

## M300-02 / M300-02F

### CHARACTERISTICS

Microprocessor	INTEL 386SX
Clock	16 MHz on the earlier M300-02 models 25 MHz on the new M300-02F models
Architecture	16-bit AT
Memory	2 MB to 10 MB on the motherboard Bank 0 2 MB, consisting of two soldered memory chips Bank 1 Two sockets that can host two SIMMs: 1 M x 9 <b>EXM 25-532</b> (2 MB) 4 M x 9 <b>EXM 26-809</b> (8 MB)
Memory access	80 ns
Coprocessor	16 MHz i387SX on the earlier models 25 MHz i387SX on the new models
Floppy Disk	1.2 MB 5.25" Panasonic JU 475-4 C20R 1.2 MB 5.25" Panasonic JU 475-5 C20R 1.44 MB 3.5" EPSON SMD 1040-418
Hard Disk	40 MB Quantum LPS 52 AT 40 MB W.D. AC 140 40 MB CONNER CP3044 40 MB CONNER CP3046F 40 MB QUANTUM Pioneer ELS42 AT 85 MB W.D. Caviar 280 85 MB CONNER CP30084E 85 MB QUANTUM Pioneer ELS85 AT 120 MB CONNER CP30126 120 MB W.D. AC 2120 120 MB QUANTUM Pioneer ELS127 AT
Streaming Tape	120 MB <b>STU 38-120</b> - with floppy disk interf.
Slots	Two 16-bit connectors on the bus expansion board
Video controller	VGA-compatible WD90C11A integrated on the motherboard
HDU and FDU controller	Integrated on the motherboard Floppy disk controller: National 87C310 Hard disk interface: MSI buffer and logic gates
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key ANK 27-101/N, ANK 27-102/N

#### MOTHERBOARD

BA013/16 2 MB  
BA013/25 2 MB

#### BIOS

Last level:  
Lev. 1.03 BA013/16  
Lev. 5.03 BA013/25

#### EXPANSION BUS

Level: 02

#### POWER SUPPLY

LA/11B 220 V  
LA/16B 110 V

#### CONSOLE BOARD

**MOTHERBOARD**

	LEVEL	D.R.S. CODE	ROM BIOS	NOTES
BA013/16	Nasc.	612547T	Rev. 1.03	For the 16 MHz clock version, motherboard with 2 MB
	Lev. 04			New printed circuit board that renders the board compatible with the CISPR22/B norms.
BA013/25	Nasc.	612563 T	Rev. 5.01	For the 25 MHz clock version, motherboard with 2 MB
	Lev. 01		Rev. 5.01	<ul style="list-style-type: none"> <li>- To comply with the restrictions imposed by the UL and NEMKO norms, the value of resistance R245 is changed from 100 Ohm to 340 Ohm.</li> <li>- Cuts and trimmings to guarantee a stabile picture on the screen when using a high resolution 1024x768 monitor.</li> </ul>
			Rev. 5.03	New BIOS allowing the management of the following HDUs: Quantum ELS42A 40 MB Quantum ELS85A 85 MB Quantum ELS127A 120 MB CONNER CP30124 120 MB Board level does not change.

**CONSOLE BOARD**

	LEVEL	D.R.S. CODE	NOTES
	Nasc.	030787U	A cable is used to connect the console board to the bus expansion board The hard disk LED is mounted on the console board.

**BUS EXPANSION BOARD**

	LEVEL	D.R.S. CODE	NOTES
	Nasc.	030099W	New printed circuit board to improve contact between the bus expansion board and system structure.
	Lev. 01		
	Lev. 02		

**MOTHERBOARD INTEGRATED COMPONENTS**

MOTHERBOARD	INTEGRATED CONTROLLER
	<b>CPU 386SX</b> 16 or 25 MHz microprocessor Socket for the <b>i387SX</b> math coprocessor <b>8042</b> Keyboard and mouse controller <b>WD90C11C</b> VGA video controller. <b>WD90C64</b> Video controller clock generator <b>ADV BT476</b> DAC <b>87C310</b> Parallel and serial interface controller <b>ACER</b> Floppy disk controller <b>Buffer MSI</b> Intelligent hard disk interface <b>27C010</b> BIOS EPROM <b>TOPCAT</b> <b>VL82C320</b> system controller <b>VL82C331</b> bus controller

