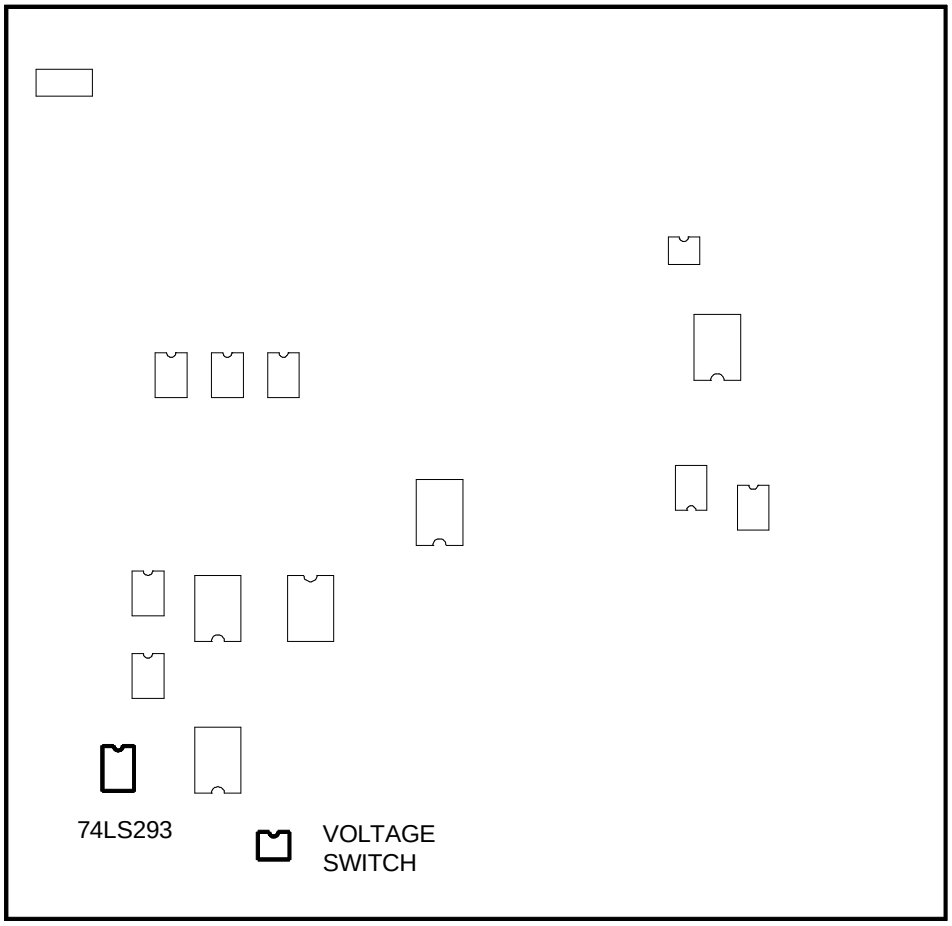
Jumper J16 Position 2-3: The system can be bootstrapped from the serial port.
Position 1-2: The system cannot be bootstrapped from the serial ports.

Jumper J17 IN: The User Program that allows the system to be configured and which is stored in the system region of the hard disk drive, is not launched. If the configuration of the system has been changed, the only way to reconfigure the system is by using the System Test diskette. If this security feature was enabled, the following message is displayed at the end of the POD: *POD Warning*

OUT: If the configuration of the system has been changed, the POD will automatically access the User Program so that the system can be reconfigured.

Jumper J15 Position 1-2: Floppy drive write disabled.
Position 2-3: Floppy drive write enabled.

