M250 - M250 E

CHARACTERISTICS

Microprocessor	80286 16-BIT
Clock	8 MHz/12 MHz (M250 E)
RAM access time	120 ns/80 ns (M250 E)
Wait states	0
Maximum/minimum RAM capacity	M250 -1 MB / 2 MB on system board M250 E 1, 2 or 4 MB on system board
Memory expansion KIT for M250 E	**EXM 25-531** - 2 SIMM 512 KB 80 ns (1 MB to 2 MB memory expansion on system board) **EXM 25-332** - 2 SIMM 1 MB 80 ns (2 MB to 4 MB memory expansion on system board)
BIOS RAM	64 KB
Bus	AT339 compatible
Monitor	VGA compatible
Magnetic units	2 3.5" uFD/1 HD/1 STC
SHADOW memory	SI-128 KB (E0000-FFFFF)
Hard disk adapter	AT/RLL on system board
BUS ADAPTER board	Three 8-/16-Bit connectors **IN 113** for the M250 **IN 118** for the M250 E
Monitor adapter	PVGA1 on system board
Memory expansion board	For M250 ME 903 For M250 E AMB 2678 Expandable to 4 MB by means of **EXM 25-852** memory kit 18 chips 120 ns
External floppy disk controller board	IF374
External floppy disk power supply	PSU
Coprocessor for M250 E	Intel 80287-2

SYSTEM BOARD

M250	BA227 BA233 BA239 BA240
M250 E	BA241

POWER SUPPLY

PS07/B 220 V
D.R.S. code 412442 J
PS07/B 110 V
D.R.S. code 412441 R

BIOS

M250: Lev. 1.06

M250 E: Lev. 1.09

MEMORY EXPANSIONS

M250 - ME903

M250 E - AMB 2678

SYSTEM BOARD

	LEVEL	D.R.S. CODE	BIOS ROM	NOTES
BA227	Nasc. Lev. 01 Lev. 02	412436 M	See following table Lev. 1.03 Lev. 1.03	M250 system board. Multilayer & SMD Problems with 16-bit boards, and with 3 COM Token Link Plus, Novell NP 600, Olicom, Madge Token Ring boards. Impossible to utilize 512 KB SIMM Solves the parity error, CMOS and timer problems.
BA233	Nasc Lev. 01 Lev. 02 Lev. 03		See following table Lev. 1.03 Lev. 1.03 Lev. 1.04 Lev. 1.06	M250 motherboard. Multilayer & SMD Corrects parity error, CMOS and timer problems New BIOS Replaces BIOS 1.04 with 1.06. Corrects serial port problems.
BA239	Nasc. Lev. 01 Lev. 02 Lev. 02/A Lev. 04 Lev. 05		See following table Lev. 1.04 Lev. 1.04 Lev. 1.04 Lev. 1.06 Lev. 1.06	M250 system board. SETUP loss problem solved Coprocessor problems solved Coprocessor and timer problems solved BIOS 1.04 replaced by 1.06 Floppy disk controller W.D. 37C65C ver. C can be used in place of the W.D. 37C65B ver. B floppy disk controller.
BA240	Nasc. Lev. 01 Lev. 02 Lev. 03 Lev. 03/A Lev. 05 Lev. 06	412577 R	See following table Lev. 1.04 Lev. 1.04 Lev. 1.04 Lev. 1.04 Lev. 1.06 Lev. 1.06	M250 system board. Impossible to read 360 MB floppy disk with 1.2 MB drive Piggy-Back board RA 085 (VIDEO DRAM) soldered directly on-board SETUP loss problem solved Coprocessor problems solved Coprocessor and timer problems solved BIOS 1.04 replaced by 1.06 Floppy disk controller W.D. 37C65C ver. C can be used in place of the W.D. 37C65B ver. B floppy disk controller.

