

## M24 - M21 - M24 SP

### CHARACTERISTICS

1

Microprocessor	8086, 16 bit
Clock	8 MHz (M24, M21) 10 MHz (M24 SP)
RAM access time	150 ns (M24, M21) 120 ns (M24 SP)
Wait states	1 (M24, M21) 0 (M24 SP)
Maximum RAM capacity	640K bytes
ROM BIOS memory	-

### BOARDS

FUNCTION	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
System Board/CPU	BA106/121/135	414369 A	
System Board/CPU	BA139/170/171	414091 G	
System Board/CPU	BA196	411298 Z	640 KB in System Board
System Board/CPU	BA801	411031 G	M24 SP/640 KB
System Board/CPU	BA177	411187 A	M24 SP/640 KB
Bus Converter/Bus 2407	IF172/IF272/IF314	411038 P	M24/M24 SP
Bus Converter/Bus 2403	IF249	48741 P	M21 (3 Slot 8 Bits/16 Bits)
Video Adapter	GO317/GO318/GO380	411216 N	
Video Enhanced Adapter	GO329	48193 H	EGC 2413
Video Adapter	GO362	411053 N	M24 3270
1.2 MB MFD Adapter	GO703		M24 SP (Bit 56)
D.T.C./HDU Adapter	GO310/GO349	414194 C	
H.D.U. W.D. Adapter	GO391	411032 H	Bios 1.36
H.D.U. W.D. Adapter	GO425	411423 E	M24 SP (Bios 1.36 later)
CPU Alternate	GO330	48199 E	CPU Z8001/APB2481
Memory Expansion	ME048/M049	48613 C	
Memory Expansion	ME062		
Memory Expansion	ME056STL		Single In Line (CDM 5,4)
Power supply	LC07	411369 F	
Power supply	LA16	414093 A	
Power supply	LA16B	411052 M	
Micro Box Interface	IF362	411743 W	Bios 1.43/MSDOS 3.20/3.27
Keyboard Adapter	MI293	491230 Z	Emulates 8741 Nivel CSNZ (1.1)

**PAL AND ROM BIOS LEVEL**

M24/M21							
FUNCTION	POS.	EVOLUTION					
ROM Bios	6 F	PFBFH	1.0H	1.10H	1.21H	1.36H	1.43H (PQBK)
	6 H	PBCFL	1.0L	1.10L	1.21L	1.36L	1.43L (PQBL)
Bus Adapter	8 H	PL48		PL51	PL52B		
Wait Logic	6 J	PL95	PBFD				PBFY
RAM Add.	2 P	PL49				PL90	
I/O Logic	6 E	PL51		PL74			
KBC uC 8741	10 U	CSNE/CSHX	CSNY/CSNZ				
KBC uC 8041				CS40			
Keyboard Firmware		PDBA/PDBB	PDBE (1.1)	PDBP (1.2)	PDBP (2.1)		

**NOTE:** (ANK 2463 = IBM Y ANK 2462 = OLIVETTI)

M24 SP			
FUNCTION	POS.	EVOLUTION	
ROM Bios	6 F	PBFW 1.36H	PQBK 1.43H
	6 H	PBFV 1.36L	PQBL 1.43L
Bus Arbiter	8 H	PL86	
Wait Logic	6 J	PBFX	PBFZ
RAM Add.	2 P	PL90	
I/O Logic	6 E	PL85	