Components on Side B



EXE5A

INTERRUPT LEVELS

LEVEL	NAME	CONTROLLER	FUNCTION
1	IRQ0	1	Channel 0 timer OUT
2	IRQ1	1	Keyboard
3 to 10 *	IRQ2	1	Interrupt from Controller 1 to Controller 2
3	IRQ8	2	Real time clock
4	IRQ9	2	Available
5	IRQ10	2	Available
6	IRQ11	2	Available
7	IRQ12	2	Mouse
8	IRQ13	2	Coprocessor
9	IRQ14	2	Hard disk controller
10	IRQ15	2	Available
11	IRQ3	1	Serial port 2
12	IRQ4	1	Serial port 1
13	IRQ5	1	Parallel port 2 - parallel port 3
14	IRQ6	1	Floppy disk controller
15	IRQ7	1	Parallel port 1

* The priority level depends on the selected interrupt. For example, if interrupt IRQ11 is selected, the priority level is 6; if interrupt IRQ15 is selected, the priority level is 10.

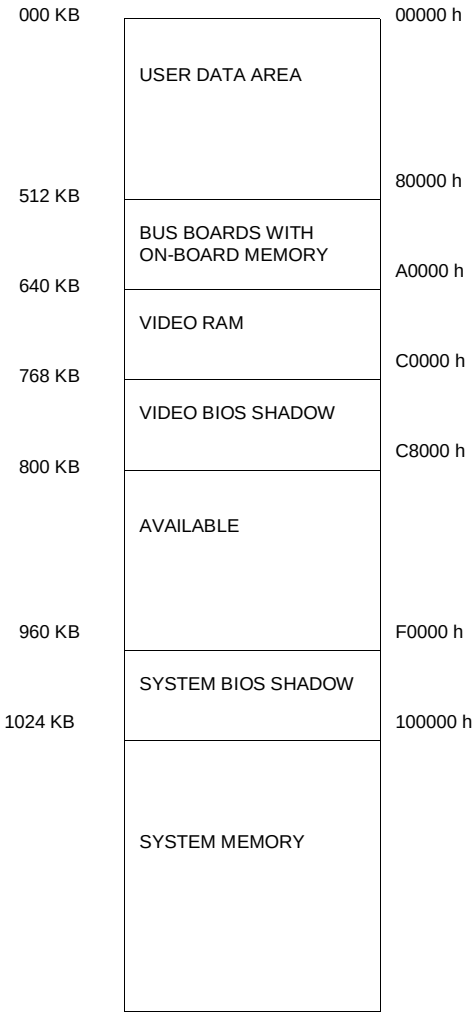
DMA CHANNELS

CHANNEL	NO. OF BITS	FUNCTION
0	8	Reserved
1	8	Available
2	8	Floppy disk transfers
3	8	Video
4	16	Used for the cascade connection of DMA 1
5	16	Available
6	16	Available
7	16	Available

I/O ADDRESS MAP

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000-01F h	8237A-5 DMA controller 1	2F8-2FF h	Serial port 2 (COM2)
020-03F h	8259A interrupt controller 1	300-31F h	Reserved
040-05F h	8254 timer	340-347 h	AT CD-ROM interface
060-06F h	8742 data keyboard controller	360-36F h	Reserved
61 h	System Control Port B	378-37F h	Parallel port 2 (LPT2)
64 h	8742 commands keyboard controller	380-38F h	Reserved for SDLC connections, bisynchronous 2
070-07F h	Real time clock, NMI Mask, CMOS RAM (write registers)	3A0-3AF h	Reserved for bisynchronous 1
080-09F h	DMA page registers	3B0-3BF h	Reserved
0A0-0BF h	8259 interrupt controller 2	3BC h	Parallel port 1 (LPT1)
0F0 h	Cancel NPX (80487) busy	3C0-3CF h	Reserved
0F1 h	Reset NPX, 80487	3D0-3DF h	Video controller
0F8-0FF	80487 math coprocessor	3E8-3EF h	Serial port 3 (COM3)
1F0-1F8 h	Hard disk controller	3F0-3F7 h	Floppy disk controller
200-207 h	Reserved	3F8-3FF h	Serial port (COM1)
278-27F h	Parallel port 3 (LPT 3)		

SYSTEM MEMORY MAP



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