

# M380-40

## CHARACTERISTICS

Microprocessor	Intel 80386 with 32-bit addressing
Clock	33 MHz
Architecture	AT
Memory	<p>4 MB to 52 MB</p> <ul style="list-style-type: none"> <li>- 1 bank of 4 MB soldered on motherboard (8 DRAM 1M x 4 chips+ 4 DRAM chips 1Mx1 parity)</li> <li>- 3 banks of 4 sockets each , where the following SIMM modules can be installed:                             <ul style="list-style-type: none"> <li>- SIMM 256K x 9 <b>EXM 26-801</b></li> <li>- SIMM 1M x 9 <b>EXM 26-807</b></li> <li>- SIMM 4M x 9 <b>EXM 26-809</b></li> </ul> </li> </ul> <p>In these 3 banks different capacity SIMMs can be installed but they cannot be mixed within one bank. Banks can be left free</p>
Memory access	80 ns
Coprocessor	<p>1) Intel 80387 (33 MHz)</p> <p>2) Weitek 3167 (33 MHz)</p>
Floppy disk	<p>1.2 MB 5.25" Panasonic JU 475-3/-4</p> <p>1.2 MB 5.25" Toshiba ND 08 DE</p> <p>1.44 MB 3.5" Panasonic J-257</p> <p>1.44 MB 3.5" Sony MP-F17</p> <p>1.44 MB Mitsubishi MF355C</p>
Hard disk	<p>120 MB CONNER CP30126 19 ms</p> <p>210 MB CONNER CP3206 19 ms</p> <p>40 MB W.D. AC 140</p> <p>40 MB QUANTUM LPS52 AT 19 ms</p> <p>340 MB CONNER CP3304 12 ms</p> <p>510 MB CONNER CP3504 13 m</p>
Streaming tape	<p>80/120 MB IRWIN 285 500 Mb/s</p> <p>80/120 MB IRWIN 287 1 Mb/s</p> <p>80/120 MB IRWIN 3125 1 Mb/s</p> <p>150 MB WANGTEK SCSI</p>
AT Expansion slots	4 Present - 4 Available
Video adapter	Integrated on motherboard - 82C452
Hard disk and floppy disk controller	<p>Integrated on motherboard</p> <p>FDU controller: Intel 82077</p> <p>HDU controller: Logic ports and MSI Buffers implementing an AT interface for intelligent hard disks</p>
Cache controller	82385 - 64 KB cache
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key Compact ANK 27-101 ANK 27-102

<p><b>MOTHERBOARD</b></p> <p>BA 262</p> <p>BA 281</p> <p><b>BIOS</b></p> <p>ROM BIOS is a FLASH EPROM. The BIOS Code is supplied on diskettes and must be copied into flash EPROM.</p> <p>Rel. 1.09</p> <p><b>POWER SUPPLY</b></p> <p>PS11/A 220 V PLESSEY</p> <p>PS11/A 115 V PLESSEY</p> <p>PS11/A - 220 V ASTEC only</p> <p>PS11/AR - 220V ASTEC - MAGNETEK</p> <p>PS11/AR - 110V MAGNETEK</p> <p><b>CONSOLE</b></p> <p>IF 469</p> <p><b>BUS EXPANSION BOARD</b></p> <p>IN284</p>
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**MOTHERBOARD**

