M300-25

CHARACTERISTICS

Microprocessor	i386SX (P9) 16-bit BUS
Clock	20 MHz
Architecture	MICROCHANNEL
Memory	Two banks, each with two sockets: BANK 1: the following are installable: - SIMM 1 Mb x 9 **EXM 25-532** (2 SIMMs = 2 MB) - SIMM 4 Mb x 9 **EXM 26-809** (2 SIMMs = 8 MB) BANK 2: same as bank 1 Memory installed on motherboard can have the following sizes: 2 MB 2 1 Mb x 9 SIMMs installed 4 MB 4 1 Mb x 9 SIMMs installed 8 MB 2 4 Mb x 9 SIMMs installed 16 MB 4 4 Mb x 9 SIMMs installed This system does not support mixed configurations: when SIMMs 1 Mb x 9 are installed, SIMMs 4 Mb x 9 can not be installed
Memory access time	80 ns for motherboard SIMMs 100 ns for memory board SIMMs
Memory expansion board	**MEM 26-503** - 2 MB memory board expandable to 8 MB by SIMM modules 1 Mb x 9 **EXM 25-502**
Coprocessor	20 MHz i387SX
Floppy Disk	1.44 MB 3.5" Panasonic J-257 1.44 MB 3.5" Sony MP-F17 1.44 MB 3.5" Mitsubishi MF355C 1.2 MB 5.25" Toshiba ND08 DE 1.2 MB 5.25" Panasonic JU475-3/4/5 1.44 MB 3.5" Y-E Data YD-702B
Hard Disk	60 MB CONNER CP30069 120 MB CONNER CP30129
Streaming Tape	80 MB IRWIN 245 - 80 MB IRWIN 285
AT expansion slots	4 Present - 3 Available
Video adapter	Integrated on System Board VGA-compatible 82C452
Floppy Disk controller	Integrated on system board 82077
Hard Disk controller	Only BUFFER for intelligent hard disks
CMOS RAM	128 KB powered by internal lithium battery
ROM BIOS	128 KB EPROM
Mouse	PS/2- and AT-compatible GRD 25-025
Keyboard	101/102-key ANK 27-101/N ANK 27-102/N

MOTHERBOARD

BA 856
BASE ASSEMBLY

BA 888

BA 889

BIOS

Last level: 1.03

POWER SUPPLY

PS11 PLESSEY 220 V

PS11 PLESSEY 110 V

PS11 ASTEC 220 V only

NETWORK BOARDS

(Installable on Diskless version)

OLICOM 16/4 MCA Token Ring NCU 9174
with RPL ROM on board

IMB Token Ring Network Adapters (4, 4/16 Mbps)
with on-board RPL ROM

IBM Ethernet Adapter
with on-board RPL ROM

In the PC standard version other types of network boards can be installed. They can be configured using the configuration diskettes supplied with the boards. The diskettes cannot be used in the Diskless version since it does not configure any magnetic peripheral.

MOTHERBOARD

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA856	Nasc.	-	-	For the integrated controllers, see the following table.
	Lev. 01			Cuts and wirings implemented to solve the signal ARB/GNT drive problem.
	Lev. 02			Component 74F373 added at location SP3 No. 1 to solve incorrect hard disk arbitration.
	Lev. 03			- 35 ns PAL GLBS 16R4 replaced by the 15 ns PAL GKCH 16R4. - Vcc and GND 10 mF filter capacitors replaced
	Lev. 04			- Floppy disk controller 82077AA-1 is replaced by 82077SL and therefore the capacitor in position C47 is removed. - 80386 step C CPU is replaced by the 80386 step D CPU. - Component 16C552 mask C is replaced by the same component mask D.
	Lev. 05			Component 16C552 is no longer produced and is replaced by the STARTECH component. To use this new component a cut has to be made between this component's pin 43 and ground, and a wiring inserted between the same pin and pin 1 of resistor R35.
	Base Assembly - Code BA856 identifies the printed circuit board on which the SIMMs are mounted according to their memory size. The printed circuit board with the SIMMs installed assumes the name of the different BAs described further on.			

