M300-10

CHARACTERISTICS

Microprocessor	INTEL 386SX or AMD 386SX
Clock	20 MHz
Architecture	XT AT addressing 32-bit
Memory	From 2 MB to 12 MB on system board Bank 1 2 MB soldered chip 256 Kb x 4 Bank 2 Two sockets, for SIMM modules: 1 Mb x 9 **EXM 26-502** or 4 Mb x 9 **EXM 26-809** Bank 3 Same as bank 2
Memory access	100 ns / 80 ns
Coprocessor	20MHz 80387 SX
Floppy Disk	1.2 MB 5.25" Panasonic JU 475-3 1.2 MB 5.25" Panasonic JU 475-4 1.2 MB 5.25" Toshiba ND 08 DE 1.44 MB 3.5" Panasonic J-257 1.44 MB 3.5" Sony MP-F17 1.44 MB Mitsubishi MF355C
Hard Disk	40 MB Quantum LPS 52 AT 40 MB 40 MB W.D. AC 140 40 MB 120 MB CONNER CP 30126 120 MB 120 MB W.D. AC 2120 120 MB 210 MB Quantum LPS 240 AT 210 MB 200 MB CONNER CP 3206 / CP 3204F
Streaming Tape	40 MB IRWIN 245 floppy interface 80/120 MB IRWIN 285 floppy interface
Slots	Four 16-bit connectors on expansion board of BUS IN283
Video adapter	Integrated in PVGA1B system board VGA-compatible
Hard Disk and Floppy disk controller	Integrated in system board Floppy disk controller: National DP8473 Hard disk interface: MSI buffer and logic ports
Cache	Cache controller 82385 16 KB cache capacity
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key ANK 26-101, ANK 26-102

SYSTEM BOARD

BA 250
Level 03 MI

BA 275
Level 04 MI

BA 279
Level 05 MI

BA 289
Level 02 MI

BA 303
Level 01

BIOS

Rev. 1.00 for BA 250
Rev. 1.02 for BA 275
Rev. 1.04 for BA 279
Rev. 1.06 for BA 289
Rev. 1.06 for BA 303

EXPANSION BUS

IN283 Level 03
IN124 Level 01

POWER SUPPLY

PS11 220 V
Level 06

PS11 115 V
Level 04

PS11 220 V only
ASTEC Level 05

CONSOLE

IF469
Level 01

SYSTEM BOARD

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA250	Lev. Nasc.	412998 Q	Rev. 1.01 PZBA	**8742** Keyboard and Mouse controller **PVGA1B** VGA super video adapter **82C206** Non-volatile RAM Real Time Clock DMA controller Interrupt controller **WD16C552** Serial and parallel port controller **DP8473** Floppy disk controller **MSI buffer** Intelligent hard disk interface **NORD Gate Array** READY signal generation Intel 387SX interface RESET generation BUS address control Slow speed work session Memory addresses control Address map decode Interface for refresh Shadow RAM support **SUD Gate Array** DMA controller Data BUS controller Clock generator Parity control BUS controller Read/write logic decode Signal generation A20GATE **82385** Cache controller
	Lev. 01		Rev. 1.02 PZBC	Replaced PAL 20L8B at location U85 with PAL 20R4B GL8G, executed cutting and trimming to eliminate faults on some boards on the AT BUS caused by an incorrect IOCHRDY management
	Lev. 02		Rev. 1.04 PZCG	New BIOS
	Lev. 03		Rev. 1.04	Keyboard controller 10.01 introduced
BA275	Lev. Nasc.	612295 X	Rev. 1.02 PZBC	Replaces BA250 with same integrated controllers
	Lev. 01			Replaced PAL 20R4B GL8G at location U85 with PAL GL8H and replaced R40 and R25 resistors to eliminate faults on DEPCA board caused by an incorrect IOCHRDY management
	Lev. 02			Solves system crashing in OS/2 Olivetti rel. 1.21 environment during format "A" when the system contains more than 6 MB. Field only, it is not factory applied.
	Lev. 03		Rev. 1.04 PZCG	New BIOS, field only
	Lev. 04		Rev. 1.04	Keyboard controller 10.01 introduced