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
<b>BA262</b>	Nasc.		<p>Rel. 1.00 ROM BIOS is a FLASH EPROM. The BIOS code is supplied on diskettes and must be copied in flash EPROM. The BIOS loading utility allows the AMB, Mitsubishi and Intel Flash EPROMs to be programmed.</p>	<p><b>Intel 80386</b> Processor <b>82385</b> Cache controller <b>Intel 80387</b> Optional coprocessor <b>WTL 3167</b> Optional coprocessor <b>82C206</b> Real Time Clock RAM 128 KB with battery DMA controller Interrupt controller <b>8742</b> Keyboard controller <b>82C452</b> Video controllerr <b>WD16C551</b> Serial port interface Parallel port interface <b>82077</b> Floppy disk controller <b>CHIP SET</b> <b>BCUE</b> I/O signal generation BUS timing control <b>MCUE</b> Memory logic controller <b>DPU</b> Data buffer Parity control 32- to 16-bit data conversion <b>IOU</b> Signal decode logic Chip select signal Open logic</p>
	Lev. 01 MI		Lev. 1.00	Solves EMI criticality with FCC/B rule
	Lev. 02 MI		Lev. 1.03	<ul style="list-style-type: none"> <li>- Possible to replace the 82C452 component with 82C452A component. They are alternatives.</li> <li>- The WD 16C551 mask C component has been replaced with the WD 16C551 mask D component. These are alternatives. Field change only.</li> </ul>
	Lev. 03 MI		Lev. 1.07	Cuts and trimmings made in order to use the AMD 80386 DX processor
	Lev. 04 MI		Lev. 1.07	Corrects read problems in VIDEO RAM
	Lev. 05 MI		Lev. 1.07	New floppy disk controller
	Lev. 06		Lev. 1.07	-
	Lev. 07		Lev. 1.07	<ul style="list-style-type: none"> <li>- A resistor is added and the pins of the parallel port are reconfigured to solve the problems with the streaming tape.</li> <li>- Capacitors at location C16, C21 and C24 are replaced to solve the problem with Interactive UNIX when connected to the DM124 parallel printer.</li> </ul>

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
<b>BA281</b>	Nasc.	612399 F	Lev. 1.03	Replaces BA262. Adds EYE component and new security features
	Lev. 01		Lev. 1.03	Hardware changes to solve problem of FCC/B rule not respected and random system crashes.
	Lev. 02	612399 F	Lev. 1.03	<ul style="list-style-type: none"> <li>- Possible to replace 82C452 component with 82C452A component. They are alternatives. Board level does not change</li> <li>- Printed circuit modified to solve instability problems in the EM characteristics. The pcb changes to level 01</li> <li>- TEXAS 82C206 component as alternative to C&amp;T 82C206 component</li> </ul>
	Lev. 03		Lev. 1.06	<ul style="list-style-type: none"> <li>- Replaced WD16C551 component mask C with WD16C551 component mask D</li> <li>- Sockets for the SIMM modules replaced to improve productivity</li> <li>- Keyboard controller 10.01 replaces the 8.00 keyboard controller which did not manage the security features and had problems with some software packages</li> <li>- New BIOS code, for management of: 40 MB and 120 MB W.D. hard disks Security features DOS function (only rel. 5.0) int 15 "Support A29 gate" video error codes (factory only)</li> </ul>
	Lev. 04		Lev. 1.07	<ul style="list-style-type: none"> <li>- Printed circuit changed from 01 to 02</li> <li>- New BIOS to solve the serial port FIFO reset problems, and 132-column video mode. This BIOS manages the HDU RDY/BSY signals.</li> </ul>
	Lev. 05		Lev. 1.07	The socket for the 82385 DX cache controller eliminated, the component now being soldered directly on the board.
	Lev. 06		Lev. 1.07	Cuts and trimmings in order to use the AMD 80386 DX processor.
	Lev. 07		Lev. 1.07	New printed circuit to recover cuts and trimmings. Level changes from CS 02 to CS 03.
	Lev. 08		Lev. 1.07	Cuts and trimmings to solve the 82C452 video controller problem, not to specs.

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA281	Lev. 9	612399 F	Lev. 1.09	The Intel 82077AA-1 FDU component is replaced with the new 82077SL-1. With this new component, the 4.7 nF capacitor at location U114 must be removed.
	Lev. 10		Lev. 1.09	Printed circuit board 03 trimmings have been recovered thus changing level to 04.  This BIOS release solves some of the problems with the previous release. In release 1.07, the colors changed when running the WINDRAW application in super VGA mode. Since only the BIOS was modified, the board level does not change.
	Lev. 11		Lev. 1.09	Component DAC BT471 has been replaced by the Samsung component KD0471. This solves the problem of wrong colors displayed when the WINDOWS AFTERDARK application is used. Change made at field level only.
	Lev. 12 MI		Lev. 1.09	Vengono sostituiti i condensatori da 2200 pF C16, C21, C54 con altri da 220 pF. Questa modifica risolve il problema dell'impossibilità di stampare sulla stampante DM124 con INTERACTIVE UNIX
	Lev. 12 SI		Lev. 1.09	Questa modifica risolve il problema dello streaming tape IRWIN A250EP-05 che, collegato alla porta parallela con il software EZTAPE e EZINFO, non funziona. 1 Nel caso in cui la porta parallela sia configurata come LPT1 occorre: - Alzare il pin 11 di RP4 - Collegare una resistenza assiale da 10 K Ohm tra il pin 83 e il pin 74 del componente 82C206 in U34 2 Nel caso in cui la porta parallela sia configurata come LPT2 occorre: - Alzare il pin 8 di RP4 - Collegare una resistenza assiale da 10 K Ohm tra il pin 1 e il pin 12 del componente 82C206 in U34