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA888	Lev. Nasc.	612420 Y	Rev. 1.01	Board with 2 MB of memory installed. Unless indicated otherwise, the levels and the modifications made are the same as those of the base assembly.
	Lev. 01		Rev. 1.01	Cuts and wirings implemented to solve the signal ARB/GNT drive problem.
	Lev. 02		Rev. 1.01	Component 74F373 added at location SP3 No. 1 to solve incorrect hard disk arbitration.
	Lev. 03		Rev. 1.01	- 35 ns PAL GLBS 16R4 replaced by the 15 ns PAL GKCH 16R4. - Vcc and GND 10 mF filter capacitors replaced
	Lev. 04		Rev. 1.03	- New BIOS to solve the problems with the 120 MB hard disk during system configuration.
	Lev. 05		Rev. 1.03	- Floppy disk controller 82077AA-1 is replaced by 82077SL-1 and therefore the capacitor in position C47 is removed. - 80386 step C CPU is replaced by the 80386 step D CPU.
	Lev. 06		Rev. 1.03	Component 16C552 is no longer produced and is replaced by the STARTECH component. To use this new component a cut has to be made between this component's pin 43 and ground, and a wiring between the same pin and pin 1 of resistor R35.
	Lev. 06		Rev. 1.03	New Samsung KMM59100BN-7 SIMMs (3-chip, 1 MBx9, 80 ns SIMMs) in alternative to the Samsung KMM591000C-8 SIMMs (9-chip, 1 MBx9, 80 ns SIMMs) which are no longer available on the market. The board does not change level.

	LEVEL	D.R.S. CODE	ROM BIOS	INTEGRATED CONTROLLERS / NOTES
BA889	Nasc.	612421 M	Rev. 1.01	Board with 8 MB of memory installed. Unless indicated otherwise, the levels and the modifications made are the same as those of the base assembly.
	Lev. 01		Rev. 1.01	Cuts and wirings implemented to solve the signal ARB/GNT drive problem.
	Lev. 02		Rev. 1.01	Component 74F373 added at location SP3 No. 1 to solve incorrect hard disk arbitration.
	Lev. 03		Rev. 1.01	- 35 ns PAL GLBS 16R4 replaced by the 15 ns PAL GKCH 16R4. - Vcc and GND 10 mF filter capacitors replaced
	Lev. 04		Rev. 1.03	- New BIOS to solve the problems with the 120 MB hard disk during system configuration.
	Lev. 05		Rev. 1.03	- Floppy disk controller 82077AA-1 is replaced by 82077SL-1 and therefore the capacitor in position C47 is removed. - 80386 step C CPU is replaced by the 80386 step D CPU. - Component 16C552 mask C is replaced by the mask D version.
	Lev. 06		Rev. 1.03	Component 16C552 is no longer produced and is replaced by the STARTECH component. To use this new component a cut has to be made between this component's pin 43 and ground, and a wiring inserted between the same pin and pin 1 of resistor R35.

INTEGRATED CONTROLLERS		INTEGRATED CONTROLLERS	
i386	20 MHz CPU	**QFP132**	- Gate array implementing
i387	20 MHz math coprocessor	**ASIC ADB**	Addressing Buffers and data Buffers
DS1287	- 128 KB non volatile RAM powered by internal lithium battery - Real Time Clock - DMA controller - Interrupt controller		- Implements swapping function between 16 and 8 bits
		82303	- Local I/O support - Implements the SETUP registers - Interfaces peripherals and bus
8742	Keyboad and mouse controller		
LM386	Speaker controller	**82307**	- DMA controller - BUS arbiter control - Memory Refresh - Coprocessor interface
WD16C552	Serial port and parallel port interface		
82077	Floppy disk controller		
82C452	Super VGA video adapter	**82308**	BUS controller
82304	- Interrupt controller - I/O peripherals support - Programmable timer	**82309**	- BUS address controller - Memory control - Integrates I/O ports and registers