**BOARDS**

FUNCTION	DESCRIPTION	D.R.S. CODE	CHARACTERISTICS
CPU board	BA013/16	612547T	2 MB 16 MHz M300-02
CPU board	BA013/25	612563T	2 MB 25 MHz M300-02F
220 V power supply	LA/16B	150543C	
110 V power supply	LA/11B	150542B	
220 V power supply	LA/16B	151950 D	
110 V power supply	LA/11B	151951 S	
BUS Adapter board		030099W	Two expansion slots
Console board		030787U	

**USER DISKETTE**

LEVEL	COMPATIBILITY
Rev. 1.96	
Rev. 1.99	This release contains version 1.06 of the EMMBOX2 file. The modification was made necessary since version 1.05 of the EMMBOX2 file, contained in the previous User Disk version, caused the system to crash when configured with 64 KB + VGA of shadow memory and 128 KB of expanded memory. In fact, part of the E000 segment (area reserved for the BIOS) is incorrectly occupied by expanded memory thus causing the system to crash.

**SYSTEM TEST**

LEVEL	COMPATIBILITY
	-

**POWER SUPPLY**

POWER SUPPLY	LEVEL	DESCRIPTION
LA/16B 220 V	Nasc	
LA/11B 110 V	Nasc	
LA/16B 220 V LA/11B 110 V		Two new power supplies have been introduced to improve EMI margins.

**COMPATIBILITY NOTES**

BOARD OR HW/SW DEVICE	DESCRIPTION
-	-

**SOFTWARE DRIVERS**

DRIVER	NOTES
LIM EMM386	For expanded and extended memory management.

**BIOS**

LEVEL	NOTES
Rev. 1.04	-

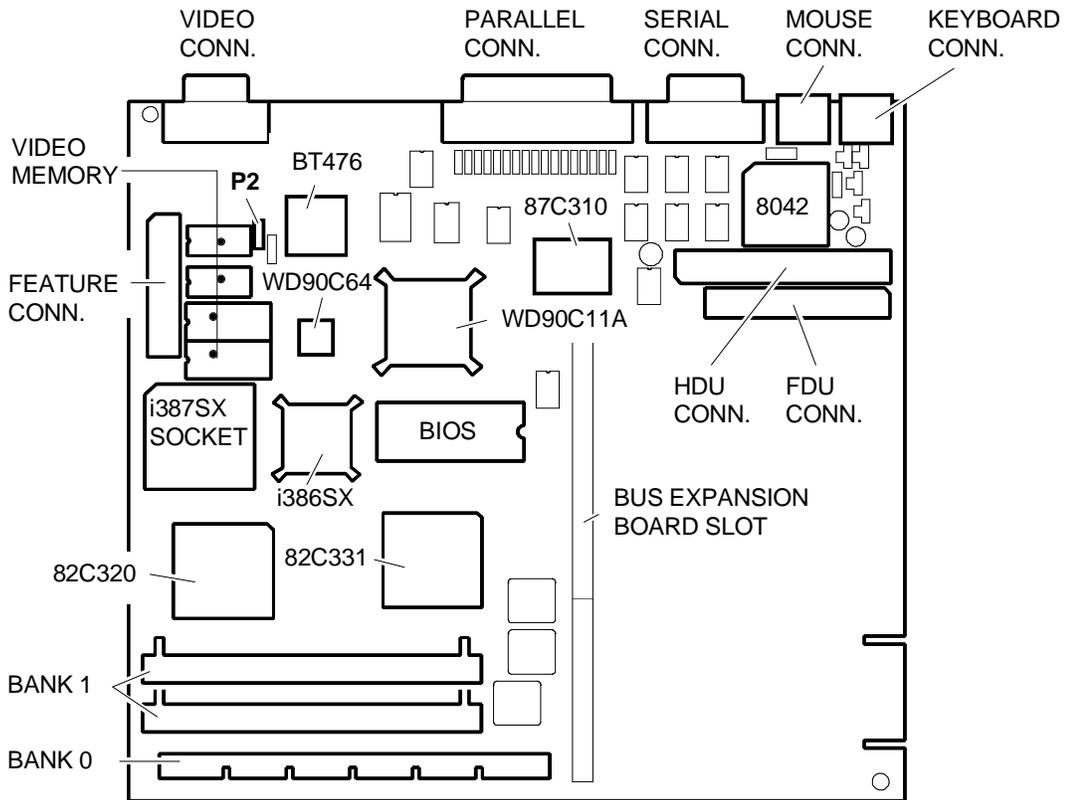
**SOFTWARE COMPATIBILITY**

<b>OPERATING SYSTEMS</b>	<b>NOTES</b>
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 SCO UNIX System V/386, Rev. 3.2 SCO XENIX 386, Rev. 2.3	 Requests for a formatted DSDD diskette during installation on hard disk. Does not recognize the PS/2 mouse.  Does not recognize the PS/2 mouse.
<b>WINDOWS</b>	
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**