**USER DISKETTE/SYSTEM TEST/DRIVER**

LEVEL	COMPATIBILITY
User Diskette Rel. 1.00 User Diskette Rel. 1.02 User Diskette Rel. 1.04	Changed messages and help files Allows management of Security Features. Must be used with BIOS 1.06 and Keyboard Controller 10.01
OEMM Ver. 4.08 Ver. 1.40 upd 2	
EVD Video Driver Ver. 4.00 Rev. 1.3 EVD Video Driver Ver. 5.0	Allows Windows 3.0, AutoCAD 386 Ver. 10.0 and AutoCAD 386 Ver. 11.0 to be supported in DAM mode (1024 x 768 x 256)
EVD Video Driver Ver. 7.0 rev. 2.0	Update of the previous release
System Test Rel. 1.02 System Test Rel. 1.03 System Test Rel. 1.05	Solves some problems relative to the password utility

**CONSOLE**

	LEVEL	D.R.S. CODE	COMPATIBILITY
IF469	Nasc.	977930 V	
	Lev. 01 MI		Solves the speaker sound problem still audible when the volume control potentiometer is at the MIN position

**COMPATIBILITY**

<b>DEVICE BOARD</b>	<b>COMPATIBILITY</b>
Serial port component WD16C551	This component can be replaced by WD16C551 component which is pin to pin compatible
Video adapter component 82C452	This component can be replaced by 82C452A that has an equivalent function
80386 DX-33 Microprocessor	An alternative to the INTEL 80386 DX-33, it is possible to use an equivalent AMD (CS4T) processor
Component WD16C551	Replaced component WD16C551 mask C with component WD16C551 mask D. They are in alternative for BA 262
IN284 BUS expansion board	Changes to improve productivity and reduce costs. Board passes to level 01 MI
Intel 80386DX CPU	The Intel 80386DX-33 MHz CPU Step E can be used as an alternative to the Intel 80386DX-33 MHz CPU Step D, which will no longer be produced. This change does not cause board level to change
Keyboard controller Rev. 10.01	Keyboard Controller Rev. 10.01 is stored in ROM. Board levels do not change.

**POWER SUPPLY UNIT**

POWER SUPPLY	D.R.S. CODE	LEVEL	DESCRIPTION
PS11/A ASTEC 220 V	612184Q	Nasc. Lev. 01	Only 220 V Extended magnetic peripheral cables
		Lev. 02	Changes to reduce fan noise and make it easier to fit the power supply into the system
		Lev. 03	Change to solve problem of system not switching on when connected to a device (parallel printer or drive installed on the BUS) that is already on
		Lev. 04	A capacitor has been added and a resistor replaced to solve production problems.
PS11/A Plessey 220 V		Nasc. Lev. 01	Improved temperature conditions Corrects the problems with the +5 V
		Lev. 02	- Extended magnetic peripheral cables
		Lev. 03	- Replaced printed circuit material to improve transportability
PS11/A Plessey 110 V	612183P	Nasc. Lev. 01 Lev. 02 Lev. 03	This power supply includes the same modifications made to the 220 V version.
PS11/AR ASTEC 220 V		Nasc.	To cut costs, new power supply as an alternative to the others
PS11/AR 220 V PS11/AR 110 V		Nasc. Nasc.	Manufactured by MAGNETIK Manufactured by MAGNETIK