BOARDS

NAME	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
OLICOM Token Ring NCU 1974	16/4 Mbps network board	-	Remote Program Load (RPL) EPROM can be on-board, it allows operating system to be loaded from network
IBM Token Ring Network Adapter	4, 4/16 Mbps network board	-	
IBM Ethernet Adapter		-	
BUS adapter board	MI542	497236 R	
BUS adapter board	MI620	498152 W	BUS adapter board for the diskless version

USER DISKETTE

LEVEL	COMPATIBILITY
Lev. 1.02	Compatible with BIOS 1.01
Lev. 1.03	Change in the M300-25 logo
Lev. 1.04	Compatible with BIOS 1.03
Lev. 1.05	Replaces the previous version to correct the error in the calculation of extended memory when the board configures 16 MB of memory and an XGA board is installed on the bus.

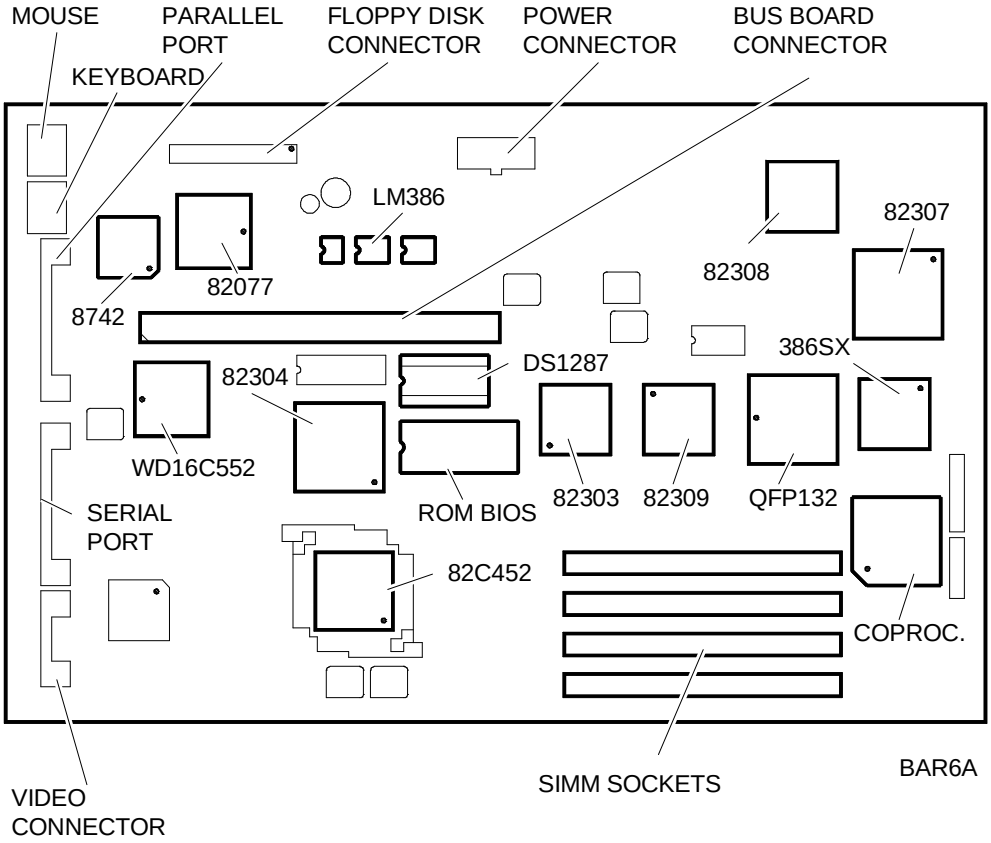
POWER SUPPLY UNIT

POWER SUPPLY UNIT	LEVEL	DESCRIPTION
PS11 ASTEC 220 V	Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 04 Lev. 05	Only version 220 V Extended magnetic peripheral cables Following problem solved: the system fails to switch on if the printer connected is switched on before it. Occurs especially if the printer is shared with other systems. A zener diode and resistor have ben added to the fan drive circuit to improve the power supply's immunity to external voltages. The box and lid have been changed A resistor has been replaced and capacitor has been added to optimize productivity. Inductance L5 has been added to the mains input area and a new printed circuit board is used to improve operational margins in the event of radio interference and random voltage drops.
PS11 Plessey 220 V	Nasc. 01 02 03 04 05 06	 RESET signal improved Noise reduced Solves temperature problems Noise with MITSUBISHI fans reduced Extended magnetic peripheral cables Replaced printed circuit material to improve transportability