	LEVEL	D.R.S. CODE	ROM BIOS	NOTES
BA241	Nasc.	412758 E	See following table	M250 E system board. Impossible to read 360 MB floppy disks with 1.2 MB drive
	Lev. 01		Lev. 1.06	Solves: SETUP loss problems Timing compatibility Keyboard defects Chip select output glitches Parallel port malfunctions
	Lev. 02		Lev. 1.06	Cutting and trimming recovery
	Lev. 03		Lev. 1.07	BIOS Rev. 1.06 replaced by 1.07
	Lev. 04		Lev. 1.08	BIOS Rev. 1.07 replaced by 1.08
	Lev. 05		Lev. 1.09	BIOS Rev. 1.08 replaced by 1.09
	Lev. 06		Lev. 1.09	Floppy disk controller W.D. 37C65C ver. C can be used in place of the W.D. 37C65B ver. B floppy disk controller.

ROM BIOS/PAL/EPROM LEVEL

FUNCTION	POS.	EVOLUTION FOR M250				
ROM Bios	U12	1.01	1.02	1.03 PERB	1.04 PERD	1.06
Keyboard controller	U10	7.01	1.06 PERC			
ROM OVC (PVGA1A)	U13	1.04 PERA	PLRT (BA233)			
Video circuit	U14	PLQ4				
Video circuit	U15	PLQB				
Video circuit	U16	PLQC				
Hard disk circuit	U17	PLQD	PLRU (BA233)			
Keyboard/sound circuit	U88	PLQE				

FUNCTION	POS.	EVOLUTION FOR M250 E			
ROM BIOS	U12	1.06	1.07	1.08	1.09
Keyboard controller	U10	7.01			
ROM OVC (PVGA1A)	U13	1.06 PERC			
Video circuit	U14	PLQ4			
Video circuit	U15	PLQB			
Video circuit	U16	PLQC			
Hard disk circuit	U17	PLQD			
Keyboard/sound circuit	U88	PLQE			

COMPATIBILITY

BIOS 1.03	Solves SETUP problems on diskless M250 (BI/01)
BIOS 1.04 (BIT 03)	Positive video management Hard Disk Update table
BIOS 1.06 PERC	M250 as Personal Banking option and for M250 E Serial port problems solved
BIOS 1.07 PDSG	M250 E only - Eliminates generation of spurious characters during Power On Added hard disk type 7 for CONNER CP3044
BIOS 1.08	M250 E only - Solves keyboards installation problems
BIOS 1.09	M250 E only

HARD DISK UNIT TYPE SELECTION --> SETUP

TYPE	MODEL	CAPACITY	CYL	T	WPC	LZ	SET
1	CONNER CP346	40 MB	805	4	-1	804	26
2	CONNER CP3106	100 MB	766	8	-1	775	33
3	CONNER CP3142	40 MB	635	4	-1	639	33
4	CONNER CP3022	20 MB	615	4	-1	614	17
7	CONNER CP3044	40 MB	635	4	-1	639	33

Where: CYL: No. of disk cylinders
T: No. of disk heads
WPC: Precompensation cylinder number
LZ: Head parking area cylinder number
SET: No. of disk sectors