**SOFTWARE COMPATIBILITY**

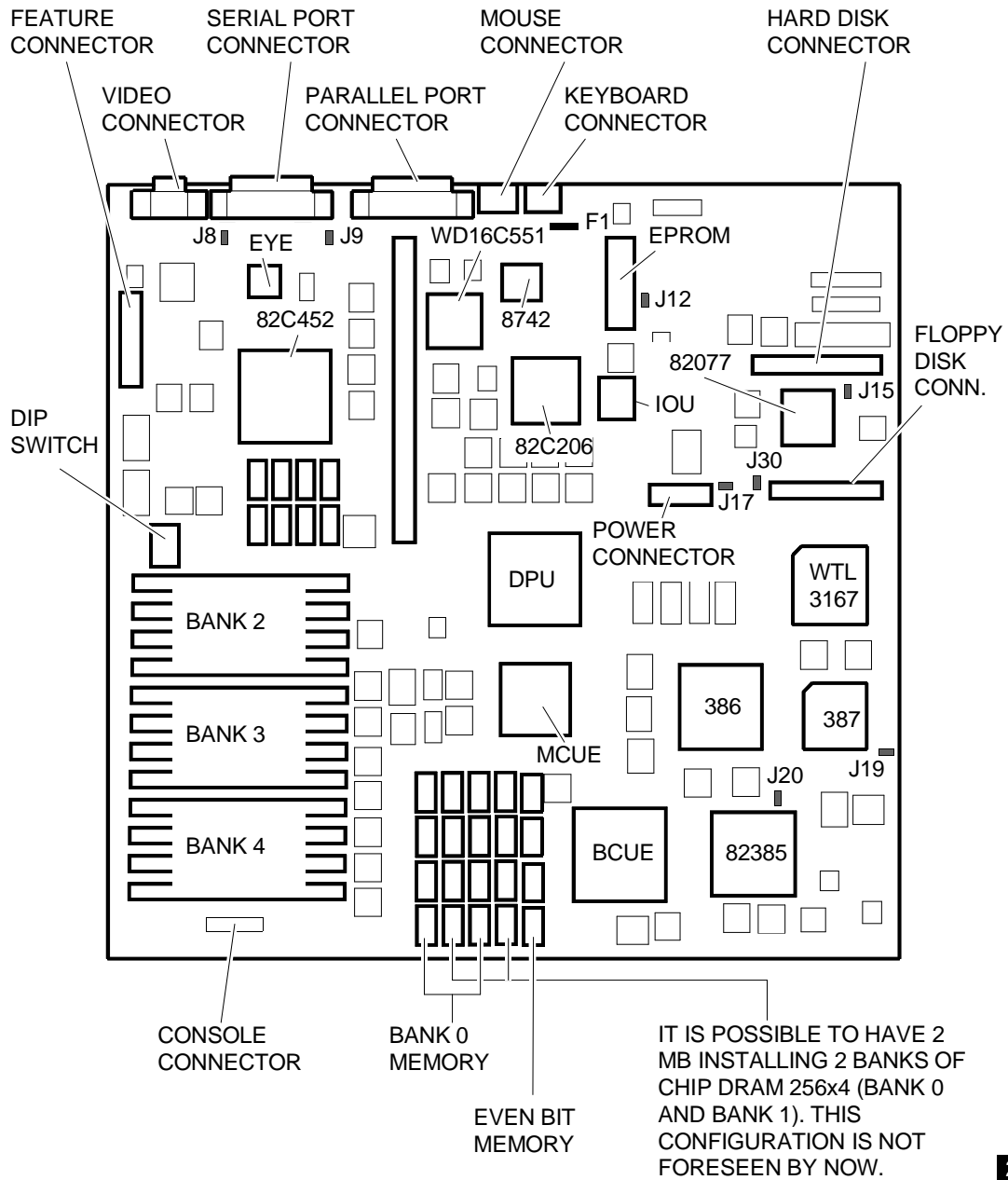
OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Ver. 3.30 IBM DISK Operating System, Ver. 4.01  IBM Operating System/2, Ver. 1.10 and 1.20 IBM Operating System/2 Extended Edition, Ver. 1.10 INTERACTIVE 386/ix, Ver. 2.02 SCO XENIX 386, Rel. 2.3.2 Olivetti's Microsoft Disk Operating System, Ver. 3.30a Olivetti's Microsoft Disk Operating System, Ver. 4.01 Olivetti's Microsoft Disk Operating System, Ver. 5.00 Olivetti's Microsoft OS/2, Ver. 1.10 and 1.20 SCO UNIX System V/386, Rev. 3.2 SCO XENIX 386, Rev. 2.3	During installation on hard disk, a formatted DSDD disk is required. PS/2 mouse not recognised PS/2 mouse not recognised
<b>WINDOWS</b>	
DESQ-VIEW 386 Ver. 2.24 GEM/3 desktop, IBM-PC Ver. 3.13 MS-WINDOWS /286 Ver. 2.11	MS-WINDOWS /386 Ver. 2.11 MS-WINDOWS 3 Ver. 3.0

