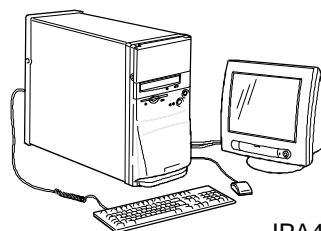


Modulo M2-2xx MT

CHARACTERISTICS

Microprocessor	Pentium II 233 (233/66 MHz) Pentium II 266 (266/66 MHz) Pentium II 300 (300/66 MHz)
Processor and overdrive socket	Slot 1
Architecture	ISA/PCI
Case	HAL BOX
2 nd lev. cache memory	512 KB integrated in the processor
Memory	Min. 32/64 MB, max. 384 MB with three 60 ns, 3.3 V, without ECC unbuffered EDO RAM DIMMs. On the motherboard there are three socket that can accommodate the following DIMMs: EXM 61-032 One 4 MBx64 (32 MB) DIMM EXM 61-064 One 8 MBx64 (64 MB) DIMM
Floppy disks	Y-E Data YD-702B/YD-702D 1.44 MB Panasonic JU-257A-736P 1.44 MB
Hard disks	3.5" IDE hard disks: Quantum Fireball TM3200AT 3.2 GB IBM DAQA-33240 3.2 GB Fujitsu MPA3035AT 3.5 GB Seagate Medalist ST34340A 4.3 GB 5.25" IDE hard disks: Quantum BFCY6.4AT 6,4 GB SCSI hard disks (AHA 2940U controller): IBM DORS-32160 2.1 GB IBM DCAS-32160 2.1 GB IBM DCAS-34330 4.2 GB
CD-ROMs	IDE CD-ROMs: GOLDSTAR CRD-8160B (16X) 650 MB SONY CDU511-10 (16X) 650 MB PANASONIC CR-585 (24X) 650 MB GOLDSTAR CRD-8240B (24X) 650 MB SCSI CD-ROM (AHA 2940U controller): SONY CDU415-10 (12X) 650 MB
Tape drives	SCSI drives (AHA 2940U controller): WANGTEK 51000HT 1-1.2 GB DAT SONY SDT-4000 2/4 GB DAT Hewlett P. HP C1536A 2/4 GB
Riser bus expansion slots	3 PCI 4 ISA
SCSI controller	AHA 2940U (GO2181) card

HAL BOX



IPA4A

MOTHERBOARD

BA2377

BIOS

The ROM BIOS is a FLASH EEPROM. The BIOS code can be updated from diskette. Supported features: Plug&Play, APM, PCI, DMI, USB.

Last level: 1.00.02.DU0
Rel. 3.0 - DB440FX
Standard

POWER SUPPLY

LITE-ON PS-5201-6IF1
(200 W / 90 - 180 V)

Video controller	Embedded into the motherboard: S3 ViRGE/DX component with a 2 MB 40 ns EDO SOJ video DRAM On the Riser expansion bus or optional: Matrox Millennium (GO2168) or Matrox Millennium II (GO2230) card.
LAN controller	Component 82557 , ICS 1890Y, Remote Wakeup ASIC
Modem/Fax	Modem/Fax card (GO2176, GO2177, GO2178, GO2179)
IDE PCI interface	Two interfaces (max PIO Mode 4) for the connection of up to four HDU and CD-ROM drives
Ports	One serial port One parallel port Two USB (Universal Serial Bus) ports
Keyboard and mouse	PS/2 standard interface
Keyboard	Compact 104/105-key Windows 95 keyboard: ANK 61-104/ANK 62-104, ANK 61-105/ANK 62-105

MOTHERBOARD

NAME	LEVEL	NOTES
BA2377	Lev. Nasc.	Intel ISA/PCI motherboard with a 512 KB 2 nd level cache.
	Lev. 01	Heatsink code 4879089Y is replaced by Thermalloy code 4879097G.
	Lev. 02	<ul style="list-style-type: none"> - Improved operation of the system monitoring component LM78 as a result of the replacement of the 22 µF capacitor in position C1M4 with a 30 Ohm resistor. - The board level is updated to AA669523-506.
	Lev. 03	<ul style="list-style-type: none"> - New printed circuit level. The board level is updated to AA669523-604 and required BIOS 1.00.02.DU0.
	Lev. 04	<ul style="list-style-type: none"> - The resistor added at Lev. 02 in removed from position C1M4 and LM78 component step C is replaced by step J. - The board level is updated to AA669523-605.