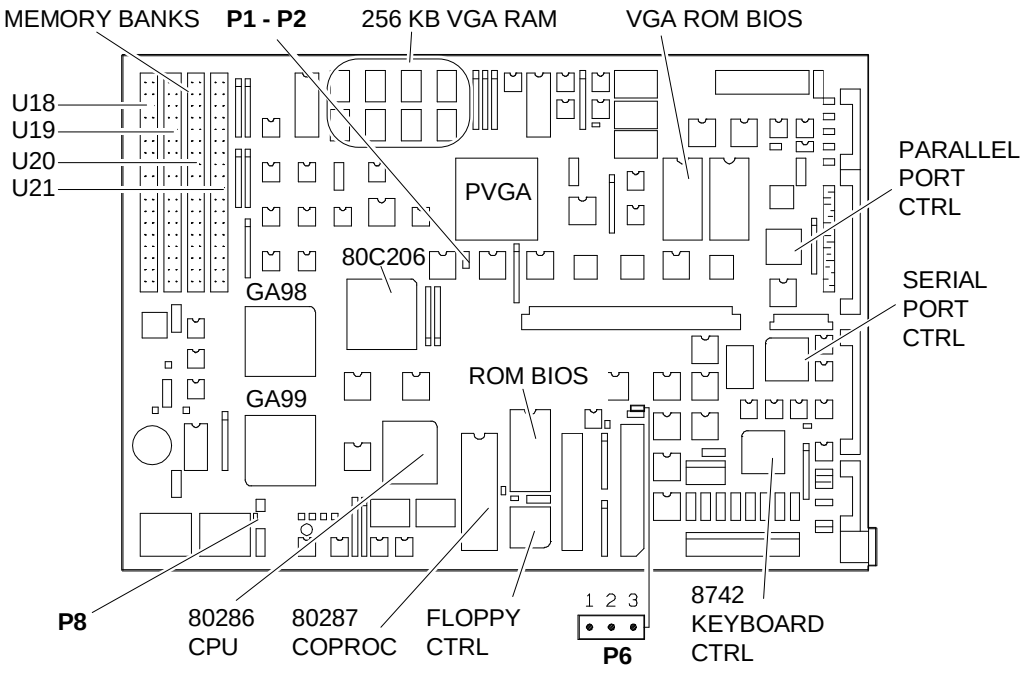
SETUP OPERATIONS

1	Date
2	Time
3	Base Memory Size
4	Extended Memory Size
5	Shadow Memory
6	Floppy Drive 1
7	Floppy Drive 2
8	Hard Disk 1
9	Mathematic Coprocessor
10	Primary CRT Adapter Type
11	Additional Setup

POWER SUPPLY

MODEL	LEVEL	D.R.S. CODE	ROM BIOS
PS07/B 220 V	Lev. 03 Lev. 04	412442J	Power Good board replaced. Retrofit made to solve certain operating malfunctions
PS07/B 110V	Lev. 03 Lev. 04 Lev. 05	412441R	Same modifications made to the 220 V version. Corrects the problems given by EMI noise.

MOTHERBOARD COMPONENTS AND SETTINGS: **BA227/BA233/BA239/BA240**



BSA7A

JUMPERS

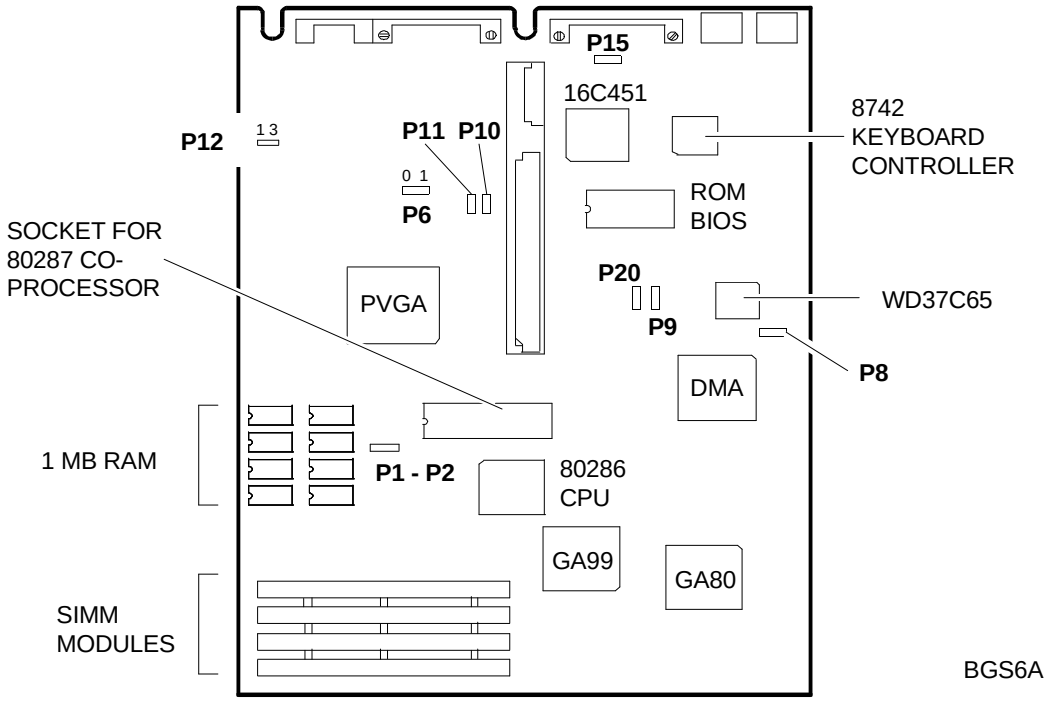
P1	P2	BANK 0	BANK 1	No. SIMM	SIMM TYPE
IN	OUT	ACTIVE	NOT ACTIVE	2	256 x 9 512 x 9
OUT	OUT	ACTIVE	ACTIVE	4	256 x 9 512 x 9
IN	IN	ACTIVE	NOT ACTIVE	2	1 M x 9
OUT	IN	CONFIGURATION NOT USED			