**HARDWARE COMPATIBILITY**

<p><b>MODEMS</b></p> <p>Hayes Smartmodem 2400B/1200B                  Telenetics Expressdata 24i (24i-12i)                  Ven-tel PC Modem Half-Card (PCM-XT)                  Fax Card                  Fury 2400 PC modem/Fury 2400 master                  AT&amp;T 2224 CEO modem</p>	<p><b>I/O INTERFACE PRODUCTS</b></p> <p>FUTURE DOMAIN HOST ADAPTER (TMC-830)                  IBM Asynchronous COM. CARD (1502074)                  IBM PRINTER ADAPTER (1505200)                  IBM SERIAL/PARALLEL</p>
<p><b>MULTIPOINT</b></p> <p>Anvil Stallion Intelligent 16 Port Controller                  Chase MSC Connect/AT8 Intelligent 8 Port                  Computone System Intelliport 16 Port AT16                  Computone System Intelliport 8 port AT8                  Consensus Powerports 8 Port Intelligent Ctr.                  Digiboard Digichannel COM/xi Intelligent 8 Port                  Specialix Si Intelligent I/O Controller</p>	<p><b>MOUSE</b></p> <p>IBM PS/2 Mouse (6450350)                  Logitech Bus Mouse (PF-3F)                  Logitech 3 button mouse                  MS-BUS mouse                  MS-Mouse serial                  Olivetti Bus Mouse (GRD 25-019)                  Olivetti New Advanced Mouse (GRD 25-025)</p>
<p><b>GRAPHICS PRODUCTS</b></p> <p>AST RESEARCH AST - VGA PLUS                  FASTWRITE 1024I                  FASTWRITE VGA                  HERCULES GRAPHICS CARD                  IBM EGA ADAPTER                  IBM VGA ADAPTER                  STB POWER GRAPH VGA                  STB VGA EM 16                  HERCULES GRAPHICS STATION CARD                  MATROX PG - 1281                  ORCHID PRODESIGNER VGA PLUS                  PARADISE VGA PRO CARD</p>	<p><b>NETWORKING &amp; LAN PRODUCTS</b></p> <p>IBM PC Network ADAPTER II                  IBM Token Ring PC ADAPTER                  IBM Token Ring 16/4 ADAPTER                  MADGE Token-Ring Network                  10 NET INTERFACE BOARD (200 SERIES)                  3COM ETHERLINK 16 ADAPTER                  3COM ETHERLINK ADAPTER (3C501 - 3C503)                  3COM ETHERLINK PLUS (3C505 - 3C605)                  DEPCA DE100 - DEPCA DE200 - DEPCA                  MICOM NP600A                  NOVELL NE1000                  NOVELL NE2000</p>
<p><b>DISPLAY UNITS</b></p> <p>IBM 8514                  IBM COLOR GRAPHIC MONITOR 5153                  IBM ENHANCED GRAPHIC MONITOR 5151                  IBM ENHANCED GRAPHIC MONITOR 5154                  IBM PS/2 COLOR DISPLAY 8512                  IBM PS/2 COLOR DISPLAY 8513                  IBM PS/2 MONOCHROME DISPLAY 8503                  NEC MULTISYNC 2A                  NEC MULTISYNC 3D                  NEC MULTISYNC 4D                  NEC MULTISYNC 5D                  NEC MULTISYNC II                  PHILIPS 7BM749                  PHILIPS 9CM82</p>	<p><b>OTHER PRODUCTS</b></p> <p>ADAPTEC 1542A SCSI HOST ADAPTER                  ADAPTEC 1542B SCSI HOST ADAPTER                  ADAPTEC 2322B-10 ESDI ADAPTER                  IRWIN STREAMER MODEL 285                  IRWIN STREAMER MODEL 287                  JETSCRIPT QMS POSTSCRIPT CONTROLLER                  OMTI 8627 ESDI ADAPTER                  OMTI 8627 RLL ADAPTER                  SCANMAN PLUS                  WD1007A ADAPTER                  WD1007V ADAPTER                  WD1007V-SE2 ADAPTER</p>



