M400-10

CHARACTERISTICS

Microprocessor	Intel 486SX with 32-bit addressing
Clock	25 MHz
Architecture	AT

Memory	From 4 MB to 52 MB
	- One bank of 4 MB soldered (8 1M x 4 DRAM chips plus 4 1Mx1 parity DRAM chips)
	- Three banks, each with 4 sockets, in which the following SIMM modules can be installed:
	  - SIMM 1M x 9 **EXM 26-807**
	  - SIMM 4M x 9 **EXM 26-809**
	Different capacity SIMMs can be installed in the three banks, but not inside the same bank. Banks can be left empty.

Memory access	80 ns

Coprocessor	1- Intel 487SX (25 MHz) for implementation of the floating point unit
	  - In BA901 the 487SX replaces the CPU
	  - In BA301 the 487SX has only one socket
	2- Weitek WTL (4167, 25 MHz) BA901 only

Floppy disk	1.2 MB Panasonic JU475-3-4-5 1.2 MB Toshiba ND08DE 1.44 MB Panasonic J-257 A / Sony MP-F17 W 1.44 MB Mitsubishi MF355 / MITSUMI D359T3 1.44 MB YE DATA YD-702B / 702D 2.88 MB Sony MP-F40 W (BA301)
Hard disk	85 MB CONNER CP30084 120 MB CONNER CP30126 120 MB W.D. AC 2120 170 MB CONNER CP30174E 210 MB CONNER CP3206 3204F 210 MB QUANTUM LPS 240 AT 210 MB CONNER CP30204 (BA301)/CP30256 340 MB CONNER CP3304/CONNER CP3364 340 MB SEAGATE ST1401A 340 MB W.D. AC2340 510 MB CONNER CP3504 / CONNER CP3544
Streaming tape	80/120 MB IRWIN 285 - 287 - 3125 150 MB WANGTEK - 320 MB WANGTEK SCSI
Expansion slots	4 Present, 4 Available (**IN284 Board**)
Video adapter	Integrated on motherboard - 82C452A
Hard disk and floppy disk controller	Integrated on motherboard. FDU controller: Intel 82077AA-1 HDU controller: Logic gates and MSI Buffer implementing an AT interface for intelligent HDUs.
Cache controller	Integrated in CPU with 8 KB
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key, compact ANK 27-101 ANK 27-102

MOTHERBOARD

Printed Circuit BA901:

BA296	4 MB
BA297	8 MB
BA309	4 MB

Printed Circuit BA301:

BA313	4 MB
BA312	8 MB

BIOS

The ROM BIOS is a FLASH EPROM. The BIOS code is supplied on diskettes and must be copied into Flash EPROM

BA296 BA297 BA309	Rel. 1.08
BA312 BA313	Rel. 2.08

POWER SUPPLY

PS11/A - 220 V PLESSEY

PS11/A - 115 V PLESSEY

PS11/A - only 220 V ASTEC

PS11/AR - 220 V ASTEC

SCSI PERIPHERAL CONTROLLER

ASC - 1

MOTHERBOARD

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS/NOTES
BA296	Nasc. Lev. 01 MI	Use the code of BA 297	The ROM BIOS is a Flash EPROM. The BIOS code is supplied on diskettes and must be copied into Flash EPROM. Rev. 1.01 Rev. 1.04 Rev. 1.05 Rev. 1.06 Rev. 1.07 Rev. 1.08	For the integrated controllers, see the following table. Board with 4 MB soldered. Cuts and trimmings to solve the problem with the 340 MB CONNER hard disk. New BIOS. The characteristics of the different BIOS versions and the problems solved are explained further on in this chapter. New BIOS New BIOS New BIOS New BIOS **This board will no longer be produced**. The different memory expansion, which is the main difference between BA269 and BA297, will be implemented at system level.
BA297	Nasc. Lev. 01 MI	553000C	Rev. 1.01 Rev. 1.04 Rev. 1.05 Rev. 1.06 Rev. 1.07 Rev. 1.08	This board the same as BA 296 but has 8 MB of memory. Four SIMMs have already been installed at the factory. Cuts and trimmings to solve the problem with the 340 MB CONNER hard disk. New BIOS New BIOS New BIOS New BIOS New BIOS **This board will no longer be produced**. Only BA 131 will continue to exist.
BA309	Nasc. Lev. 01 MI		Rev. 1.01 Rev. 1.04 Rev. 1.05 Rev. 1.06 Rev. 1.07 Rev. 1.08	Board installed for Italy only. Cuts and trimmings to solve the problem with the 340 MB CONNER hard disk. New BIOS New BIOS New BIOS New BIOS New BIOS

