

# M4-82 / PCS52 E

## CHARACTERISTICS

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Microprocessor	PENTIUM
Clock	60 MHz
Architecture	ISA / PCI
Memory	<p>On-board, from 8 to 128 MB.            On the motherboard there are 4 sockets arranged in two banks or two sockets each. The following SIMMs can be installed in these sockets:</p> <p><b>EXM 28-004</b> - 4 MB - One 1MBx36 SIMM  <b>EXM 28-008/B</b> - 8 MB - One 2MBx36 SIMM  <b>EXM 28-016</b> - 16 MB - One 4MBx36 SIMM  <b>EXM 28-032</b> - 32 MB - One 8MBx36 SIMM</p> <ul style="list-style-type: none"> <li>- Two SIMMs must always be used.</li> <li>- Different SIMMs cannot be used in the same bank, however an 8 MB and 32 MB bank, for example, can be configured.</li> <li>- Banks can be left empty.</li> </ul>
Memory access	70 ns
Primary and secondary level cache	<ul style="list-style-type: none"> <li>- The Pentium processor has a 16 MB integrated cache (8 KB data cache, 8 KB instruction cache).</li> <li>- The secondary level cache has a 256 KB capacity and is implemented using eight 32Kx8 SRAM chips with a 15 ns access time.</li> </ul> <p>The controller for the 20th level cache is integrated in the 82434LX component.</p>
Coprocessor	The motherboard is equipped with a Pentium Overdrive Ready Socket.
Video controller	<p>Video control functions are provided by one of the following boards:</p> <ul style="list-style-type: none"> <li>- <b>GO 2030 (1580)</b> - AT board with 512 KB of video RAM.</li> <li>- <b>REALITY-40 (GO2027 - GO2049)</b> PCI board with 2 MB of video RAM expandable to 4 MB.</li> <li>- <b>VISION-40 (GO2019)</b> PCI board with 1 MB of video RAM expandable to 2 MB.</li> <li>- <b>SMARTY-PCI</b> - PCI board with 1 MB of video RAM expandable to 2 MB.</li> </ul> <p style="text-align: right;">----&gt;Continues</p>

### MOTHERBOARD

**BA2066 (BATMAN)**  
 Motherboard to which only AT IDE hard disks can be connected.

**BA2121 (REVANGE)**  
 Motherboard to which both AT IDE and IDA Local Bus hard disks can be connected.

**BA2147**  
 As BA2121

### BIOS

The ROM BIOS is a Flash EPROM. The BIOS code is provided on diskettes and must be copied into Flash EPROM.

Last BA2066 level:  
 Ver. 1.00.08 AF1

Last BA2121 level:  
 Ver. 1.00.06 AF2

### POWER SUPPLY

ASTEC SA 201 3450  
 115 V / 230 V

Floppy Disks	1.2 MB Panasonic JU475-3/4/5 1.2 MB Toshiba ND 08 DE 1.44 MB Panasonic JU 257 A 1.44 MB Sony MP-F17 W / MP-F420-1 1.44 MB Mitsubishi MF 355 1.44 MB EPSON SMD 1040-418 1.44 MB Y-E DATA YD-702B / YD-702D 1.44 MB MITSUMI D359T3 1.44 MB TEAC FD235HF
Hard Disks	CONNER CP30174E 170 MB Quantum ELS170 AT 170 MB CONNER CFA17'0A 170 MB Quantum LPS170 AT (local BUS) 170 MB W.D. AC1220 (local BUS) 210 MB SEAGATE ST3250A (local BUS) 210 MB CONNER CFS 210A (local BUS) 210 MB QUANTUM LPS210 AT 210 MB W.D. AC2420 (local BUS) 420 MB SEAGATE ST3491A (local BUS) 420 MB CONNER CFS420A (local BUS) 420 MB W.D. AC2340 340 MB CONNER CFA340A 340 MB SEAGATE ST3391A 340 MB CONNER CP30544 540 MB Quantum LPS540 AT (local BUS) 540 MB CONNER CFA540A (local BUS) 540 MB SEAGATE ST5660 (local BUS) 540 MB
Streaming Tapes	<b>Irwin 31250A</b> 80/120 MB Floppy interface <b>Wangtek 5159ES</b> 150 MB SCSI interface <b>Wangtek 5525ES - 5525ES-ACA</b> 320 MB SCSI interface. <b>CONNER 2525</b> 320 MB SCSI interface All STU drives with SCSI interface require the ASC-2 controller.
Slots	- 3 slots for full-size ISA AT boards - 1 slot for a half-size ISA AT board - 2 slots for PCI boards - 1 slot shared between ISA AT or PCI boards One expansion slot is always reserved for the video controller board.
HDU and FDU controller BA2066 motherboard	Integrated on the motherboard: - <b>SMC 37C665</b> floppy disk controller - IDE AT HDU interface: MSI buffer and logic ports
HDU and FDU controller BA2121 motherboard	Integrated on the motherboard: - <b>SMC 37C665</b> floppy disk controller - IDE AT HDU interface: MSI buffer and logic ports - IDE Local BUS HDU interface <b>RZ1000 PCI IDE</b>
Mouse	PS/2- and AT-compatible
Keyboard	101/102-key ANK 27-101/N, ANK 27-102/N 101/102-key ANK 28-101, ANK 28-102 Super compact keyboard.