NOTE: - BANK 0 (SLOTS U18 and U19)
- BANK 1 (SLOTS U20 and U21)

P6	1-2	40 MB Hard disk (CP3142 interl. 1:1/RLL)/CP346 or CP3024 (1:1)
	2-3	20 MB Hard disk (CP3022 interl. 3:1/RLL or SIN HDU)
P8	IN *	Battery connected
	OUT	Battery not connected

(*) Default setting

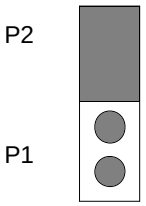
BA241 SYSTEM BOARD COMPONENTS AND SETTINGS FOR M250 E



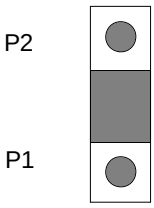
JUMPERS

NAME	POSITION	FUNCTION
P6	3 - 2	HDU interleave 1:1
	2 - 1	HDU interleave 1:3
P8	IN	Battery connected
	OUT	Battery not connected
P9	IN	16 MHz floppy disk
	OUT	1.2 MB floppy disk
P10	IN	Hard disk not present
	OUT	Hard disk present
P11	IN	Serial port disabled
	OUT	Serial port enabled
P12	1 - 2	VGA enabled
	2 - 3	VGA disabled
P15	IN	Selectable hysteresis
	OUT	Normal hysteresis
P20	IN	187 ns precompensation
	OUT	125 ns precompensation

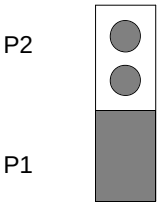
JUMPERS P1 - P2



1 MB - No SIMM module



2 MB - 2 SIMM modules of 512 K



4 MB - 4 SIMM modules 2 of 512 K and 2 of 1 M

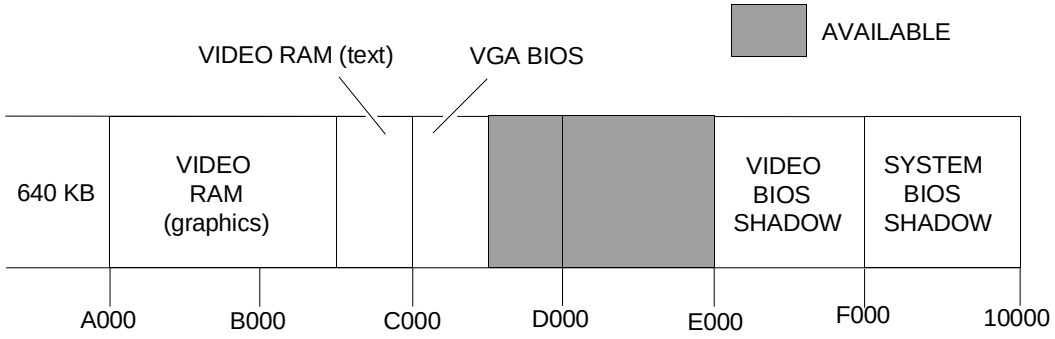
MEM 2852 (ME903) MEMORY EXPANSION BOARD SETTINGS FOR M250

(See M28 page 3-5).