ONBOARD CONTROLLERS

MOTHER-BOARD	INTEGRATED CONTROLLERS
BA2377	<p>Slot 1:</p> <p>This socket can accommodate the following processors:</p> <ul style="list-style-type: none"> - Pentium II 233 @ 233/66 MHz - Pentium II 266 @ 266/66 MHz - Pentium II 300 @ 300/66 MHz <p>2nd level cache 512 KB integrated in the processor</p> <p>82441FX (PMC) This chipset component integrates the following functions:</p> <ul style="list-style-type: none"> - Processor interface control - Integrated 2nd level cache control - Integrated DRAM control - Completely synchronous PCI bus interface - Data buffer. <p>82442FX (DBX) This chipset component integrates the data bus accelerator function.</p> <p>82371SB (PIIX3) This chipset component integrates the following functions:</p> <ul style="list-style-type: none"> - Interface between the PCI and ISA buses - USB control - Integrated dual-channel IDE interface - DMA control (up to seven channels) - Interrupt control. <p>PC87307VUL (Super I/O controller) This component integrates the following functions:</p> <ul style="list-style-type: none"> - Serial ports - Floppy disk control - Multi-mode bidirectional parallel port - Mouse and keyboard control - Real Time Clock. <p>S3 ViRGE/DX Video controller.</p> <p>CS4236B Audio controller which <i>must always be disabled</i>.</p> <p>82557 Local Area Network (LAN) controller.</p> <p>Flash EEPROM The system BIOS is stored in a 256 KB EEPROM.</p>

RISER BUS EXPANSION BOARD

NAME	LEVEL	NOTES
IN2061	Lev. Nasc.	Allows the installation of optional AT or PCI boards on HAL boxes.

POWER SUPPLY

POWER SUPPLY	LEVEL	NOTES
LITE-ON PS-5201-6IF1	Lev. Nasc.	200 W power supply for HAL boxes.

BIOS

LEVEL	NOTES
BIOS 1.00.01.DU0 Lev. Nasc.	BIOS used on the first series PCs.
BIOS 1.00.01.DU0 Lev. 01	Functional improvements. Board level is updated from AA669523-504 to AA669523-505.
BIOS 1.00.02.DU0 Lev. 02	New BIOS associated with motherboard AA669523-604.
BIOS 1.00.02.DU0 Lev. 03	With new Setup files (W95_300.bat and NT4_300.bat), allows the system to be booted from a 300 MHz CD-ROM drive.

SOFTWARE DRIVERS

NAME	LEVEL	NOTES
EVD S3 ViRGE/DX	Ver. 1.03	Video driver for: Windows 3.1x, Windows NT 4.0, Windows 95, SCO Open Server 5.2.
	Ver. 1.04	<ul style="list-style-type: none"> - Handles the OS/2-compatible environment. - Introduces the Galileo Utility for setting the Refresh Rate under Windows for Workgroups.
	Ver. 1.05	<ul style="list-style-type: none"> - Windows 95 and OS/2 environment updates. - No longer includes the Galileo Utility which is distributed separately. - Handles the DSM 70-xx series monitors.
	Ver. 2.00.17	Performance improvements (for Windows 95 only).
EVDs for the Matrox Millennium card	Ver. 1.0	Video drivers (PCI bus) for: Windows 3.1x, AutoCAD MS-DOS and MicroStation 4.0/5.0, Windows NT 4.0, OS/2 2.11 & Warp 3.0, Windows 95.
	Ver. 2.00	
	Ver. 2.01	Updated drivers for Windows NT only.
	Ver. 2.02	Handles the following new monitors: DSM 60-210, DSM 50-171, DSM 70-175, DSM 70-500, DSM 70-520, DSM 70-740.
Audio drivers for VIBRA 16C (Sound Blaster)	Ver. 5.01	Audio drivers for: Windows 3.1x, Windows NT 4.0, Creative Configuration Manager for MS-DOS, Windows 95, OS/2 Warp 4.0.
DRIVERS COLLECTION CD	Ver. 1.16	Collection of drivers for Windows NT.
	Ver. 1.20	
	Ver. 1.33	