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA279	Lev. Nasc.	612400 D	Rev. 1.02 PZBC	Replaces BA275 with same integrated controllers
	Lev. 01			Solves malfunctioning of some printers connected to parallel interface
	Lev. 02			Solves system crashes in OS/2 Olivetti rel. 1.21 environment during format "A" when the system contains more than 6 MB.
	Lev. 03			WD 16C551 component is no longer produced. It is replaced with WD 16C551 rev. D. They are functionally equivalent.
	Lev. 04		Rev. 1.04 PZCG	- Introduction of Keyboard Controller Rev. 10.01 to handle Keyboard Password and System Password - New BIOS. To allow the correct management of these passwords and install new Western Digital hard disks - To correctly manage the passwords it is necesary to use version 1.02 upd 1 of User Diskette
	Lev. 05		Rev. 1.04	Cuts and trimmings to allow introduction of the AMD 386SX processor as an alternative to the INTEL 386SX
BA289	Lev. Nasc.	612473 Z	Rev. 1.04 PZCG	- New board for trimming recovering - Replaced sockets for SIMM modules to improve factory process and quality of system board - Management of Keyboard Passwords and System Password
	Lev. 01		Rev. 1.06 PZCJ	- Eliminates the error message "Error BUS not present press F1 to continue" displayed during the P.O.D. when a PS/2 mouse is connected to the system - Allows correct management of the 132-column video mode
	Lev. 02		Rev. 1.06	- Cuts and trimmings made to allow introduction of the AMD 386SX processor as an alternative to the INTEL 386SX processor
BA303	Lev. Nasc.	553062 V	Rev. 1.06 PZCJ	Replaces BA 289. - Can use the INTEL CPU or AMD CPU irrespectively. - Can house a VL16C551 component in place of a WD16C551 component
	Lev. 01			The 330pF capacitor in position C141 has been removed to contain costs.

POWER SUPPLY UNIT

POWER SUPPLY	LEVEL	DESCRIPTION
PS11 ASTEC 220 V	Lev. Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 04 Lev. 05	Only version 220 V Extended magnetic peripheral cables Following problem solved: system fails to switch on if the printer connected is switched on before the system. Occurs especially where printers are shared with other printers. A zener diode and a resistor have been added to the fan drive circuit to increase the power supply's immunity to external voltages. The box and lid have been modified. A capacitor has been added and a resistor removed to solve production problems. Inductor L5 has been added to the main input area and the circuitry has been modified to eliminate EMI problems and random voltage drops.
PS11 Plessey 220 V	Lev. Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 04 Lev. 05 Lev. 06	Improved RESET signal Reduced acoustic noise Solves temperature problems Reduced acoustic noise with MITSUBISHI fans Solves temperature problems Extended magnetic peripheral cables Replaced printed circuit material to improve the transportability
PS11 Plessey 110 V	Lev. Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 04	This power supply has evolved in the same way as the 220 V model.

BOARDS

FUNCTION	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
CPU system board	BA 250	412998 Q	BIOS 1.00 - 1.02
CPU system board	BA 275	612295 X	
CPU system board	BA 279	612400 D	
CPU system board	BA 289	612473 Z	
CPU system board	BA 303	553062 V	
Console	IF469	977930 V	
Power supply 220 V	PS11	412957 N	
Power supply 110 V	PS11	412956 X	
BUS Adapter board	IN283	977913 Q	
BUS Adapter board	IN124	978265 P	

USER DISKETTE

LEVEL	COMPATIBILITY
Lev. 1.0 Lev. 1.01 upd 1	Solves SETUP problems
Lev. 1.02 upd 1	- Solves hard disk test malfunctioning - Allows management of Keyboard Passwords and System Password. To have these security features, the system must contain keyboard controller Rev. 10.01 and BIOS 1.04 - Corrects some errors in message system