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS/NOTES
BA312	Nasc.		Rev. 2.04	This board is the same as BA 313but has 8 MB of memory. Four SIMMs have already been installed at the factory. Replaces board BA 927.
			Rev. 2.05	New BIOS
			Rev. 2.06	New BIOS **This board will no longer be produced**. The different memory expansion, which is the main difference between BA 312 and BA 313, will be implemented at system level so only BA 313 will continue to exist.
			Rev. 2.08	New BIOS
BA313	Nasc.	553060 F	Rev. 2.04	4 MB soldered. Replaces BA 296.
	Lev. 01		Rev. 2.05	- New BIOS - Cuts, trimmings, and replacement of PAL DPGSEL (GL9A) with PAL DPGSEL12 (GKCL) to solve the problem with the video controller during VIDEO RAM read operations. - The ROM version of keyboard controller Rev. 10.01 is also introduced to cut costs.
	Lev. 02		Rev. 2.06	New BIOS to correct the problems with the CONNER 340 MB hard disk and with the power on password
			Rev. 2.06	The floppy disk controller INTEL component 82077-AA1 is replaced with the floppy disk controller INTEL component 82007SL-1.
			Rev. 2.08	New BIOS to correct the problems with IBM OS/2 version 2.0.
	Lev. 03		Rev. 2.08	- Component 74F224 in position U37 is replaced by component 74F240 to solve the "snow" effect on high resolution monitors.

MAJOR COMPONET

MOTHERBOARD	PRINTED CIRCUIT	MAIN COMPONENTS
BA296	BA901 This printed circuit does not allow the management of 2.88 MB floppy disk drivesa nor monitors with a 72 Hz vertical refresh rate (ergonomic monitors). Also, this printed circuit does not have the Performance Upgrade Processor socket so the i487SX coprocessor has to be installed in place of the system CPU. The systems on which this printed circuit is installed do not have the hard disk self-acknowledge feature but use the BUILT IN SETUP utility for the configuration of the hard disks.	- 25 MHz Intel **486SX** processor - Intel **487SX** numeric coprocessor (must be installed in place of the CPU) - Socket for the 25 MHz **Weitek WTL 4167** numeric coprocessor - **82C206:** Real time clock 128 byte non-volatile RAM Timer DMA controller Interrupt controller - **8742** OPT PLCC keyboard mouse controller - **82C452A** video controller - **WD16C551-D**: 16C550-compatible serial port AT/PS2-compatible parallel port - **82077 AA-1** floppy disk controller - Buffer for intelligent hard disks - BIOS Flash EPROM (1 Mbit) - Chip set consisting of 4 gate arrays: - BCUE bus controller - MCUE memory controller - DPU data flow controller - IOU I/O controller - System memory (from 4 to 52 MB) - EYE **GA4Q** component - 50 MHz oscillator
BA297	BA901	This board is the same as BA 296 but has an 8 MB memory.
BA309	BA901	This board is only installed for Italy.
BA313	BA301 This printed circuit allows the management of a 2.88 MB drive and a monitor with a 72 Hz vertical refresh rate. The systems on which this printed circuit is installed use the hard disk self-acknowledge feature and therefore do not have the BUILT IN SETUP utility	This board is the same as BA 296 with the exception of the following: - There is no socket for the Weitek coprocessor which therefore cannot be installed. - The Performance Upgrade Processor socket for the i487SX coprocessor is present so there is no need to install this coprocessor in place of the CPU. - Shielded keyboard and mouse connectors.
BA312	BA301	This system board is the same as BA 313 but has an 8 MB memory.