PS11 Plessey 110 V	Nasc. 01 02 03 04	This power supply has evolved in the same way as the 220 V model

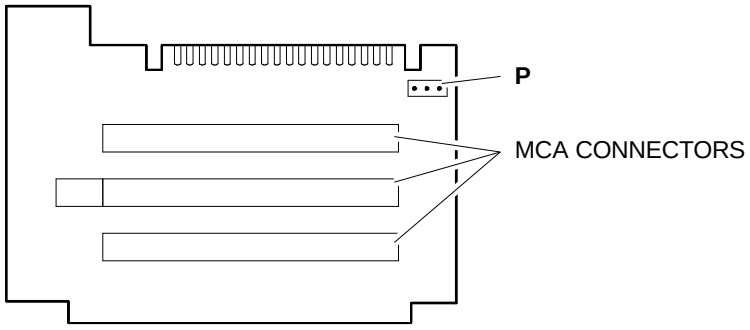
COMPATIBILITY NOTES

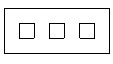
BOARD or HW/SW DEVICE	DESCRIPTION

MOTHERBOARD COMPONENTS AND JUMPERS

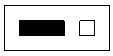


BUS ADAPTER BOARD JUMPERS

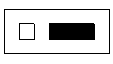




If jumper P is removed the CMOS is erased — Erasing the CMOS



Default setting



To delete the password, move jumper P to the position opposite its starting position — Erasing the password

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SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK Operating System, Version 4.00	During installation on hard disk, a formatted DSDD disk is required.

HARDWARE COMPATIBILITY

MODEMS	I/O INTERFACE PRODUCTS
Hayes Smartmodem 1200P Hayes Smartmodem 2400P IBM PS/2 300/1200 Internal Modem/A (6450349)	FUTURE DOMAIN HOST ADAPTER (MCS-350) IBM PS/2 Dual Async Adapter/A (6450347)
MEMORY EXPANSIONS	**MOUSE**
IBM PS/2 80286 Memory Exp. Option INTEL Aboveboard/2 Orchid Ramquest extra 16/32	IBM PS/2 Mouse (6450350) Microsoft Serial Mouse MSC PC Mouse PS/2 Olivetti New Advanced Mouse (GRD 25-025)
DISPLAY UNITS	**NETWORKINING & LAN PRODUCTS**
IBM PS/2 Monochrome Display 8503 IBM PS/2 Color Display 8512 IBM PS/2 Color Display 8513 IBM PS/2 Color Display 8514	IBM PC Network IBM PC Network (Baseband Adapter) IBM Token Ring Network Novell Network 3COM Network (Ethernet) 10NET Network
GRAPHICS PRODUCTS	**OTHER PRODUCTS**
IBM PS/2 Display Adapter 8514/A MATROX PG2 - 1281 HI-RES Graphics Controller	SOFTWARE SECURITY Parallel Port Block