AMB 2678 MEMORY EXPANSION BOARD SETTINGS FOR M250 E

(See M300 page 10-7).

M250 MEMORY MAP



M250 I/O ADDRESS MAP

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000-01F	DMA controller 1	0A0-0BF	Interrupt controller 2
020-021	Interrupt controller 1	0C0-0DF	DMA controller 2
022-023	82C206	0F0-0FF	80287
040-05F	Timer	1F0-1F7	Hard disk adapter
060-064	Keyboard controller	278-27F	Parallel port 2
61	General control register	378-37F	Parallel port 1
65	Configuration register	3B0-3DF	VGA controller
67	Memory page register	3F0-3F1	Hard disk controller
69	Memory map register	3F2-3F6	Floppy disk registers
070-07F	RTC and NMI controller	3F7	Exchange registers between hard disk and floppy disk
080-09F	DMA page register	3F8-3FF	Serial interface

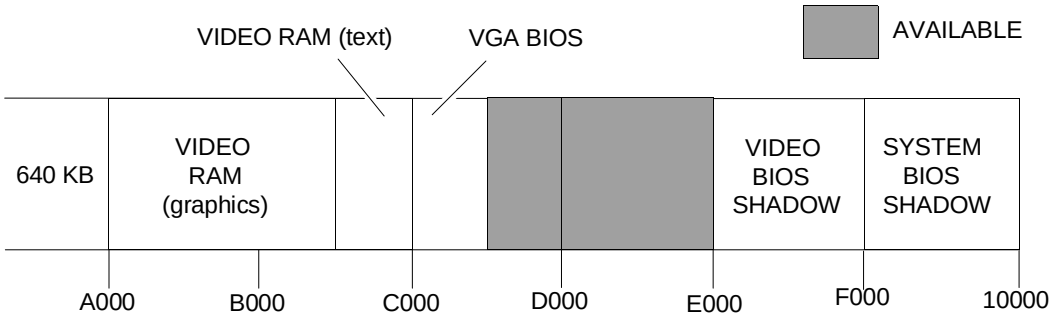
M250 E INTERRUPT LEVELS

LEVEL	FUNCTION	LEVEL	FUNCTION
IRQ0	Channel 0 timer	IRQ8	RTC
IRQ1	Keyboard	IRQ9	Available
IRQ2	Interrupt from interrupt controller 2	IRQ10	Available
IRQ3	Serial port 2	IRQ11	Available
IRQ4	Serial port 1	IRQ12	Available
IRQ5	Parallel port 2	IRQ13	80287
IRQ6	Floppy disk	IRQ14	Hard disk
IRQ7	Parallel port 1	IRQ15	Available

M250 DMA CHANNELS

CHANNEL	FUNCTION	CHANNEL	FUNCTION
DMA0	8-BIT available	DMA4	16-BIT cascade DMA controller 2
DMA1	8-BIT CD-ROM	DMA5	16-BIT available
DMA2	8-BIT floppy	DMA6	16-BIT available
DMA3	8-BIT video	DMA7	16-BIT available

M250 E MEMORY MAP



M250 E I/O ADDRESS MAP

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020-021	Interrupt controller 1	0A0-0BF	Interrupt controller 2
022-023	82C206	0C0-0DF	DMA controller 2
040-05F	Timer	0F0-0FF	80287
060-064	Keyboard controller	1F0-1F7	Hard disk adapter
61	General control register	278-27F	Parallel port 2
65	Configuration register	378-37F	Parallel port 1
67	Memory page register	3B0-3DF	VGA controller
69	Memory map register	3F0-3F1	Hard disk controller
06B	Memory banks starting address register	3F2-3F6	Floppy disk registers
		3F7	Exchange registers between hard disk and floppy disk
070-07F	RTC and NMI controller	3F8-3FF	Serial interface