SYSTEM TEST

LEVEL	COMPATIBILITY
Lev. 1.0 Lev. 1.01 upd 1	BIOS 1.00
Lev. 1.02	- This version includes the security features and can therefore only be used if the Personal Computer mounts keyboard controller Rev. 10.01 and BIOS 1.04 - Tables have been included for management of the Western Digital 40 MB, 120 MB and 210 MB hard disks

COMPATIBILITY NOTES

BOARD OR HW/SW DEVICE	DESCRIPTION
BUS adapter board IN283 Lev. 02	Solves problems with the RETIX board
BUS adapter board IN283 Lev. 02	Terminators have been mounted on the board
BA 250	Does not correctly handle 3COM + Open ver. 1.1 software. Problem is solved by disabling video shadow memory. Problem solved on BA 275 with BIOS 1.02
BUS adapter board IN124 Original level	Replaces IN283 for trimming recovering
BUS adapter board IN124 Lev. 01	Terminators have been mounted on the board
IF469	Level 01 solves: Mounting problems of system console Loudspeaker problem still audible when potentiometer is at MIN position
386SX microprocessor	386SX step C microprocessor is no longer produced. New version is step D. They are functionally equivalent.
BIOS 1.04	Used with keyboard controller Rev. 10.01 and User Diskette Version 1.02 upd 1
W.D. component 16C551	Mask C of this component has been replaced by mask D. Board level is changed
82C206 component	The CHIPS & TECHNOLOGIES component 82C206 has been replaced by a TEXAS component. The two components are interchangeable
i386SX microprocessor	The INTEL 386SX microprocessor can be replaced by the AMD processor.

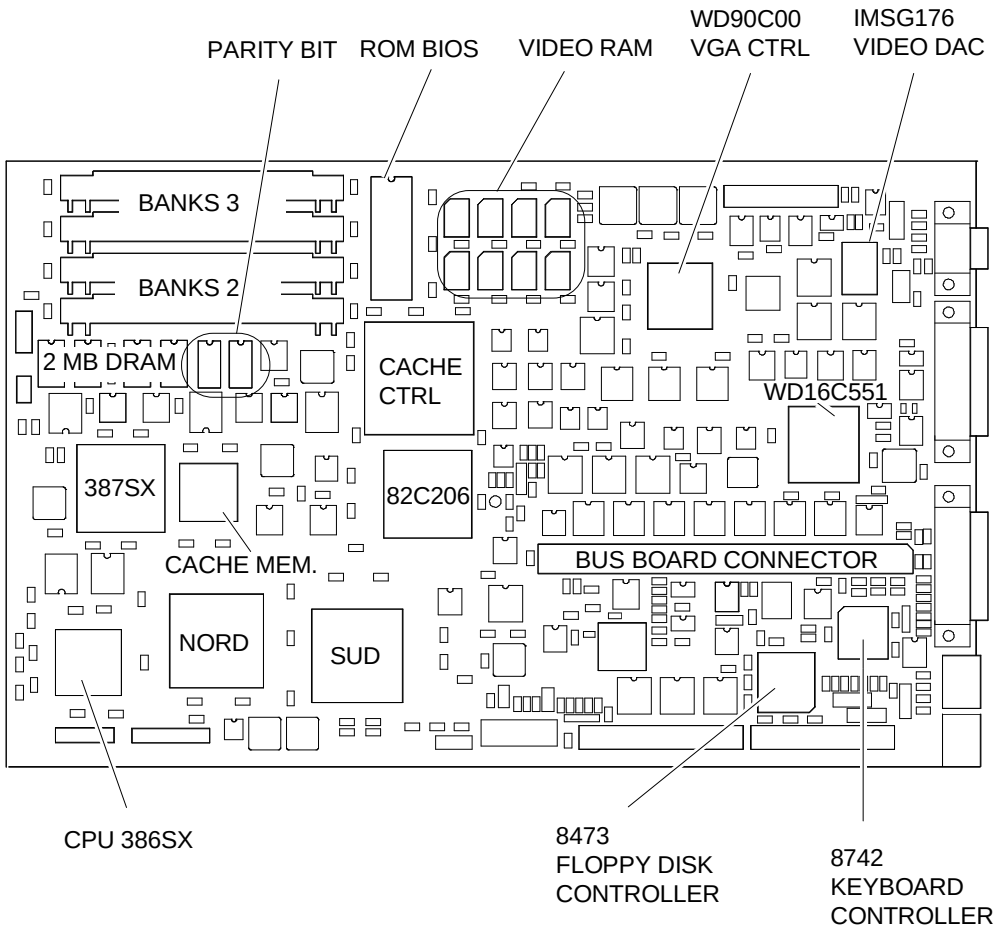
SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Ver. 3.30 MS-DOS (Compaq) 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 and 1.20 INTERACTIVE 386/ix, Ver. 2.02	 During installation on hard disk, a formatted DSDD disk is required. PS/2 mouse not recognised PS/2 mouse not recognised
WINDOWS	
DESQ-VIEW 386 Ver. 2.2 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