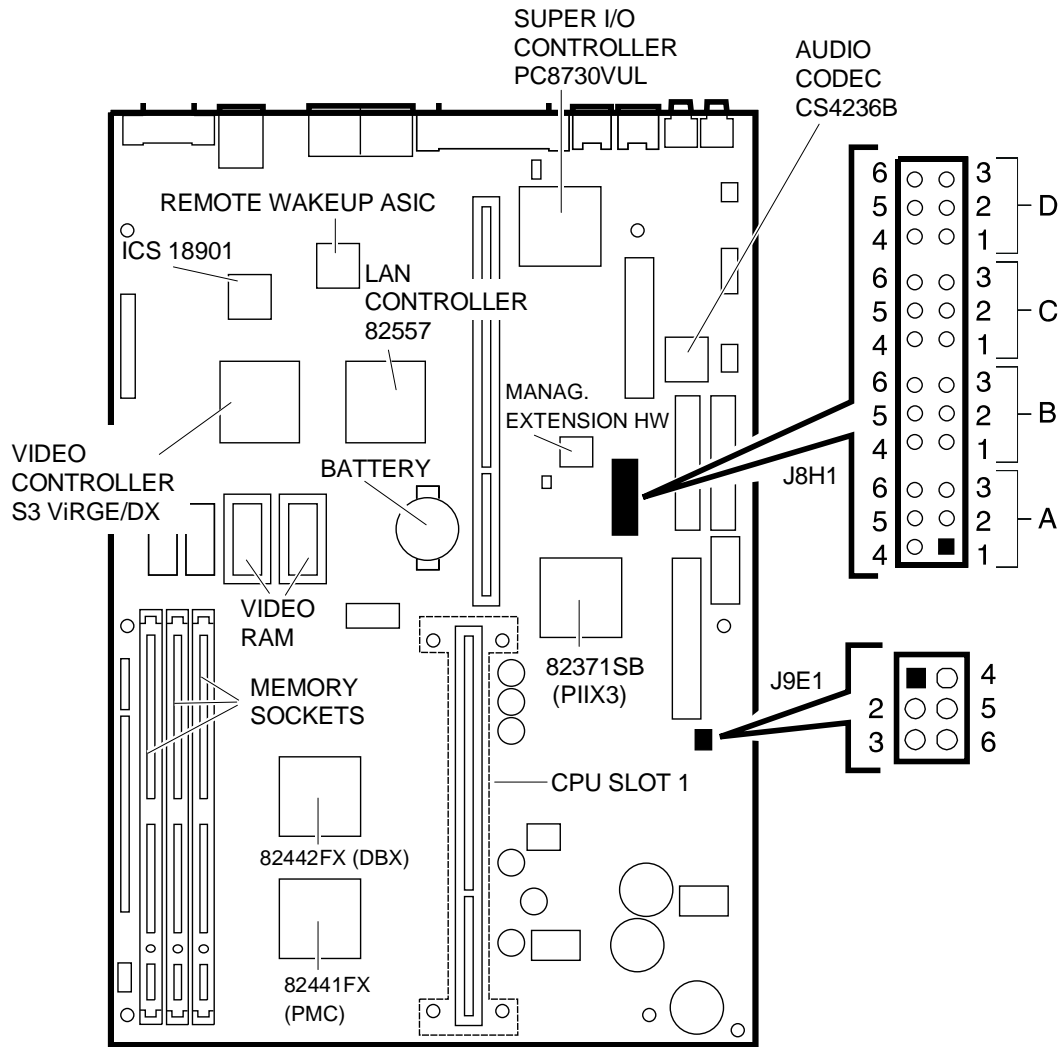
SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	WINDOWS
IBM OS/2 2.1 land Warp, version 3.0 MS-DOS, version 6.22 NOVELL NETWARE, version 4.1 PC DOS, ver. 7.0 SCO Opem Server, version 5.0 SCO UnixWare, version 2.1	MS-Windows 3.1 MS-WINDOWS for Workgroups, ver. 3.11 MS-WINDOWS 95 MS-WINDOWS NT, ver. 3.51 MS-WINDOWS NT Workstation, ver. 4.0
WINDOWS APPLICATIONS	
MS-ACCESS 97 MS-ACCESS for Windows, version 2.0 MS-EXCEL for WfW, version 5.0 MS-OFFICE 97	
WORD PROCESSING AND DTP	GRAPHICS APPLICATIONS
AMI PRO, version 3.0 LOTUS 1-2-3, versions 2.1, 4.0, 4.1 LOTUS cc:Mail, ver. 2.21 LOTUS Notes, ver. 4.01 LOTUS SmartSuite 95 MS-WORD, version 5.5 MS-WORD for WfW, version 6.0 PAGEMAKER for WfW, version 5.0 PAGEMAKER for Windows NT, version 6.5 QUATTRO PRO, version 6.0 WORD PERFECT, versions 5.1, 6.1	AUTOCAD, ver. 12 COREL DRAW, version 4.0 FREELANCE, version 2.1 Harward Graphics, ver. 2.12 Harward Graphics for Windows, ver. 4.0 MS-POWERPOINT for WfW, version 4.0