<p><b>MODEMS</b></p> <p>Hayes Smart modem 2400B                  FAXY PC MAXTER                  FURY 2400 PC MODEM                  AT&amp;T 2224 CEO MODEM                  FURY 2400 MAXTER MODEM                  FURY 2400 TI/MNP                  Hayes Smart modem 1200 B</p>	<p><b>I/O INTERFACE PRODUCTS</b></p> <p>IBM PRINTER ADAPTER (1505200)                  STB 4-ON THE FLOOR</p>
<p><b>MULTIPOINT</b></p> <p>CHASE AT8                  COMPUTONE AT 8                  COMPUTONE AT 16                  INTEL Bell ICC.6                  SPECIALIX SI / 8</p>	<p><b>MOUSE</b></p> <p>IBM PS/2 Mouse (6450350)                  IBM PS/2 Mouse Serial                  Logitech Bus Mouse (PF-3F)                  Logitech 3 button mouse                  MS-BUS mouse                  MS-MOUSE serial</p>
<p><b>GRAPHICS PRODUCTS</b></p> <p>AST VGA plus                  FASTWRITE 1024i                  FASTWRITE VGA                  HERCULES GRAPHICS CARD                  IBM VGA Adapter                  MATROX PG - 1281                  MAXON MVGA-16 Adapter                  ORCHID PRODESIGNER VGA PLUS                  HERCULES INCOLOR CARD (GB222)                  PARADISE VGA PRO CARD</p>	<p><b>NETWORKING &amp; LAN PRODUCTS</b></p> <p>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</p>
<p><b>DISPLAY UNITS</b></p>	
<p>IBM enhanced graphics monitor 5151                  IBM color graphics monitor 5153                  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</p>	<p>NEC MULTISYNC 2A                  NEC MULTISYNC 3D                  NEC MULTISYNC 4D                  NEC MULTISYNC 5D                  PHILIPS 7BM749                  PHILIPS 9CM082</p>

**MOTHERBOARD COMPONENTS AND JUMPERS**

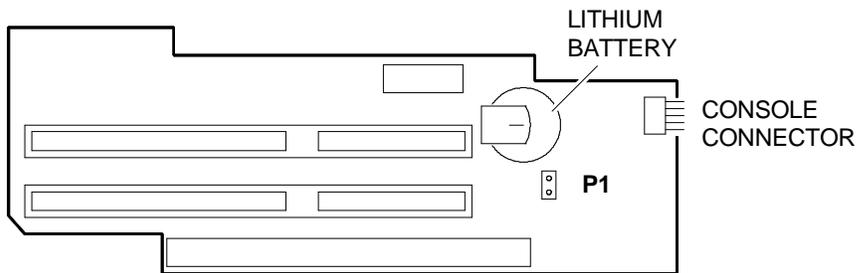


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ASB7A

<b>JUMPER P2</b>	Position 1-2	Password disabled
	Position 2-3	Password enabled

**BUS EXPANSION BOARD COMPONENTS AND JUMPERS**



AYD3A

<b>P1</b> installed:	Battery connected
<b>P1</b> not installed	Battery not connected (Personal Computer not operative)

## BUILT IN SETUP and EXTENDED SETUP Utilities

### BUILT IN SETUP

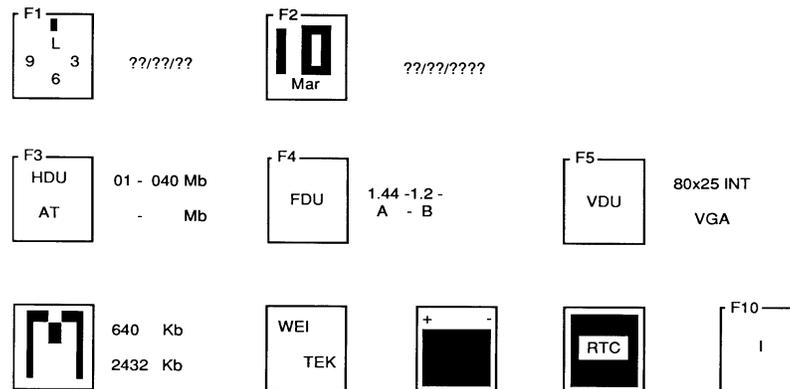
This ROM BIOS-resident program allows you to change some of the Personal Computer's configuration parameters.