USER DISKETTE / SYSTEM TEST / DRIVERS

LEVEL	COMPATIBILITY / NOTES
USER DISKETTE Rev. 1.00 USER DISKETTE Rev. 2.01	This user diskette has a new user interface and can also be used on the M400-40 and M400-60 Personal Computers
USER DISKETTE Rev. 2.02	Alignment with BIOS 2.05. Only for the system boards BA312 and BA313 with PCB BA301
USER DISKETTE Rev. 2.03	The problems with the keyboard, mouse and high resolution monitor are solved.
Enhanced video drivers ver. 5.00	
Enhanced video drivers ver. 7.1 rev. 2.0	Update of the previous version
USER DISKETTE for Streaming tape Rev. 1.02 Provided in the STU 26-082/A kit	This release allows installation of the streaming tape unit on the M400-10 with system board PCB BA301 for 2.88 MB floppy disk management
USER DISKETTE for Streaming Tape Rev. 1.03 ver. 1 provided in the STU 26-082/A kit	Version 1.02 of this User Diskette was in conflict with the second floppy drive. Problem solved with version 1.03
SYSTEM TEST Rev. 2.00	The System Test release is also used on the M400-40 Personal Computer and works properly only with BIOS Rel. 2.02.
SYSTEM TEST Rev. 2.00 Upd. 1	Allows execution of tests on the cache memory .
SYSTEM TEST Rev. 2.01	Some bugs of the previous release removed
SYSTEM TEST Rev. 2.02	This System Test release is used on the M400-10, M400-40 and M400-60 Personal Computers. This release works properly only with BIOS Rel. 2.04
SYSTEM TEST Rev. 2.03	This release supports tests on the i486DX2 CPU and works properly only with BIOS Rel. 2.05. Some problems concerning monitors with a 72 Hz vertical refresh rate have also been solved
USER DISKETTE for EOD400 rel. 1.03	Release 1.03 was replaced by 1.05 which implements the ASPI4DOS.SYS driver that supports multitasking Windows 3.xx V86 and the ASPIDISK.SYS driver that supports the DOS 3.31 extended partition.

COMPATIBILITY

DEVICE BOARD	COMPATIBILITY
Streaming tape with floppy disk interface	The software for streaming tape unit management may enter into conflict with the floppy disk controller when the latter is programmed for operation in "perpendicular - mode" (programming for 2.88 MB floppy disks). BIOS 1.07 solves this problem. In any case, it is possible to use this streaming tape by jumpering it in position ID 4 to avoid the programming conflict between the EZTAPE management program and the floppy disk controller.
Motherboard with PCB BA901 replaced by system board with PCB BA301	Replacement of motherboard PCB BA901 with PCB BA 301 may result in problems with the management of 340 MB hard disks. When changing board the hard disk should be reformatted (low level format). If this is not possible, because the hard disk contains data that cannot be lost, it is still possible to use it with the new system board by configuring it as a non- standard hard disk and giving the following parameters: HDU 340 MB Conner CP3304 Cyl. = 726 Land. zone = 726 Auxiliary = 112 Heads = 15 Sectors = 61 There are no such problems with the 210 MB hard disk
EYE1 component	EYE2 is introduced as the alternative of EYE1. The level of the boards does not change.
INTEL component PDL 85C220-7	Component PALCE 16V8-7 AMD (GKTC) is introduced as the alternative of the INTEL component PDL 85C220-7 (GLZX). The level of the boards does not change.

EVOLUTION OF BIOS BA296, BA297 and BA309 (PCB BA901)

LEVEL	EVOLUTION
Rev. 1.00	BIOS level not present in the field.
Rev. 1.01	Solves some problems of release 1.00 and adds the following new features: - Implements the GOFAST, GOSLOW and AUTOSLOW utilities - Changed password management - Implements video modes 32, 33, 3A and 3B
Rev. 1.04	This release solves the problems of the second serial port (serial board installed on the BUS)
Rev. 1.06	Addition of the 200 MB QUANTUM LPS 240 AT hard disk (entry 27) in the hard disk table
Rev. 1.07	Solves the operation problem of a streaming tape when the handling software enters into conflict with programming of the floppy disk controller in "perpendicular-mode" (2.88 MB floppy disks)
Rev. 1.08	This release corrects: - the incorrect operation of IBM OS/2 ver. 2.0 within a DOS window - warm boot problems when using an Ethernet board - the extended wait state of the hard disk's data request signal in order to guarantee compatibility with the new Conner hard disks.