HARDWARE COMPATIBILITY

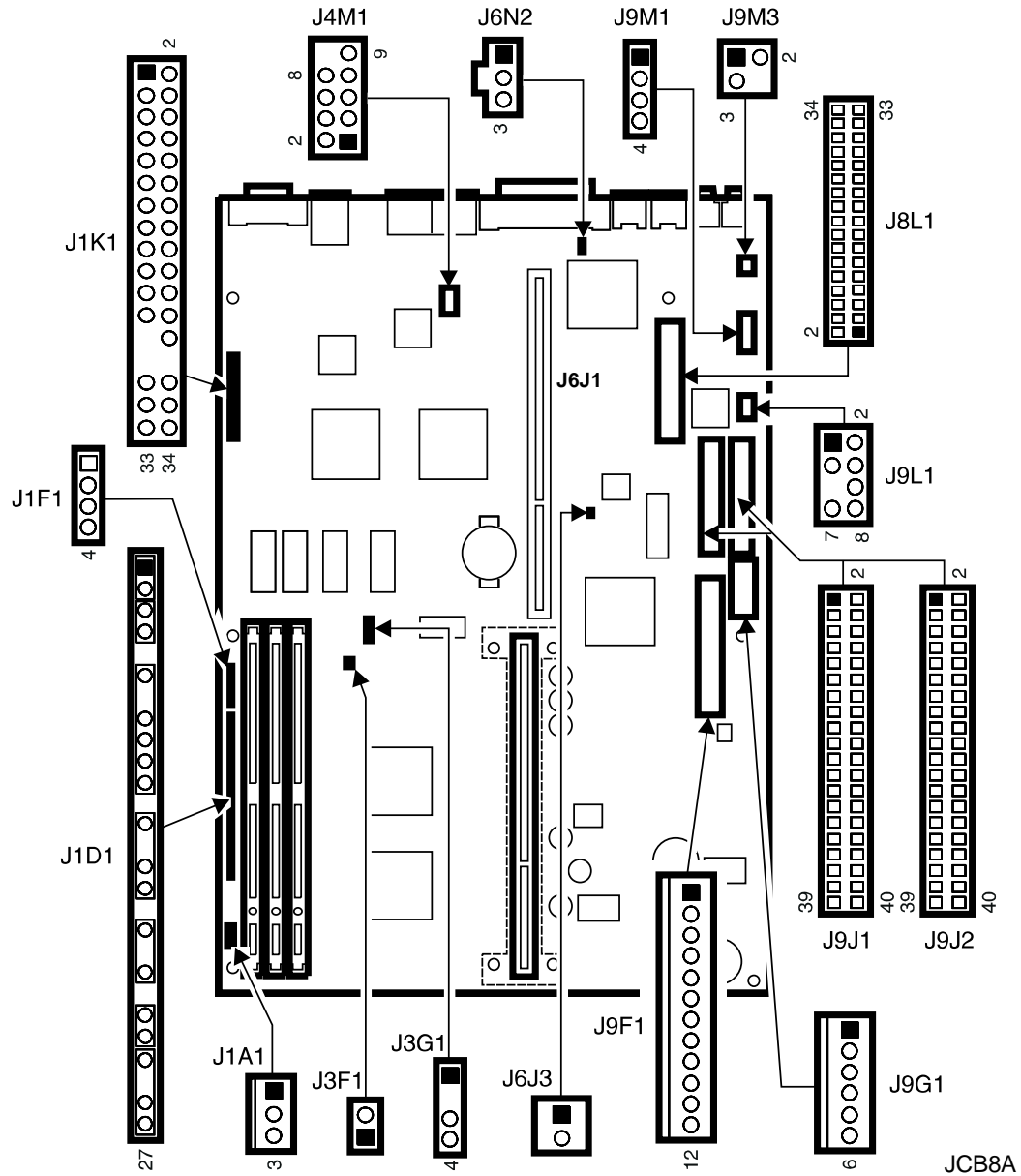
GRAPHICAL PRODUCTS	LAN (ISA/PCI)
#9 9FX Motion531 2MB (PCI) #9 Imagine 128 2MB (PCI) ATI Graphics Xpression 2MB (PCI) DIAMOND Stealth 64 3400XL 4MB (PCI) Hercules Graphite Terminator Professional 4MB VRAM (PCI) MATROX Millenium 3D 4MB (PCI) STB PowerGraph 64V 2MB (PCI)	3COM Etherlink III Adapter (3C509B) (ISA) BANYAN ICA IBM Auto LANStreamer (PCI) IBM Token-Ring 16/4 II IBM Token-Ring 16/4 ISA-16 Intel EtherExpress 16 Intel EtherExpress PRO/10 (PCI) Intel EtherExpress PRO/10 A (PnP) Intel EtherExpress PRO/100 (PCI) Intel EtherExpress PRO/100 B Intel TokenExpress 16/4s (ISA) OLICOM 16/4 PCI Token-Ring PROTEON 1392plus Z'NYX Netblaster ZX312 (PCI)
I/O PORT	MODEM/FAX
DEC PPB EVAL Board	Diamond SupraExpress 288i PnP Intel Teladdin Motorola OnlineSURFR 28.8 US Robotics Sportster Vi 28.8 US Robotics Courier V. Everything with V.34
MPC BOARDS	DISPLAYS
LOGITECH Soundman Wave Creative Labs SOUND BLASTER 16 ViBRA SOUND BLASTER AWE 32 (ISA, P&P)	MAG DX1595 NEC 3D NEC MultiSync XP15 NEC MultiSync XP17 ViewSonic 6E ViewSonic 21PS
MOUSE	
Microsoft Serial Microsoft PS/2 Logitech M-S35	