Two cases can arise:

First case: If the data stored in the CMOS RAM is no longer valid or the power supply battery is low, the BUILT IN SETUP screen is displayed. You are now give the choice of selecting the language to work in from a total of six languages available.

Second case: If the configuration of the system has been changed, only the icon representing the device that has to be added to, or modified in, CMOS RAM will be displayed. For example, if you install a second floppy disk drive, just the floppy disk icon will be displayed.

In both cases the BUILT IN SETUP screen is automatically displayed without operator intervention.



**F1** Allows you to change the system hour, minutes and seconds.

**F2** Allows you to change the system day, month and year.

**F3** Allows you the type of hard disk installed and its capacity. Press the space bar until the correct value is displayed. The following table lists the hard disks that can be installed in the system.

TYPE	MODEL	CAPACITY	CYL	T	WPC	LZ	SET
01	W.D. AC-140 3,5" 19 ms	40 MB	980	5	-1	980	17
	Quantum LPS 52 AT	40 MB	980	5	-1	980	17
	CONNER CP3044	40 MB	980	5	-1	980	17
	CONNER CP3046F	40 MB	980	5	-1	980	17
	QUANTUM ELS42 AT	40 MB	980	5	-1	980	17
02	W.D. Caviar AC-280	85 MB	977	10	-1	977	17
	CONNER CP30084E	85 MB	977	10	-1	977	17
	QUANTUM ELS85 AT	85 MB	977	10	-1	977	17
03	W.D. AC-2120	120	762	8	-1	762	39
	CONNER CP30126	120	762	8	-1	762	39
	QUANTUM ELS127 AT	120	762	8	-1	762	39

**Where:** CYL: Number of disk cylinders  
 WPC: Write precompensation cylinder number  
 LZ: Head landing zone cylinder number  
 T: Number of disk heads  
 SET: Number of disk sectors.

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**F4** Allows you select the capacity of the floppy disk drive. Depending on the number of drives present (1, 2 or 3), up to three fields can be displayed next to this icon. Define in these fields the capacity of the floppy disk drive installed.

The logic names of the drives are displayed on the row underneath: A (for one drive only), A-B (for two drives), A-B-X (for three drives).

**NOTE:** If a streaming tape drive with floppy disk interface is installed, the data field corresponding to this drive must not contain any value, and this drive must always be indicated as logic drive B.

**F5** Allows you to select the video format when powering on the system.

**Math Coprocessor** This icon appears only when the WEITEK coprocessor is installed. It is intended for informational purposes only.

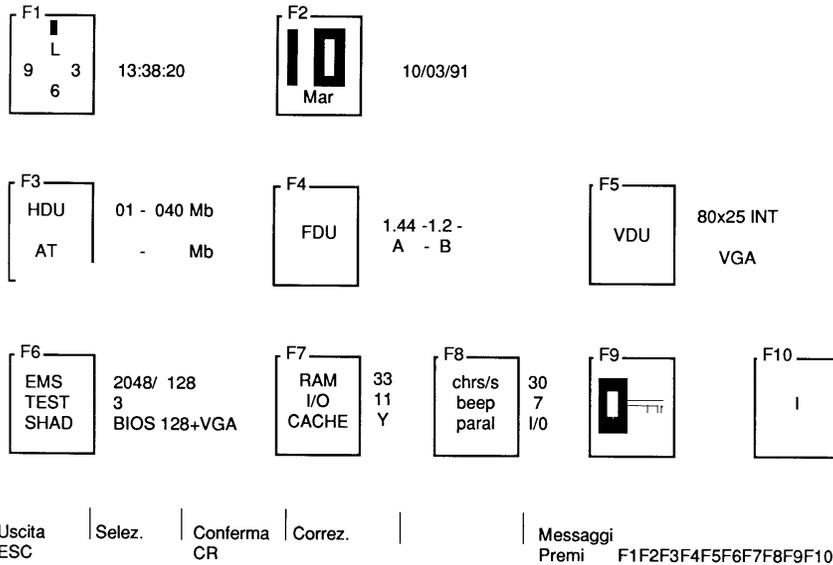
**Batteries** This icon appears only when the system is powered on for the very first time or when the system batteries are low

**Real time clock** This icon flashes when the system *Real Time Clock* is faulty.

**Language** You can select the language in which all the BUILT IN SETUP messages will be displayed. There are six languages available.