EVOLUTION OF BIOS BA312 and BA313 (PCB BA301)

LEVEL	EVOLUTION
Rev. 2.00	This release introduces the following features: - Automatic HDU acknowledgement selecting the "standard" function which will be included in the user diskette release 2.02. - Management of the new VESA 72.8 Hz monitors. - Management of 2.88 MB drives
Rev. 2.01	This release has the following variations with respect to the previous one: - Change at Security level so that the Power-On password is copied on the Keyboard password, only when there is a Power-On and not when there is a Soft-reset (Ctrl-Alt-Del) or a Jump to F000:FFF0. Banner change for introduction of the new type P24 50/66 MHz CPU - The "ROM checksum error" error on rebooting after the SETUP has been removed. - Various faults concerning new HDU management have been corrected. - New corrections made to 2.88 MB floppy drive management. - A new video table has been introduced for the 11h,12h,79h 72Hz modes due to VESA.N.B. timing problems. This release does not yet implement the the facility by which the user has the possibility of setting non-standard hard disks and presents faults on HDUs when working in Shadow disabled mode (condition not much used).
Rev. 2.02	Corrected the faults with the OLICOM "V24 LPU 2100/2400/3500/3600" board.
Rev. 2.03	Corrected problem of the "Memory refresh error" appearing randomly after a Ctrl-Alt-Del reset.
Rev. 2.04	- Corrected the "Keyboard Error" problem appearing randomly during the POD after a Ctrl-Alt-Del. - Corrected problem of failure to Bootstrap from floppy disk when disconnecting an HDU previously installed on other systems. - Some corrections made in management of 2.88 MB floppy disks. - Some system faults with Shadow memory disabled have been corrected. - Problems concerning management of non-standard Hard Disks with high capacity (600 MB) have been solved.
Rev. 2.05	This release has the following variations with respect to the previous release: - Corrected message conecrning CPU type 486DX2. - Corrected message concerning Dedicated memory when disabling the memory between 512K and 640K and performing a controlled reset. - Corrected malfunctioning of the interrupt controller and refresh tests caused by the increase in clock frequency of the computer (486DX2 for M400-60). - Correction to eliminate malfunctioning of the floppy disk running Windows 3.0 in standard mode. Windows release 3.1 does not have this problem. - Change made for management of the 6K between C680 and C7FF as ROM option. This BIOS revision is also extended to the M400-60 personal computer so subsequent issues of the BIOS will be attributed to all systems of the M400-10, M400- 40 and M400-60 family.
Rev. 2.06	This release corrects the following: - Bootstrapping delays with CP3304 HDUs and other MASTER HDUs - Spurious characters when a password is typed using slow keyboards - Cache for compatibility with COMPUTONE AT 8/16 boards - Cancelled the hidden partitions message displayed after the POD
Rev. 2.08	This release corrects the malfunctioning of IBM OS/2 ver 2.0 in a DOS window

HARD DISK SELF-ACKNOWLEDGEMENT FEATURE

M400-10 systems with motherboard BA312 or BA313 have the hard disk self-acknowledgement feature. This feature is not included on BA926 and BA927, which still have the BUILT IN SETUP utility. Using the SETUP utility of the System Test or Customer Test, the type of hard disk installed in the system can be defined. Having selected the SETUP utility, select the option hard disk #1 and #2. The following values can be defined in this field:

Not Present: If no hard disk is installed.

Standard In this case the system automatically acknowledges type and capacity of the hard disk installed. This option can be used for hard disks including the self-acknowedlge device and have capacity of less than 528 MB.

High Capacity In this case, the system automatically acknowledges type and capacity of the hard disk installed. This option must be used for hard disks with a capacity of more than 528 with the self-acknowledge device and which are to be used with the Olivetti OS/2, IBM OS/2 and MS-DOS operating systems.

Compatible This option must be used for hard disks compatible with the system but which do not have the self-acknowledge device, or hard disks which do have this feature but which have previously been used on other systems. If this option is chosen, a list of hard disks with preset parameters will be displayed. Check that the parameters defined match with those on the label of the hard disk being installed. The types of hard disk are as follows:

TYPE	CAPACITY	CYLINDERS	HEADS	SECTORS PER TRACK	WPC	LZ	MODEL
01	10 MB	306	4	17	128	305	STANDARD 10 MB, 8.5 ms
02	40 MB	925	5	17	128	924	CDC WREN I, Full, 35 ms
03	30 MB	697	5	17	128	696	WREN I, Full, 35 ms
04	42 MB	981	5	17	-1	980	WREN II Slim
05	53 MB	1024	6	17	-1	1023	Micropolis 1324, Full
06	56 MB	925	7	17	128	924	CDC WREN II, Full
07	71 MB	1024	8	17	-1	1023	Micropolis 1325, Full
08	72 MB	925	9	17	128	924	CDC WREN II, Full
09	44 MB	1024	5	17	-1	1023	Micropolis 1323-A
10	42 MB	820	6	17	-1	819	Seagate ST251, Half
11	104 MB	776	8	33	-1	775	CONNER CP3106 *
12	104 MB	776	8	33	-1	775	QUANTUM LPS 105 AT *
13	121 MB	762	8	39	-1	762	W.D. AC2120 *
14	340 MB	726	15	61	-1	726	CONNER CP3304 *