COMPONENTS AND JUMPERS ON MOTHERBOARD BA2377



JCA3A

MOTHERBOARD CONNECTORS BA2377



CONN.	DESCRIPTION	CONN.	DESCRIPTION
J1D1	I/O FRONT PANEL	J9L1	WAVE-TABLE EXPANSION
J1F1	SCSI ACTIVITY LED	J9J1	PRIMARY PCI IDE
J1K1	FEATURE VESA	J9J2	SECONDARY PCI IDE
J4M1	SERIAL	J9G1	3.3 V POWER SUPPLY
J6N2	SOFT-OFF POWER SUPPLY	J9F1	PRIMARY POWER SUPPLY
J6J1	RISER BOARD EXPANSION	J6J3	CHASSIS SECURITY (NOT USED)
J9M1	ATAPI CD-ROM AUDIO	J3G1	WOM
J9M3	TELADDIN TELEPHONE CONN.	J3F1	WOL
J8L1	FLOPPY DISK	J1A1	FAN

Jumpers J8H1-A, B, C - CPU, System Bus, PCI Bus, ISA Bus Clock Configuration

CPU Clock (MHz)	J8H1-A	J8H1-B	J8H1-C	Host Bus Clock (MHz)	PCI Bus Clock (MHz)	ISA Bus Clock (MHz)	CPU/Bus Clock Ratio
233	2-3	2-3 & 5-6	2-3	66	33	8.33	3,5
266	1-2	1-2 & 4-5	2-3	66	33	8.33	4
300	1-2	2-3 & 4-5	2-3	66	33	8.33	4.5