## MOTHERBOARD

	LEVEL	D.R.S CODE	ROM BIOS	NOTES
BA2066	Nasc.	588067 W	The ROM BIOS is a Flash EPROM. BIOS evolution is shown in an appropriate table	Motherboard with 8 MB of RAM.
BA2121	Nasc.			New board to support IDE Local Bus hard disks. Motherboard with 8 MB of RAM.
BA2147	Nasc.			Replaces BA2121

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## CONTROLLERS INTEGRATED ON THE MOTHERBOARD

MOTHER-BOARD	INTEGRATED CONTROLLERS
BA2066 BA2121 BA2147	<p><b>CPU</b> 60 MHz Pentium processor installed in the <i>Pentium Overdrive Ready Socket</i></p> <p><b>82434LX</b> Mercury chip set component. Offers the following functions:            - PCI bus control            - Memory control            - Secondary level cache control</p> <p><b>82433LX</b> Two Mercury chip set components. They offer the following function:            - Control the external extension of the PCI local bus.</p> <p><b>82378IB</b> Mercury chip set component. Offers the following functions:            - Interface between the PCI local bus and the AT ISA bus.            - I/O peripheral management.</p> <p><b>2° level cache</b>  <b>8042</b> Eight 32Kx8 SRAM chips with a 15 ns access time  <b>8042</b> Keyboard and mouse controller</p> <p><b>SMC37C665</b> Super I/O controller. Offers the following functions:            - Floppy disk management            - Interface for two serial ports            - Parallel port interface            - AT IDE hard disk interface</p> <p><b>DS12887</b> Offers the following functions:            - Real time clock            - CMOS RAM (128 KB)            - CMOS RAM back-up battery</p> <p><b>28F001BXT</b> 1 MB Flash EPROM containing the system BIOS</p> <p><b>RZ1000 IDE PCI</b> IDE Local BUS hard disk controller (BA 2121 only)</p>

**BOARDS**

FUNCTION	DESCRIPTION	D.R.S. CODE	FEATURES
Motherboard	BA2066	588067 W	8 MB of RAM IDE AT hard disks only
Motherboard	BA2121		8 MB of RAM
Motherboard	BA2147		
115 V / 230 V power supply	SA 201 3450		
Video controller board	GO2030 (1580)		512 KB of video RAM
Video controller board	VISION-40		1 or 2 MB of video RAM ATI board
Video controller board	REALITY-40		2 or 4 MB of video RAM MATROX board
Video controller board	SMARTY-PCI		1 or 2 MB of video RAM