MODEMS	I/O INTERFACE PRODUCTS
FURY 2400 PC MODEM FURY 2400 MAXTER MODEM Hayes Smartmodem 1200 B Hayes Smartmodem 2400 B TELENETICS EXPRESSDATA 24i (24i - 12i)	IBM PRINTER ADAPTER (1505200) IBM SERIAL/PARALLEL Adapter STB 4-ON THE FLOOR
MULTIPORT	**MOUSE**
CHASE AT 8 COMPUTONE AT 8 COMPUTONE AT 16 INTEL Bell ICC.6 SPECIALIX SI / 8	IBM PS/2 Mouse (6450350) Logitech Bus Mouse (PF-3F) Logitech 3 button mouse MS-BUS mouse MS-MOUSE serial
GRAPHICS PRODUCTS	**NETWORKS & LAN PRODUCTS**
AST VGA PLUS FASTWRITE 1024i FASTWRITE VGA HERCULES GRAPHICS CARD IBM VGA Adapter IBM EGA Adapter MATROX PG - 1281 MAXON MVGA - 16 Adapter ORCHID PRODESIGNER VGA PLUS 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 enhanced graphics monitor 5154 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

SYSTEM BOARD COMPONENTS



BKG1A

INTERRUPT LEVELS

LEV.	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

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 Controller 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)	-	

SYSTEM MEMORY MAP

AT standard has a basic memory of 512 KB, expandable up to 640 KB, in which remapping of physical memory areas is not requested.
With a basic memory expansion beyond 640 KB, a logic addressing conflict arises because the physical memory between 640 KB and 1 MB occupies the logic addressing space reserved for ROM BIOS addressing. This addressing space between 640 KB and 1 MB is called *AT compatibility gap*.
In order not to lose this memory space, in these systems a remapping function has been introduced which makes it possible to have this memory portion available by addressing it beyond the MB.

This memory remapping function also includes a *Shadow RAM* function that allows ROM BIOS to be recopied by the system into the system memory at the same logic address locations in order to speed up the system.

These operation generates adjacent physical address space (physical memory map) from which a logic address space can be configured, these logic addresses may be not adjacent (logic memory map). In this case, for instance, it is possible to intercalate portions of memory resident on boards installed on the BUS with portions of memory of system board.

LIMITATIONS FOR MEMORY CONFIGURATION

There are some limitations when using these system memory configuration function.
Limitations are as follows:

AT Compatibility Gap - system needs this GAP
External memory can not be mapped in the logic address area reserved for this gap (0A000h to 0FFFFF h).

128 KB memory segment size - this function works only for memory segments of 128 KB.

The first 258 KB is always used by system internal memory - this 256 KB is reserved for BIOS during Power-On procedure. This memory space requires that the physical address be equal to logic address. This means that the first two memory segments of 128 KB must belong to system memory.

If these limitations are violated, automatically the system gives priority to physical memory map, ignoring the logic memory map. As a result, the external memory installed is ignored.

Another case is to be taken into consideration: when the **maximum memory is installed, i.e. 16 MB**.
In this case there is logic addressing space to remap the AT compatibility Gap which, therefore, will be a usual read/write RAM memory. In this situation, the user memory available depends on how the Shadow RAM option is used.