Jumpers J8H1-D - Password Clear

JUMPER	FUNCTION	CONFIGURATION
J8H1-D	PASSWORD CLEAR	2-3 PASSWORD ENABLED (DEFAULT) 1-2 PASSWORD CLEARED/DISABLED

Jumpers J8H1-C - CMOS Clear

JUMPER	FUNCTION	CONFIGURATION
J8H1-C	CMOS CLEAR (NVRAM AND ESCD)	5-6 CMOS HOLD (DEFAULT) 4-5 CMOS CLEAR

Jumpers J8H1-D - Access to the BIOS Setup

JUMPER	FUNCTION	CONFIGURATION
J8H1-D	ACCESS TO THE BIOS SETUP	5-6 ACCESS ENABLED (DEFAULT) 4-5 ACCESS DISABLED

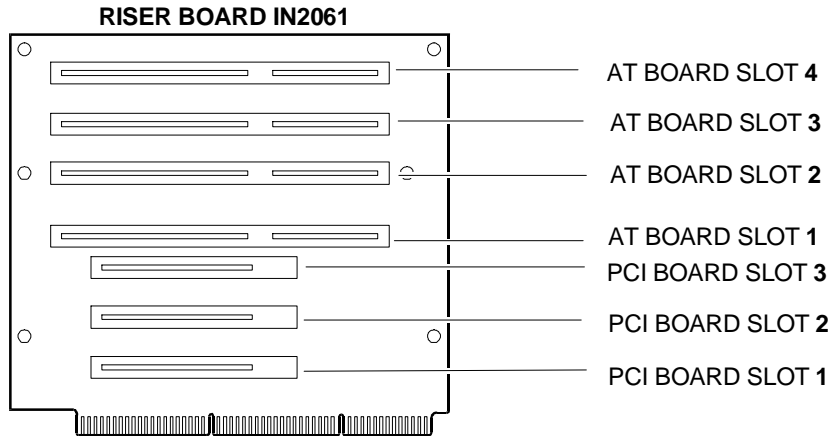
Jumpers J8H1-A - Floppy Write Enable

JUMPER	FUNCTION	CONFIGURATION
J8H1-A	FLOPPY WRITE ENABLE	5-6 WRITE ENABLED (DEFAULT) 4-5 WRITE DISABLED NOTE: When trying to write data to a floppy disk in the write disabled condition, the system acts as if it is making a copy but it is actually not copying anything to diskette. There is no message displayed indicating that the write is disabled.

Jumpers J9E1 for BIOS Recovery

JUMPER	FUNCTION	CONFIGURATION
J9E1	BIOS RECOVERY	5-6 NORMAL OPERATION (DEFAULT) 4-5 BIOS RECOVERY

RISER BUS EXPANSION BOARD



IBC4A

NOTE: For conflict problems between resources with audio enabled, the Matrox Millennium must be installed in PCI slot 2 while the SCSI controller board in PCI slot 3.

INTERRUPT LEVELS

INTERRUPT	SYSTEM RESOURCE
NMI	I/O channel control
IRQ0	Reserved - Interval Timer
IRQ1	Reserved - Keyboard buffer full
IRQ2	Reserved - Cascade interrupt from the slave PIC
IRQ3	Serial port 2 (COM2) *
IRQ4	Serial port 1 (COM1) *
IRQ5	Parallel port 2 (LPT2) / Audio / Free
IRQ6	Floppy
IRQ7	Parallel port 1 (LPT1) *
IRQ8	Real Time Clock
IRQ9	Audio / Free
IRQ10	USB (if present, otherwise free)
IRQ11	Video (Default) or Free
IRQ12	Mouse (if present, otherwise free)
IRQ13	Reserved - Math coprocessor
IRQ14	Primary IDE (if present, otherwise free)
IRQ15	Secondary IDE (if present, otherwise free).

DMA CHANNELS

DMA CHANNEL	DATA WIDTH	SYSTEM RESOURCE
0	8 or 16 bits	Audio
1	8 or 16 bits	Audio / Parallel port
2	8 or 16 bits	Floppy disk
3	8 or 16 bits	Parallel port (in ECP/EPP configuration) / Audio
4		Reserved
5	16 bits	Free
6	16 bits	Free
7	16 bits	Free.