SYSTEM MEMORY MAP

ADDRESS	SIZE	FUNCTION
0000 0000 - 0009 FFFF	640 KB	System RAM (System board Bank 0)
000A 0000 - 000B FFFF	128 KB	VIDEO RAM (System board Bank 0)
000C 0000 - 000D FFFF	128 KB	I/O expansion ROM
000E 0000 - 000F FFFF	128 KB	BIOS
0010 0000 - 00FD FFFF	14 MB + 896 KB	System RAM (System board Bank 0 and 1)
00FE 0000 - 00FF FFFF	128 KB	BIOS

DMA CHANNELS

CHANNEL	I/O DEVICE
0	Channel 0 DMA (Can be programmed with the lowest priority)
1	Channel 1 DMA
2	Channel 2 DMA (Floppy disk controller)
3	Channel 3 DMA
4	Channel 4 DMA (Can be programmed with another priority)
5	Channel 5 DMA
6	Channel 6 DMA
7	Channel 7 DMA
8	Master expansion slot
9	Master expansion slot
A	Master expansion slot
B	Master expansion slot
C	Master expansion slot
D	Master expansion slot
E	Master expansion slot
F	Intel 386 SX CPU

INTERRUPT LEVELS

INTERRUPT LEVEL	PIC 1 MASTER	PIC 2 SLAVE	FUNCTION
NMI	-	-	Parity, I/O channels control, Arbiter timeout, Watchdog timer
IRQ0	IR0	-	Channel 0 output timer
IRQ1	IR1	-	Keyboard interface
IRQ2	IR2	-	Interrupt PIC 2 to PIC 1
IRQ8	-	IR0	Real Time Clock
IRQ9 *	-	IR1	Available
IRQ10	-	IR2	Available
IRQ11	-	IR3	Available
IRQ12	-	IR4	Mouse
IRQ13	-	IR5	Math coprocessor
IRQ14	-	IR6	Hard disk controller
IRQ15	-	IR7	Available
IRQ3	IR3		Secondary serial port
IRQ4	IR4		Primary serial port
IRQ5	IR5		Availbale
IRQ6	IR6		Floppy disk controller
IRQ7	IR7		Parallel port

I/O ADDRESS MAP

ADDRESS	FUNCTION	REGISTER LOCATION
90	BUS arbiter control register	82307
96	MicroChannel selection register	82304
91		82304
3F0 to 3F7	Board feedback info register	
00 to 1F, C0 to DF	Installed in selected microchannel	3F3 is in discrete logic, all the rest in
81, 82, 83, 87, 89,	Floppy disk control registers	82077
8A, 8B, 8E		82307
E3 to E7	DMA control registers	82307
20, 21	DMA page registers	82309
A0, A1	Error trace registers	82304
64	Interrupt 1 controller	82304
60	Interrupt 2 controller	8742
E0, E1	Keyboard command/status	8742
100 to 107	register	82309
	Keyboard data register	102 and 106 are in 82304, all the rest
94	Memory control registers	in discrete logic.
70, bit 7 only	POS registers	82304
		82304
97, 104, 105, 107	System board SETUP register	
74, 75, 76		Used in diskless version only
	Non maskerable interrupt enable	Intel 387 SX
F0 to FF	register	WD 16C552
3BC to 3BF	NOT USED	WD 16C552
378 to 37B	RESERVED	WD 16C552
278 to 27B		82304
40, 42, 43, 44, 47	Math coprocessor registers	DS 1278
70, 71		Discrete logic
93	Parallel port 1	WD 16C552
3F8 to 3FF	Parallel port 2	WD 16C552
2F8 to 2FF	Parallel port 3	82304
92	Programmable timer registers	82304
61	Real Time Clock and CMOS RAM	BT472
3C6 to 3C9	registers	3C3 bit 0 and in 82304, all the rest in
3B4, 3B5, 3BA,	RESERVED	82C452
3C0 to 3C5	Serial port 1	
3CE, 3CF, 3D4,	Serial port 2	
3D5, 3DA	System A control register	
	System B control register	
	DAC video	
	I/O system video	

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