* These hard disks have the self-acknowledgement feature. The values of the table must be used only if bringing on to these systems a disk formatted on a "previous system", keeping the data recorded. If the hard disk is new, the self-acknowledgement feature can be used.

Later BIOS versions implement a new hard disks table that does not have hard disks with the self-acknowledgement feature and that may have been used previously on other systems.

TYPE	CAPACITY	CYLINDERS	HEADS	SECTORS PER TRACK	WPC	LZ	MODEL
01	10 MB	306	4	17	128	305	STANDARD 10 MB, 8.5 ms
02	40 MB	925	5	17	128	924	CDC WREN I, Full, 35 ms
03	30 MB	697	5	17	128	696	WREN I, Full, 35 ms
04	42 MB	981	5	17	-1	980	WREN II Slim
05	53 MB	1024	6	17	-1	1023	Micropolis 1324, Full
06	56 MB	925	7	17	128	924	CDC WREN II, Full
07	71 MB	1024	8	17	-1	1023	Micropolis 1325, Full
08	72 MB	925	9	17	128	924	CDC WREN II, Full
09	44 MB	1024	5	17	-1	1023	Micropolis 1323-A
10	42 MB	820	6	17	-1	819	Seagate ST251, Half
11	45 MB	872	6	17	-1	871	RODIME RO3055
12	21 MB	612	4	17	128	663	MINISCRIBE M8425
13	65 MB	820	6	26	-1	819	SEAGATE ST277R
14	65 MB	820	6	26	128	819	OPE XM5340/60

Not Standard This option allows the service engineer to personally define the parameters of a hard disk without any self-acknowledgement feature and that is not included in the list of compatible hard disks. The following table lists the parameters of the hard disks that are supported by the system BIOS.

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
25	CONNER CP3304	340 MB	726	15	-1	726	61
25	Seagate ST-1401A	340 MB	726	15	-1	726	61
26	CONNER CP3504	510 MB	989	16	-1	989	63
27	Quantum LPS 240 AT	205 MB	635	13	-1	634	51

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

POWER SUPPLY UNIT

POWER SUPPLY	LEVEL	DESCRIPTION
PS11/A ASTEC 220 V	Lev. 02	This power supply has already been used on other Personal Computers (see previous chapters). The level shown is that used on this system.
	Lev. 03	Change to solve the problem of the system not switching on when connected to a device (parallel printer or drive installed on the BUS) already on.
	Lev. 04	Inductor L5 has been added and changes have been made to the circuitry to solve the problems with EMI radio interference and random voltage drops.
	Lev. 05	New inductor and printed circuit. **NOTE:** Given the new printed circuit, the power supplies of previous levels cannot be upgradede to this level.
PS11/A Plessey 220 V	Lev. 03	This power supply has already been used on other Personal Computers (see previous chapters). The level shown is that used on this system.
PS11/A Plessey 110 V	Lev. 03	
PS11/AR ASTEC 220 V	Nasc.	New alternativpe power supply to cut costs.