**VIDEO CONTROLLER BOARDS**

BOARD	LEVEL	NOTES
GO2030 (1580)	Nasc.	AT board with 512 KB of video RAM
VISION-40 (GO2019)	Nasc.	PCI board manufactured by ATI
	01	The following components are installed to improve EMI margins: - One 100 pF capacitor - One 75 Ohm resistor
	Liv. 02	To improve the board's EMI margins, the following modifications are made when the board is installed in SLIM BOX cases: - Ferrites are installed in position R1001 - R8 - R33 - The 0 Ohm resistor in position R74 is replaced with a 100 Ohm resistor - A track on pin 18 of the ATI18813 component installed in position U1 has been cut.
REALITY-40 (GO2027)	Nasc.	PCI board manufactured by MATROX
	01	New MATROX BIOS Rev. 3.4B
REALITY-40 (GO2049)	Nasc.	Replaces GO 2027.
	01	To avoid crosstalks between the ADBUS and DBUS in VGA mode and solve the problems concerning the hardware setup of the 50 MHz clock, the following modifications were made: - The following resistors were moved: from R70 to R69; from R50 to R49 - The following capacitors were added: 33 pF capacitor between pins 17 and 20 of the component in position A25; 33 pF capacitor between pin 1 and 16 of the component in position A25; 33 pF capacitor between pin 13 and 20 of the component in position A23.
SMARTY-PCI	Nasc.	PCI board with 1 MB of video RAM expandable to 2 MB.

**ENHANCED VIDEO DRIVERS**

DRIVER	NOTES
EVD for the ATI GO2019 - Ver. 1.06 video controller	<p>This package integrates the video drives for: AutoDesk, Autocad, IBM OS/2, Lotus 1-2-3, Word, Microstation, Windows 3.1 and Windows NT, but has the following problems:</p> <ol style="list-style-type: none"> <li>1- In cannot be used under Windows NT to set the operating parameters of both the video and EEPROM of the video controller board.</li> <li>2 - When using the PC in complex environments (with different SW drivers loaded into memory, such as mouse, networks, share, doskey, SCSI), the video subsystem test programs cannot be run. The "No adapter present" error message is displayed.</li> <li>3 - After setting the video subsystem operating parameters, the system randomly crashes when exiting the configuration program.</li> <li>4 - The test program does not work correctly (for example you have to press the ESC key to run the 24-bbp test otherwise the option allowing the execution of this test is not displayed).</li> <li>5 - Problems with the pre AutoDesk - Autocad 11 / 12 / AutoShade / 3D Studio / Renderman drivers:               <ul style="list-style-type: none"> <li>- There is inconsistency between the table indicated in the documentation and the table of the program with which the user has to select the resolution to adopt. The correct table is the one listed in the documentation.</li> <li>- Limits when using AutoCad 12: the Bit Plane color of the Rendering function must be coherent with the Device Display color Bit Plane.</li> </ul> </li> <li>6 - Microstation 4.0 drivers do not work (error number 910: Product not licensed for this hardware).</li> <li>7 - With Windows 3.1 / Windows for WorkGroups 3.1 / 3.11, it is better to avoid using Crystal Fonts given the limitations announced by the supplier.</li> <li>8 - Under Windows NT the user must adopt the resolutions offered by the standard Windows NT package. Resolutions with more than 256 colors DO NOT work in this environment.</li> </ol>
EVD for the ATI GO2019 - Ver. 1.07 video controller	<p>With respect to the previous version only the part concerning Windows NT has been modified.</p> <p>This video driver has the following inconvenience: the PC randomly crashes when exiting Windows through the Mozart board's control panel either in its full or icon formats.</p>
EVD for the ATI GO2019 - Ver. 1.08 video controller	<p>With respect to the previous version only the part concerning Microstation which was unavailable in version 1.07 has been modified.</p> <p>This video driver has the following inconvenience: the colors are wrong when using the "640x480x16.7 MI " resolution, while the are correct when using the "640x480x16.7 MI BGR" resolution.</p> <p>The problem with the Mozart board control panel has not been solved.</p>
EVD for the ATI GO2019 - Ver. 1.09 video controller	<p>The documentation concerning Microstation has been added along with new Olivetti monitors.</p>
EVD for the GO2030 (1580) - Ver. 1.02 video controller	