M250 E INTERRUPT LEVELS

LEVEL	FUNCTION	LEVEL	FUNCTION
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IRQ1	Keyboard	IRQ9	Available
IRQ2	Interrupt from interrupt controller 2	IRQ10	Available
IRQ3	Serial port 2	IRQ11	Available
IRQ4	Serial port 1	IRQ12	Available
IRQ5	Parallel port 2	IRQ13	80287
IRQ6	Floppy disk	IRQ14	Hard disk
IRQ7	Parallel port 1	IRQ15	Available

M250 E DMA CHANNELS

CHANNEL	FUNCTION	CHANNEL	FUNCTION
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DMA1	8-BIT CD-ROM	DMA5	16-BIT available
DMA2	8-BIT floppy	DMA6	16-BIT available
DMA3	8-BIT video	DMA7	16-BIT available

SOFTWARE COMPATIBILITY

OPERATING SYSTEMS	NOTES
IBM DISK OPERATING SYSTEM, Version 3.30	
IBM DISK OPERATING SYSTEM, Version 4.01	During installation on hard disk, a formatted DSDD disk is required.
IBM OPERATING SYSTEM/2, Version 1.10	PS/2 mouse not acknowledged
IBM OPERATING SYSTEM/2, EXTENDED EDITION, Version 1.10	PS/2 mouse not acknowledged
OLIVETTI'S MICROSOFT DISK OPERATING SYSTEM, Version 3.30	
OLIVETTI'S MICROSOFT DISK OPERATING SYSTEM, Version 4.01	
OLIVETTI MICROSOFT OS/2, Version 1.10	

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HARDWARE COMPATIBILITY

MODEMS	NETWORKING & LAN PRODUCTS
HAYES SMARTMODEM (1200B) HAYES SMARTMODEM (2400B) QUADRAM QUADMODEM II (QM2024) TELENETICS EXPRESSDATA 24i (24i-12i) VEN-TEL PC MODEM HALF-CARD (PCM XT) HAYES SMARTMODEM 1200	AT&T STARLAN NETWORK IBM PC NETWORK IBM TOKEN RING NETWORK MADGE AT RING NODE TOKEN-RING 3COM NETWORK (ETHERNET) 10NET NETWORK
MOUSE	**MEMORY EXPANSION PRODUCTS**
IBM PS/2 MOUSE (6450350) LOGITECH BUS MOUSE (P7-3F) MICROSOFT BUS MOUSE, REV. C MICROSOFT SERIAL MOUSE MSC PC MOUSE PS/2 OLIVETTI NEW ADVANCED MOUSE (GRD 25-025)	AST RAMPAGE/AT (RAMPAT-2000) AST RAMPAGE/286 (RAMP286) BOCA RESEARCH BOCARAM/AT INTEL ABOVEBOARD PLUS 8 (PCMB4525)
INTERFACE & I/O PORT PRODUCTS	**DISPLAY UNITS**
FUTURE DOMAIN HOST ADAPTER (TMC-830) IBM ASYNCHRONOUS COMMUNICATIONS CARD (1502074) IBM PRINTER ADAPTER (1505200) IBM SERIAL/PARALLEL CARD (6450215) NATIONAL IEEE-488 CARD (GPIB-PC, Rev. A)	IBM MONOCHROME MONITOR (5151) 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 MONITOR (APC-H431)
GRAPHICS PRODUCTS	
AST RESEARCH AST-3G PLUS ATI EGA WONDER GENOA SUPER EGA HIRES HERCULES GRAPHICS CARD (GB102) **I**BM ENHANCED GRAPHICS ADAPTER (5154001)	IBM VGA ADAPTER MATROX PG-1280A ORCHID PRODESIGNER VGA PLUS PARADISE EGA 480 QUADRAM QUAD EGA PLUS (QC8601) TECMAR VGA AD VIDEO-7 VEGA DELUXEI

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