**COMPONENTS AND JUMPERS ON MOTHERBOARD BA262 AND BA281**



FEC5A

THE EYE COMPONENT IS PRESENT ON BOARD BA281 ONLY

**FUSE F1**

2 A 5 V keyboard and mouse fuse.

**JUMPERS AND FUSE ON MOTHERBOARD BA262**

<b>JUMPER</b>	<b>POSITION</b>	<b>FUNCTION</b>
J8	IN OUT *	RING Indicator signal (RS232 threshold voltage) FAIL-SAFE disabled RING Indicator signal (RS232 threshold voltage) FAIL-SAFE enabled
J9	IN OUT *	Input signals (RS232 threshold voltage) FAIL-SAFE disabled Input signals (RS232 threshold voltage) FAIL-SAFE enabled
J12	OUT IN *	ROM BIOS disabled ROM BIOS enabled
J15	IN * OUT	Floppy disk oscillator enabled Floppy disk oscillator disabled
J17	OUT * IN	Normal operation Erases CMOS RAM
J19	OUT * IN	33 MHz 80387 numeric coprocessor Enable 80387 numeric coprocessor to see optional oscillator clock to be installed on U99
J20	IN * OUT	Normal operation Possibility of using a different 82385 cache controller model
J30	IN * OUT	Only one hard disk installed Two hard disks installed

IN: Jumper installed

OUT: Jumper not installed

(\*) shows default setting

**DIP-SWITCH BLOCK U515**

<b>SWITCH</b>	<b>POSITION</b>	<b>FUNCTION</b>
1	ON * OFF	NOT USED
2	ON * OFF	NOT USED
3	ON * OFF	Normal operation Disables floppy disk write operations
4	ON OFF	NOT USED

(\*) shows default setting

**JUMPERS AND FUSE ON SYSTEM BOARD BA281**

JUMPER	POSITION	FUNCTION
J8	IN	RING Indicator signal (RS232 threshold voltage) FAIL-SAFE disabled
	OUT *	RING Indicator signal (RS232 threshold voltage) FAIL-SAFE enabled
J9	IN	Input signals (RS232 threshold voltage) FAIL-SAFE disabled
	OUT *	Input signals (RS232 threshold voltage) FAIL-SAFE enabled
J12	OUT	ROM BIOS disabled
	IN *	ROM BIOS enabled
J15	IN *	Floppy disk oscillator enabled
	OUT	Floppy disk oscillator disabled
J17	OUT *	Normal operation
	IN	Erases CMOS RAM
J19	OUT *	33 MHz 80387 numeric coprocessor
	IN	Enable 80387 numeric coprocessor to see optional oscillator clock to be installed on U99
J30	IN *	Only one hard disk installed
	OUT	Two hard disks installed

IN: Jumper installed

OUT: Jumper not installed

(\*) shows default setting

**DIP-SWITCH BLOCK U515**

SWITCH	POSITION	FUNCTION
1	ON *	Serial port enabled
	OFF	Serial port disabled
2	ON *	BUILT IN SETUP enabled
	OFF	BUILT IN SETUP disabled
3	ON *	Normal operation
	OFF	Disables floppy disk write operations
4	ON	NOT USED
	OFF	

(\*) shows default setting

**I/O ADDRESS MAP**

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000-01F h	DMA Controller (all channels)	2F8-2FF h	Serial Port COM2 (alternate)
020-021F h	Interrupt controller 1	378-37B h	Parallel port 1
040-043 h	Timer	3B4-3B5 h	Video adapter
60 h	Data Keyboard controller	3BA h	Video adapter
61 h	System Control Port B	3C0-3CF h	Video adapter
64 h	Commands Keyboard controller	3D4-3D5 h	Video adapter
70 - 71 h	Real time clock, NMI Mask, CMOS RAM	3DA h	Video adapter
081-08F h	DMA page registers	3F0-3F7 h	Floppy disk controller
0A0-0A1 h	Interrupt controller 2	3F8-3FF h	Serial port COM1
0C0-0DF h	DMA channels 4-7	46E8 h	VGA Control Registers
1F0-1F8 h	Hard disk drive	8000F0-8000FF	Coprocessor
278-27B h	Parallel port 2 (alternate)		