## SYSTEM TEST

LEVEL	NOTES
Rev. 1.00	Requires BIOS version 1.00.03.AF1
Rev. 1.01	The keyboard test has been modified in this system test revision.
Rev. 1.02	The video and hard disk tests have been modified in this system test revision.
Rev. 1.03	Requires BIOS version 1.00.05.AF2 <ul style="list-style-type: none"> <li>- This system revision is capable of handling both motherboards that can be used on this system (BA2066 and BA2121)</li> <li>- The ECP FIFO subtests is added to the parallel port test</li> <li>- The EEPROM subtests is added to the video test</li> <li>- The hard disk test is capable of testing both AT IDE and IDE local bus hard disk drives.</li> </ul>
Rev. 1.06	Requires BIOS version 1.00.06.AF2 <ul style="list-style-type: none"> <li>- This system test revision is capable of recognizing the REALITY-40 (Matrox) video controller.</li> <li>- Solved the problems concerning the "ECP FIFO" subtest of the parallel port test</li> <li>- All tests are linked with the new system test library (4.10) which implements Fast Mode Operation.</li> <li>- The parallel port test has been modified to be able to handle the new SIO SMC 665 GT release.</li> <li>- Memory tests have been modified.</li> <li>- The tests on the Mozart board and on the game port have been removed.</li> <li>- The "FIFO" and "RTS to RI" tests have been added to the serial port test.</li> <li>- The floppy disk test now supports the Three Mode used by the PCs originating from Japan.</li> </ul>
Rev. 1.01	This system test is used for the PCS52 E Personal Computer. Requires BIOS version 1.00.06.AF2. <ul style="list-style-type: none"> <li>- All the tests have been linked to the new system test library (4.10) which implements Fast Mode Operation.</li> </ul> This system test has the following inconveniences: <ul style="list-style-type: none"> <li>- The PCI subtest of the motherboard test does not work correctly with IDE AT hard disks</li> <li>- To run the video test, the type of video connected to the system must be correctly configured using the EVD utilities of the different video controller boards.</li> </ul>
Rev. 1.03	Requires BIOS version 1.00.08.AF2. With respect to the pervious version, this revision incorporates the following changes: <ul style="list-style-type: none"> <li>- The hard disk test now supports 1 GB HDUs.</li> <li>- The mouse test has been modified.</li> <li>- The configuration of the parallel port has been changed.</li> <li>- The floppy disk tests have been modified to support the Three Mode used by the PCs originating from Japan.</li> <li>- The memory tests have been modified.</li> </ul>

LEVEL	NOTES
Rev. 1.04	<p>Requires BIOS version 1.00.08.AF2</p> <p>With respect to the previous version, this revision incorporates the following changes:</p> <ul style="list-style-type: none"> <li>- The memory test can now test above 64 MB.</li> <li>- The mouse test has been changed.</li> <li>- The video test has been changed so that the CIRRUS video controller can be added.</li> <li>- The keyboard test has been changed.</li> </ul>

#### USER DISKETTE

LEVEL	NOTES
Rev. 1.00	Requires BIOS version 1.00.03.AF1
Rev. 1.01	The keyboard test has been modified in this user diskette revision.
Rev. 1.02	The video and hard disk tests have been modified in this user diskette revision.
Rev. 1.03	<p>Requires BIOS version 1.00.05.AF2</p> <ul style="list-style-type: none"> <li>- This user diskette revision is capable of supporting both motherboards that can be used on this system (BA2066 and BA2121)</li> <li>- The ECP FIFO subtest has been added to the parallel port test.</li> <li>- The EEPROM subtest has been added to the video test.</li> <li>- The hard disk test is capable of supporting both IDE AT and IDE Local Bus hard disk drives.</li> </ul>
Rev. 1.06	<p>Requires BIOS version 1.00.06.AF2</p> <ul style="list-style-type: none"> <li>- This user diskette revision is capable of recognizing the REALITY-40 (Matrox) video controller.</li> <li>- Solved the problems concerning the "ECP FIFO" subtest of the parallel port test</li> <li>- All tests are linked with the new system test library (4.10) which implements Fast Mode Operation.</li> <li>- The parallel port test has been modified to be able to handle the new SIO SMC 665 GT release.</li> <li>- Memory tests have been modified.</li> <li>- The tests on the Mozart board and on the game port have been removed.</li> <li>- The PIC subtest of the motherboard test has been modified.</li> </ul>
Rev. 1.01 Up.1	<p>This user diskette is used on the PCS52 E Personal Computers.</p> <p>Requires BIOS version 1.00.06.AF2</p> <p>This user diskette revision has the following inconvenience:</p> <ul style="list-style-type: none"> <li>- To run the video test, the type of video connected to the system must be correctly configured using the EVD utilities of the different video controller boards.</li> </ul>
Rev. 1.03	<p>Requires BIOS version 1.00.08.AF2</p> <p>With respect to the pervious version, this revision incorporates the following changes:</p> <ul style="list-style-type: none"> <li>- The hard disk test now supports 1 GB HDUs.</li> <li>- The mouse test has been modified.</li> <li>- The configuration of the parallel port has been changed.</li> <li>- The floppy disk tests have been modified to support the Three Mode used by the PCs originating from Japan.</li> <li>- The memory tests have been modified.</li> </ul>