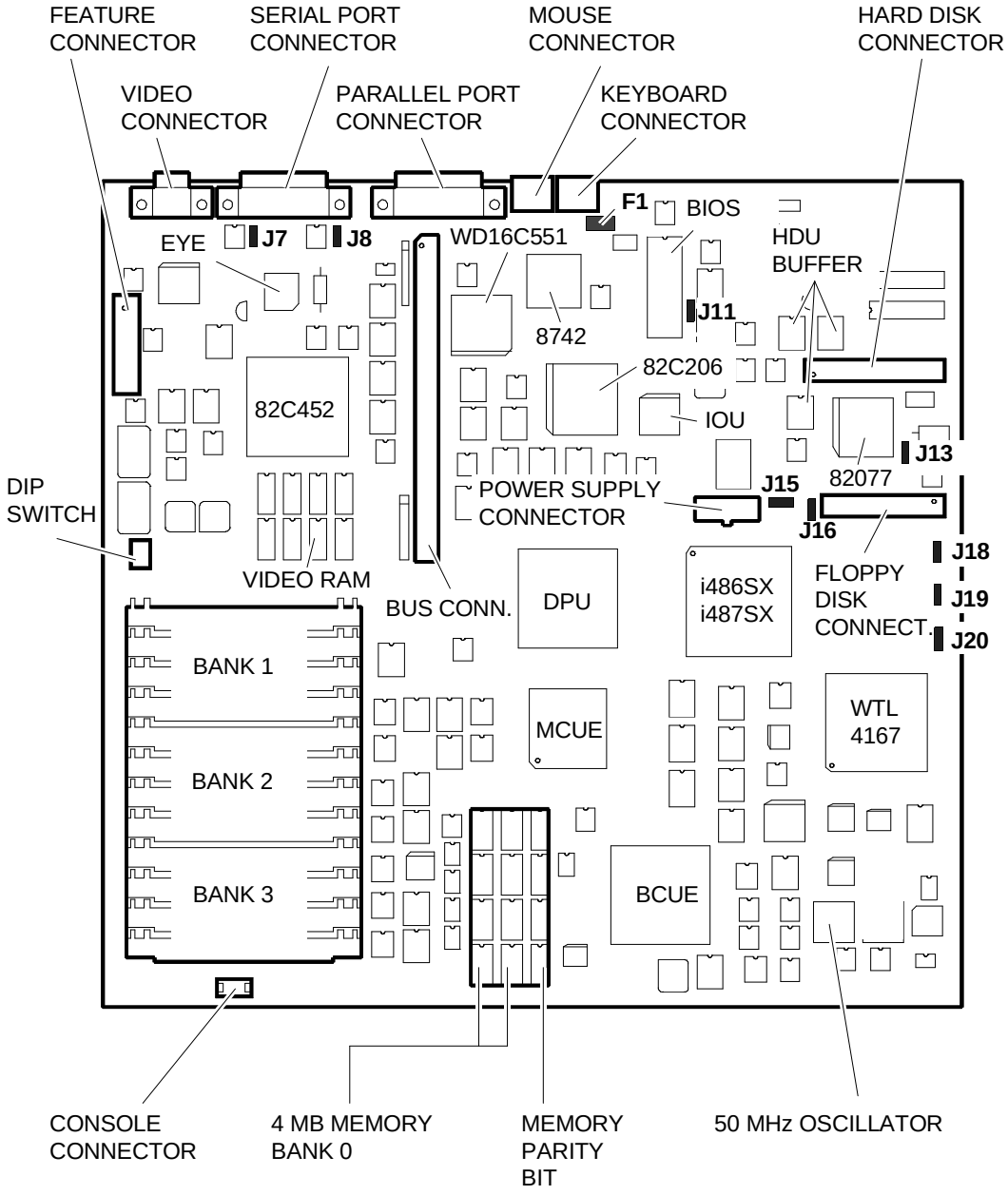
SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Ver. 3.30 IBM DISK Operating System, Ver. 4.01 Olivetti's Microsoft Disk Operating System. 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 IBM OS/2 version 2.0 IBM OS/2 extended edition Version 1.10, 1.20, 1.30 IBM OS/2 standard edition Version 1.10, 1.20, 1.30 SCO UNIX System V Rev. 4.0, Rev. 2.1 SCO XENIX Rev. 3.2	A formatted DSDD diskette required during installation on hard disk.
WINDOWS	
DESQ-VIEW 386 Ver. 2.31 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

MODEMS	**I/O INTERFACE PRODUCTS**
Hayes Smartmodem 2400B / 1200 B DR: NEUHAUS FAXY PC MASTER FERRARI Fax Card Fury 2400 PC modem / Fury 2400 master AT&T 2224 CEO modem	IBM PRINTER ADAPTER (1505200) IBM SERIAL/PARALLEL
MULTIPORT	**MOUSE**
Anvil Stallion Intelligent 16 Port Controller Chase AT16 / Chase AT8 Computone System Intelliport 16 Port AT16 Computone System Intelliport 8 Port AT8 Corollary 8 x 4 MUX Digiboard Digichannel COM/xi Intelligent 8 Port Specialix Si Intelligent I/O Controller Intel-Bell ACE 8 / Intel (Bell) ICC.6 Wyse WY-995	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)
GRAPHIC PRODUCTS	**NETWORKING & LAN PRODUCTS**
AST RESEARCH AST - VGA PLUS FASTWRITE 1024I FASTWRITE VGA HERCULES GRAPHICS CARD IBM EGA ADAPTER IBM VGA ADAPTER HERCULES GRAPHICS STATION CARD Olivetti AGC Olivett HGC Olivetti XGC ORCHID PRODESIGNER VGA PLUS PARADISE VGA PRO CARD	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
DISPLAY UNITS	**OTHER PRODUCTS**
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	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 POSCRIPT CONTROLLER OMTI 8627 ESDI ADAPTER OMTI 8627 RLL ADAPTER SCANMAN PLUS WD1007A ADAPTER WD1007V ADAPTER WD1007V-SE2 ADAPTER