I/O ADDRESSES

I/O PORT (h)	SIZE	DEVICE OR FUNCTION
0000 - 000F	16 bytes	PIIX3 - DMA controller 1
0020 - 0021	2 bytes	PIIX3 - Interrupt controller 1
002E - 002F	2 bytes	Super I/O controller configuration registers
0040 - 0043	4 bytes	PIIX3 - Timer counter 1
0048 - 004B	4 bytes	PIIX3 - Timer counter 2
0060	1 byte	Keyboard controller - IRQ reset
0061	1 byte	PIIX3 - NMI, speaker controller
0064	1 byte	Keyboard controller, CMD/STAT byte
0070 bit 7	1 bit	PIIX3 - NMI enable
0070 bit 6-0	7 bits	PIIX3 - Real Time Clock addresses
0071	1 byte	PIIX3 - Real Time Clock data
0078	1 byte	Reserved - Board configuration
0079	1 byte	Reserved - Board configuration
0080 - 008F	16 bytes	PIIX3 - DMA page registers
00A0 - 00A1	2 bytes	PIIX3 - Interrupt controller 2
00B2 - 00B3	2 bytes	APM Control
00C0 - 00DE	31 bytes	PIIX3 - DMA controller 2
00F0	1 byte	RESET for numeric errors
0170 - 0177	8 bytes	Secondary IDE channel
01F0 - 01F7	8 bytes	Primary IDE channel
0220 - 022F	16 bytes	Audio CS4236B
0278 - 027F	8 bytes	LPT2 parallel port 2
0290-0297	8 bytes	Hardware extension management
02F8 - 02FF	8 bytes	COM2 serial port 2
0330 - 0331	2 bytes	MPU-401 (MIDI)
0376	1 byte	Secondary IDE channel command port
0377	1 byte	Floppy disk channel 2 commands
0377 bit 7	1 bit	Floppy disk change channel 2
0377 bit 6-0	7 bits	Secondary IDE channel status port
0378 - 037F	8 bytes	Primary LPT1 parallel port
0388 - 038B	4 bytes	FM synthesizer
03BC - 03BF	4 bytes	LPT3 parallel port 3
03E8 - 03EF	8 bytes	COM3 serial port 3
03F0 - 03F5	6 bytes	Channel 1 floppy disk controller
03F6	1 byte	Primary IDE channel command port
03F7 (write only)	1 byte	Floppy disk channel 1 commands
03F7 bit 7	1 bit	Floppy disk change channel 1
03F7 bit 6-0	7 bits	Primary IDE channel status port
03F8 - 03FF	8 bytes	COM1 serial port 1
04D0 - 04D1	2 bytes	Edge/Level triggered PIC
0534 - 0537	4 bytes	Windows Sound System
LPTn + 400h	8 bytes	Port ECP, LPTn base address + 400h
0CF8 - 0CFB*	4 bytes	PCI configuration address register
0CF9**	1 byte	Turbo & Reset control register
0CFC - 0CFF	4 bytes	PCI configuration data register
0FF0 - 0FF7	8 bytes	CS4236B audio controller
FF00 - FF07	8 bytes	IDE Bus Master register
FFA0 - FFA7	8 bytes	Primary IDE Bus Master registers
FFA8 - FFAF	8 bytes	Secondary IDE Bus Master registers
Dynamic allocation	32 bytes	USB.

(*) Accessible through DWORD accesses only.

(**) Accessible through byte accesses only.

SYSTEM MEMORY MAP

ADDRESS RANGE (DECIMAL)	ADDRESS RANGE (HEX)	SIZE	DESCRIPTION
1024K-393216K	100000-18000000	383 MB	Extended memory
960K-1024K	F0000-FFFFF	64 KB	AMI system BIOS
944K-960K	EC000-EFFFF	16 KB	Boot block
936K-944K	EA000-EBFFF	8 KB	ESCD (Plug & Play configuration area)
932K-936K	E9000-E9FFF	4 KB	Reserved for the BIOS
928K-932K	E8000-E8FFF	4 KB	OEM logo area
896K-928K	E0000-E7FFF	32 KB	Reserved for the BIOS
800K-896K	C8000-DFFFF	96 KB	High DOS memory available (open to the ISA and PCI buses)
640K-800K	A0000-C7FFF	160 KB	Video BIOS and memory
639K-640K	9FC00-9FFFF	1 KB	Extended BIOS data memory (transferrable from QEMM, 386MAX)
512K-639K	80000-9FBFF	127 KB	Conventional extended memory
0K-512K	00000-7FFFF	512 KB	Conventional memory.

PCI CONFIGURATION AREA MAP

BUS NUMBER (HEX)	DEVICE NUMBER (HEX)	FUNCT. NUMBER (HEX)	DESCRIPTION
00	00	00	Intel 82441FX (PMC) Host Bridge
00	07	00	Intel 82371SB (PIIX3) PCI/ISA Bridge
00	07	01	Intel 82371SB (PIIX3) IDE Bus Master
00	07	02	Intel 82371SB (PIIX3) USB
00	08	00	Video controller
00	06	00	Intel 82557 Ethernet LAN controller
00	11	00	PCI expansion slot: free
00	13	00	PCI expansion slot: free
00	0B	00	PCI expansion slot: free.