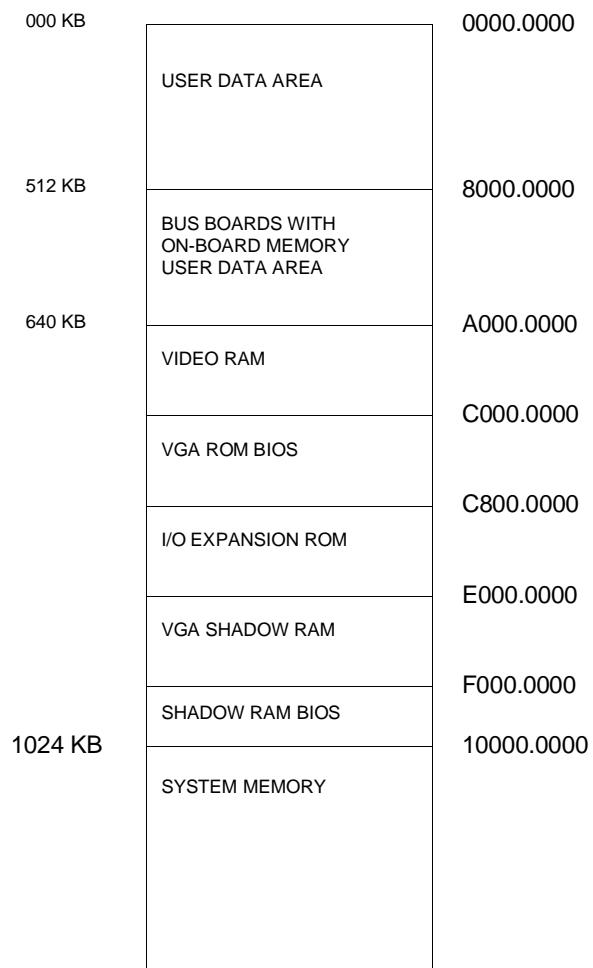
**INTERRUPT LEVELS**

LEVEL	NAME	CONTROLLER	FUNCTION
1	IRQ0	1	Channel 0 timer OUT
2	IRQ1	1	Keyboard
3 - 10	IRQ2	1	Interrupt to Controller 1 from Controller 2
3	IRQ8	2	Real time clock
4	IRQ9	2	Available
5	IRQ10	2	Available
6	IRQ11	2	Available
7	IRQ12	2	Available
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
14	IRQ6	1	Floppy disk controller
15	IRQ7	1	Parallel port 1

### SYSTEM MEMORY MAP

System memory map can change according to configurations given to system by User Diskette or System Test.

The following diagram gives a configuration example of the first MegaByte of memory.



**COMPATIBLE HARD DISKS**

TYPE	MODEL	CAPACITY	CYL	T	WPC	LZ	SET
1	NEC-D5146H half size	40 MB	615	8	128	664	17
2	Miniscribe M8425 68 ms 3,5"	20 MB	612	4	128	663	17
3	Seagate ST277R	62 MB	820	6	-1	819	26
4	NEC D5147H	62 MB	615	8	384	664	26
5	NEC D5652 ES	136 MB	820	10	-1	822	34
6	MICROPOLIS 1355 ESDI	135 MB	1021	8	-1	1023	34
7	MICROPOLIS 1353 ESDI	67 MB	1021	4	-1	1023	34
8	NEC D5452	68 MB	823	10	512	822	17
9	Fujitsu M2227D	40 MB	615	8	512	614	17
10	Fujitsu M2227D RLL	60 MB	615	8	512	614	26
11	ESDI	304 MB	814	15	-1	1	51
12	ESDI	81 MB	977	5	-1	1	34
13		136 MB	820	10	-1	1	34
14	CONNER CP3206	200 MB	683	16	-1	682	38
15	RESERVED						
16	CONNER CP3142	40 MB	635	4	-1	639	33
17	CONNER CP346	40 MB	805	4	-1	804	26
18	CONNER CP3106	100 MB	776	8	-1	775	33
19	Quantum LPS105 AT	100 MB	776	8	-1	775	33
20	Quantum PD210 AT	200 MB	873	13	-1	872	36
21	CONNER CP30064	60 MB	762	4	-1	761	39
22	CONNER CP30126	120 MB	762	8	-1	761	39
23	W.D. AC-140	40 MB	980	5	-1	980	17
24	W.D. AC-2120	120 MB	762	8	-1	762	39

**Where:** CYL: No. of disk cylinders

T: No. of disk heads

WPC: Precompensation cylinder number

LZ: Head parking cylinder number

SET: No. of disk sectors.