COMPONENTS AND JUMPERS ON BA296 BA297 BA309 (PCB BA901) MOTHERBOARD



FUSE F1
2 A 5 V keyboard and mouse fuse.

JUMPERS AND FUSE ON BA926 BA927 BA309 (PCB BA901) MOTHERBOARD

JUMPERS J18, J19 AND J20 FOR PROCESSOR SELECTION

JUMPER	POSITION	FUNCTION
J18 3-way jumper	1-2 2-3 OUT *	Processor i486DX is installed in the system Processor i487SX (floating point unit) is installed in the system Processor i486SX is installed in the system
J19	IN OUT *	Processor i486DX or i487SX installed in the system Processor i486SX installed in the system
J20 3-way jumper	1-2 2-3 *	Processor i486DX or i487SX installed in the system Processor i486SX installed in the system

Jumpers J7, J8, J11, J13, J15, J16

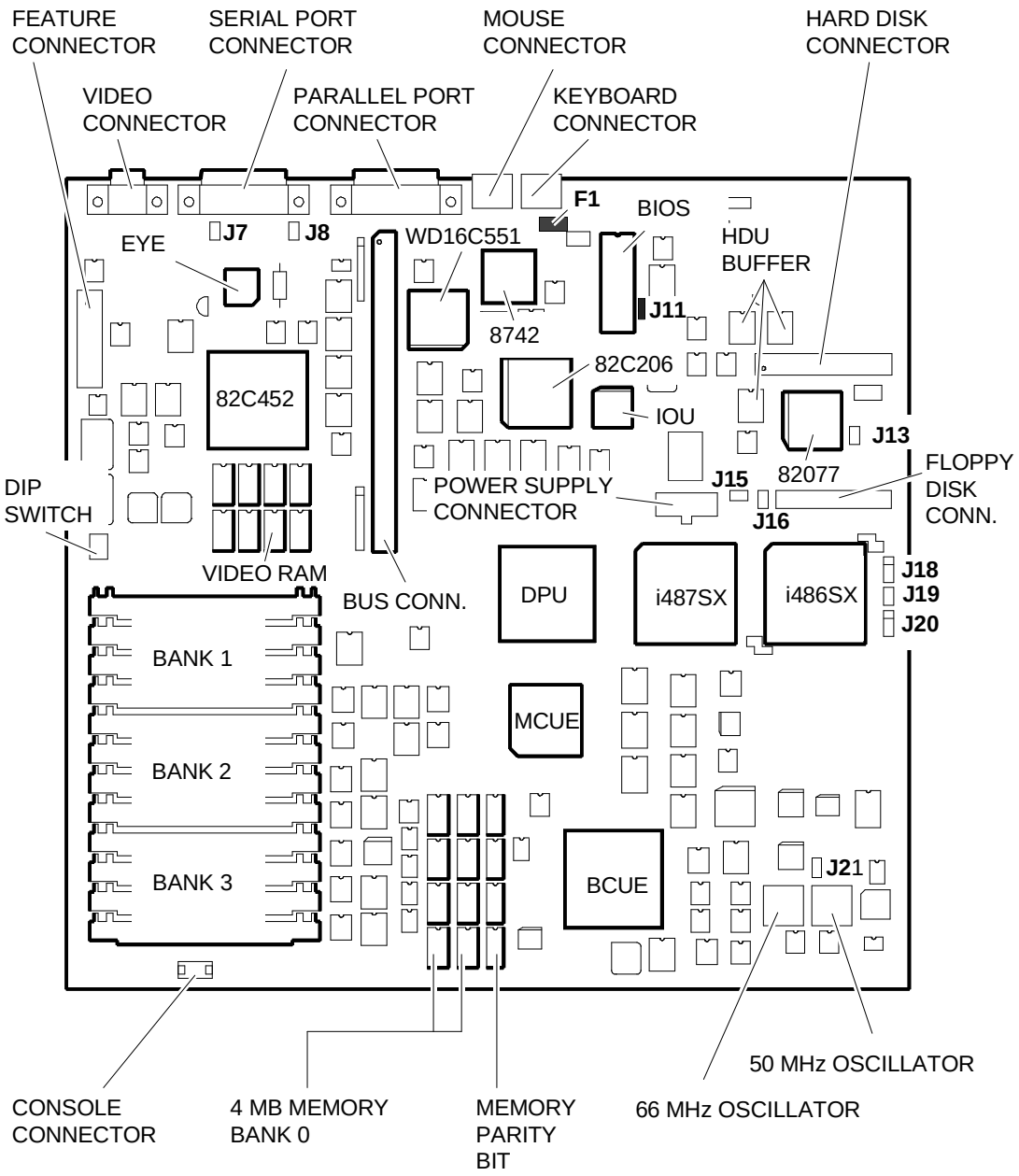
JUMPER	POSITION	FUNCTION
J 7	OUT * IN	RING Indicator signal (RS232 threshold voltage) FAIL-SAFE disabled RING Indicator signal (RS232 threshold voltage) FAIL-SAFE enabled
J 8	OUT * IN	Signals in input (RS232 threshold voltagea) FAIL-SAFE disabled Signals in input (RS232 threshold voltage) FAIL-SAFE enabled
J11	OUT IN *	ROM BIOS disabled ROM BIOS enabled
J 13	IN * OUT	Floppy disk oscillator enabled Floppy disk oscillator disabled
J15	OUT * IN	Normal operation Erases the CMOS RAM
J16	IN * OUT	Only one hard disk installed Two hard disks installed
F1	Keyboard protection fuse	