Shadow RAM disabled

512 KB of AT compatibility Gap is ignored by the system and is lost.
System total memory is therefore 15.872 KB (16.384 - 512 = 15.872).
Therefore, system loses 512 KB.

Only video BIOS in shadow RAM

64 KB of AT compatibility gap is recovered because it is remapped.
64 KB of video BIOS is set in shadow RAM. System total memory is therefore is 16.000 KB (16.384 - 512 + 64 recovered +64 in shadow = 16.000).
Therefore, system loses 384 KB.

System BIOS and video BIOS in shadow RAM

32 KB of AT compatibility gap is recovered because it is remapped. 96 KB of system BIOS and video BIOS is set in shadow RAM. System total memory, therefore, is 16.000 (16.384 - 512 + 32 recovered + 96 in shadow = 16.000).
Therefore, system loses 384 KB.

COMPATIBLE HARD DISKS

TYPE	MODEL	CAPACITY	CYL	T	WPC	LZ	SET
1	Standard 85 ms	10 MB	306	4	128	305	17
2	OPE XM5221 half size	20 MB	615	4	256	700	17
3	WREN 2 full size	38 MB	925	5	128	924	17
4	CDC WREN 1 35 ms full size	28 MB	697	5	128	696	17
5	ST4096	76 MB	1024	9	-1	1023	17
6	OPE XM5340	40 MB	820	6	256	819	17
7	NEC D5146H	40 MB	615	8	128	664	17
8	WREN II slim size	40 MB	981	5	-1	980	17
9	CDC WREN II slim size	40 MB	981	5	128	980	17
10	Micropolis 1324 full size	51 MB	1024	6	128	980	17
11	CDC WREN II full size	53 MB	925	7	128	924	17
12	Micropolis 1325 full size	68 MB	1024	8	-1	1023	17
13	CDC WREN II full size	69 MB	925	9	128	924	17
14	Micropolis 1323-A full size	42 MB	1024	5	-1	1023	17
15	RESERVED						
16	OPE XM5220 85 ms	20 MB	612	4	128	656	17
17	TANDON TM 362 85 ms	20 MB	612	4	-1	663	17
18	Seagate ST251 40 ms	40 MB	820	6	-1	819	17
19	Rodime RO3055 40 ms	43 MB	872	6	0	871	17
20	Miniscribe M8425 68 ms	20 MB	612	4	0	663	17
21	Seagate ST277TR	62 MB	820	6	-1	819	26
22	OPE XM5340/60	62 MB	820	6	128	819	26
23	NEC D5147H	62 MB	615	8	384	664	26
24	NEC D5652	136 MB	820	10	-1	822	34
25	Micropolis 1355 ESDI	135 MB	1021	8	-1	1023	34
26	Micropolis 1353 ESDI	67 MB	1021	4	-1	1023	34
27	NEC D5452	68 MB	823	10	512	822	17
28	Fujitsu M2227D	40 MB	615	8	512	614	17
29	Fujitsu M2227D RLL	60 MB	615	8	512	614	26
30	CDC 94205-77	62 MB	981	5	-1	980	26
31	CONNER CP3142	40 MB	635	4	-1	639	33
32	CONNER CP3022	20 MB	615	4	-1	614	17
33	CONNER CP3106	100 MB	776	8	-1	775	33
34	Miniscribe 8051A	40 MB	745	4	-1	744	28
35	Quantum P40 AT	40 MB	965	5	-1	964	17
36	CONNER CP346	40 MB	805	4	-1	804	26
37	Quantum LPS105 AT	100 MB	776	8	-1	775	33
38	Quantum LPD210 AT	200 MB	873	13	-1	872	36
39	CONNER CP30064	60 MB	762	4	-1	761	39
40	CONNER CP30124	120 MB	762	8	-1	761	39
41	CONNER CP3206	210 MB	683	16	-1	682	38
42	W.D. AC-140	40 MB	980	5	-1	980	17
43	W.D. AC -2120	116 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

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