**COMPATIBILITY**

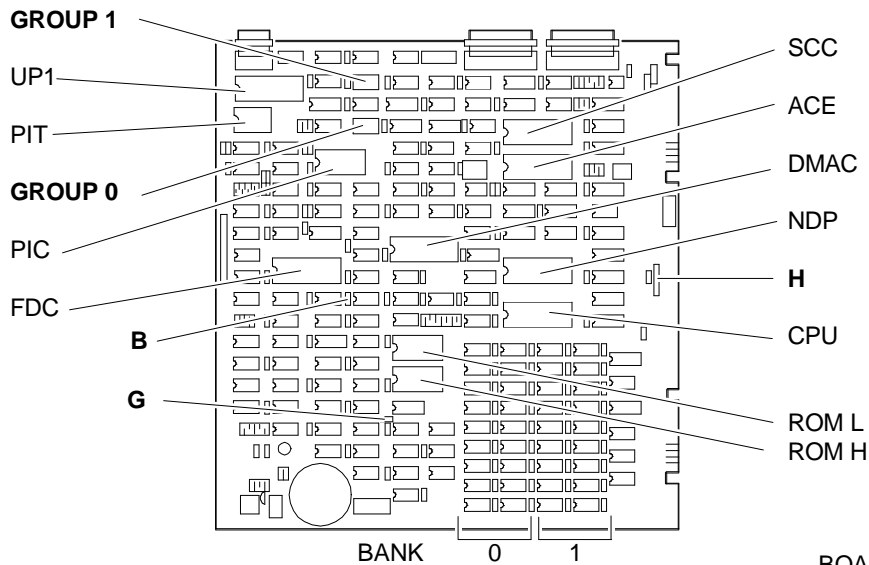
PBFY (M24) (CDM 1.60.60.1/525) PBFZ (M24 SP)	Solves timing problems of the 8250 serial interface controller and (bit 05) keyboard controller
PL52 (M24) (BIT 160.69.5/24)	To install APB card
PL74 (M24) (BIT 160.60.5/24)	Possibility of selecting between 8250 and 8530 by switch
PL90 (M24) * (BIT 160.60.5/48)	RAM Address improvement Born with 1.36 BIOS release
BIOS 1.10	Does not support MS-DOS REL. 3.20 REV. 327 "Frame Work" and "Symphony" compatibility
BIOS 1.36 (BIT 160.60.5/48)	Extends H.D. table in W.D. Adapter (GO391) COM2/EGC/COPROCESSOR right management
BIOS 1.43 * (CDM 160.60.1/529) (BIT 160.60.5/58)	Manages: MFDU 3.5" 720 KB Token Ring L.A.N. EGA Compatibility

(\*) ROM BIOS 1.43 + LP90 manage EGA emulation

**SYSTEM BOARD SETTINGS:**

**M24, M21:** BA106/BA121/BA135/BA139/BA170/BA171/BA196

**M24 SP:** BA801/BA177



**DIP-SWITCHES OF GROUP 0**

AREA	1	2	3	4	FUNCTION
RAM Capacity	OFF	ON	ON	ON	128 KB System Board
	ON	OFF	ON	ON	256 KB PB
	OFF	OFF	ON	ON	256 KB PB 128 KB PEXP
	ON	ON	OFF	ON	256 KB PB 256 KB PEXP
	OFF	ON	OFF	ON	256 KB PB 384 KB PEXP
	ON	ON	ON	OFF	512 KB Bank 0
	OFF	ON	ON	OFF	512 KB PB Bank 0 128 KB PB Bank 1
	OFF	ON	OFF	OFF	128 KB PB Bank 0 512 KB PB Bank 1

AREA	5	6	7	8	FUNCTION
Coprocessor	ON				Not installed
	OFF				Installed
Serial Interface		ON			8250 ACE Asynchronous
		OFF			8530 SCC Synchronous
System memory from BIOS REL. 1.36				ON	RAM Bank 0
				OFF	RAM Bank 0 and 1

**DIP-SWITCHES OF GROUP 1**

AREA	1	2	3	4	FUNCTION
Floppy Disk Unit	OFF				720 KB (3.5")
	ON				360 KB (5.25")
Speed		ON			Startup 800 ns
		OFF			Startup 250 ns
EPROM-BIOS			ON		ROM HDU System board
			OFF		ROM HDU External
Video				ON	Scroll CPU
				OFF	Slow scroll

AREA	5	6	7	8	FUNCTION
Monitor type	OFF	OFF			80 x 25 monochrome
	OFF	ON			40 x 25 colour
	ON	OFF			80 x 25 colour
	ON	ON			EGA (*)
MFDU			ON	ON	1 MFD unit
			OFF	ON	2 MFD units

(\*) BIOS 1.43 only

**JUMPERS (ONLY M24 SP BA801/BA177)**

JUMPERS	POS.	FUNCTION
B	B1 - B2	CLOCK 8 MHz FDC
	B2 - B3	CLOCK 4 MHz FDC
G	OUT	Floppy controller enable
	IN	Floppy controller disable

JUMPERS	POS.	FUNCTION
H	H-1	8087 8 MHz
	H-2	8087 10 MHz
C and E	OUT	Normal
	IN	Production test

**KEYBOARDS COMPATIBILITY**

TYPE	PROTOCOL	LAYOUT
ANK2462	Olivetti	Olivetti
ANK2463	Olivetti	IBM
ANK2502	Olivetti	M240 type
ANK2886	Olivetti	M28 type
ANK25-102	Standard AT	101/102 keys