DIP-SWITCHES

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

IN: Jumper installed
OUT: Jumper not installed
The asterisk indicates the default setting.

COMPONENTS AND JUMPERS BA312 BA313 (PCB BA301) MOTHERBOARD



FUSE F1
2 A 5 V keyboard and mouse fuse.

JUMPERS AND FUSE ON BA312 BA313 (PCB BA301) MOTHERBOARD

JUMPERS J18, J19 AND J20 FOR PROCESSOR SELECTION

JUMPER	POSITION	FUNCTION
J18 3-way jumper	1-2 2-3 OUT *	Processor i486DX installed in system Processor i487SX (floating point unit) installed in system Processor i486SX installed in system
J19	IN OUT *	Processor i486DX or i487SX installed in system Processor i486SX installed in system
J20 3-way jumper	1-2 * 2-3	Processor i486DX or i487SX installed in the system Processor i486SX installed in the system
J21 3-way jumper	1-2 2-3 *	33 MHz processor clock 25 MHz processor clock

Jumpers J7, J8, J11, J13, J15, J16

JUMPER	POSITION	FUNCTION
J 7	OUT * IN	RING Indicator signal (RS232 threshold voltage) FAIL-SAFE disabled RING Indicator signal (RS232 threshold voltage) FAIL-SAFE enabled
J 8	OUT * IN	Input signals (RS232 threshold voltage) FAIL-SAFE disabled RING Indicator signal (RS232 threshold voltage) FAIL-SAFE enabled
J11	OUT IN *	ROM BIOS disabled ROM BIOS enabled
J 13	IN * OUT	Floppy disk oscillator enabled Floppy disk oscillator disabled
J15	OUT * IN	Normal operation Erases CMOS RAM
J16	IN * OUT	Only one hard disk installed Two hard disks installed
F1	Keyboad protection fuse	

DIP-SWITCHES

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

IN: Jumper installed
OUT: Jumper not installed
The asterisk indicates the 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 controller
60 h	Keyboard Data controller	3BA h	Video controller
61 h	System control port B	3C0-3CF h	Video controller
64 h	Keyboard Commands controller	3D4-3D5 h	Video controller
70-71 h	Real time clock, NMI Mask, CMOS RAM	3DA h	Video controller
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 Controller1 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

The system memory map will vary depending on the configuration given the system through the User Diskette or System Test. Consequently only an example of the configuration of the first MegaByte of memory is given below.