## EXTENDED SETUP

Besides using the BUILT IN SETUP utility, you can also use the EXTENDED SETUP utility to configure the system parameters. You can recall this utility at any time by pressing the CTRL, ALT and DEL keys simultaneously.



This menu contains all the icons of the BUILT IN SETUP utility, therefore it allows you to configure the system as previously explained.

However, the EXTENDED SETUP utility has the following additional parameters:

- F6** EMS Allows you to modify the capacity of extended and expanded memory..
- TEST Allows you to reduce the number of tests performed on system memory during the Power On Diagnostics.
- SHAD Allows you to assign shadow memory to the BIOS and specify memory areas.
- F7** RAM Allows you to change system speed from the default value (33 MHz) to 14 MHz.
- I/O Allows you to the system bus speed from the default value (11 MHz) to the standard AT speed (8 MHz).
- F8** CHR/S Allows you to change change the character repeat speed when associated keys are pressed. This value is expressed in number of characters per second.
- BEEP Allows you to increase or decrease the speaker volume.
- PARAL Allows you to modify the direction of the parallel port.
- F9** Allows you to assign a system **PASSWORD**.

**INTERRUPT LEVELS**

LEVEL	NAME	CONTROLLER	FUNCTION
1	NMI		Parity error
2	IRQ0	1	Channel 0 timer OUT
3	IRQ1	1	Keyboard
4	RQ8	2	Real Time Clock
5	IRQ9	2	Software redirection to INT 0AH (IRQ2)
6	IRQ10	2	Available
7	IRQ11	2	Available
8	IRQ12	2	Mouse
9	IRQ13	2	Available
10	IRQ14	2	Hard disk controller
11	IRQ15	2	Available
12	IRQ3	2	Serial port 2
13	IRQ4	1	Serial port 1
14	IRQ5	1	Parallel port 2
15	IRQ6	1	Floppy disk controller
16	IRQ7	1	Parallel port 1

**I/O ADDRESS MAP**

ADDRESS	FUNCTION	ADDRESS	FUNCTION
000-01F h	DMA controller (channels 0 - 3)	0F8-0FF h	Math coprocessor
020-03F h	Interrupt controller 1	1F0-1F7 h	Hard disk drive (HCS0 selection)
040-043 h	Timer	278-27F h	Parallel port 2
060 h	Keyboard data controller	2F8-2FF h	COM2 serial port (alternat.)
061- 06F h	System control port A	378-37F h	Parallel port 1 (default)
064 h	Keyboard commands controller	3C0 - 3DF h	Video controller
070 - 071 h	Real time clock, NMI, CMOS RAM	3F2 h	Floppy disk controller
080-08F h	DMA page registers	3F3 h	Super I/O configuration register
092 h	System control port B	3F4- 3F5 h	Floppy disk controller
0A0-0BF h	Interrupt controller 2	3F6-3F7 h	Hard disk drive (HCS1 selection)
0C0-0DE h	DMA channels 4-7	3F7 h	Floppy disk controller
1E0 - 1EF h	TOPCAT registers	3F8-3FF h	COM1 serial port
0F0 h	Cancels the operation of the math coprocessor	46E8 h	VGA register
0F1 h	Resets the coprocessor		

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**SYSTEM MEMORY MAP**

<b>ADDRESS</b>	<b>MEMORY</b>	<b>FUNCTION</b>
00000 - 7FFFF h	512 KB	Conventional memory (0 KB - 512 KB)
80000 - 9FFFF h	128 KB	base memory (512 KB - 640 KB)
A0000 - BFFFF h	128 KB	Video controller RAM
C0000 - DFFFF h	128 KB	Available
E0000 - FFFFF h	128 KB	BIOS/Shadow BIOS
100000 - FFFFFFF h	15 MB	Memory expansion (to the physical addressable limits of the 80386SX CPU)
1000000 - 1FFFFFFF h	1 MB	Memory expansion (to the system's physical addressable limit)