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<b>LEVEL</b>	<b>NOTES</b>
Rev. 1.04	Requires BIOS version 1.00.08.AF2. With respect to the previous version, this revision incorporates the following changes: <ul style="list-style-type: none"><li>- The memory test can now test above 64 MB.</li><li>- The mouse test has been changed.</li><li>- The video test has been changed so that the CIRRUS video controller can be added.</li><li>- The keyboard test has been changed.</li></ul>

BIOS (Batman BA2066 Board)

LEVEL	NOTES
Ver. 1.00.05 AF1	This BIOS version includes the possibility of managing IDE AT hard disk drives on the PCI bus.
Ver. 1.00.06 AF1	
Ver. 1.00.08 AF1	<p>This release solves some of the problems and includes modifications for PCI support.</p> <p><b>SUMMARY OF THE PROBLEMS SOLVED BY THIS RELEASE</b></p> <ol style="list-style-type: none"> <li>1) The system will not reconfigure the motherboard I/Os if automatic peripheral management has been enabled via Setup and a serial board is installed on the bus.</li> <li>2) Monochrome video modes 7h and Fh cannot be set.</li> <li>3) The floppy disk's "Get media type" (Int13 AH:20h) function returns a "BadCommand" (AH:01 &amp;Cy).</li> <li>4) If "Dos full Screen compatibility" is accessed from an OS/2 desktop, the monitor is dark, while the cursor remains in a fixed position in "Dos windows compatibility".</li> <li>5) If the "Win-OS/2 full screen" application is accessed from an OS/2 monitor, the monitor is set incorrectly.</li> <li>6) After formatting a 2.88 MB diskette, a SCANDISK operation on this floppy will result with the following problems:             <ul style="list-style-type: none"> <li>- Incorrect Media descriptor (Media byte missing)</li> <li>- Incorrect FAT backup (out of date)</li> <li>- 2.88 MB FDU driver autoselect.</li> </ul> </li> </ol> <p><b>SUMMARY OF PROBLEMS NOT YET SOLVED</b></p> <ol style="list-style-type: none"> <li>1) Serial port tests fail with the following indication: "Fail to Init ComPort". The problem concerns the extended functions (04h/05h) which returns a Line Status (xh) different than AH</li> <li>2) The BIOS uses the 1Ah and 24h functions of Int15h, which should be reserved (Int15h Ah:1A/24h).</li> <li>3) With cache enabled, the "Switch to protected mode" function (Int15h Ah:89h) returns a "Warning IRQ7 Unexpected Interrupt".</li> <li>4) The keyboard controller "Write Keyboard output buffer (D2h)" command fails when the 0 value is written.</li> <li>5) The keyboard test encounters the following problems:             <ul style="list-style-type: none"> <li>- Verify INT 09H INVOKES INT 1BH AK FAIL Error: INT 1Bh is not invoked when hit LEFT CTRL_BREAK Error: INT 1Bh is not invoked when hit RIGHT CTRL_BREAK</li> <li>- Verify INT 09H INVOKES INT 05H FAIL Error: INT 05h is not invoked when hit LEFT CTRL_PRTSC Error: INT 05h is not invoked when hit RIGHT CTRL_PRTSC Error: INT 05h is not invoked when hit PRTSC</li> <li>- Verify Int 09H Invokes Int 15H (AH)=4FH Keyb. Intercept Fail Error: Intercept Flag = 0, Code Send = 0H, INT09H PassIn = 0H Error: Intercept Flag = 0, INT09H does not ignore the key stroke</li> <li>- WARNING: Extended function AX = 0309H does not support</li> </ul> <p>This test also detects incorrect scan codes:</p> <ul style="list-style-type: none"> <li>- Cache enabled : Keys 32,33 fail</li> <li>- Cache disabled: Keys 14,16,30,34,73 fail</li> </ul> </li> <li>6) If serial port 2E8 is defined in Setup it will not be configured.</li> </ol>

Ver. 1.00.08 AF1 (Continuation)	<p>7) In all resolutions, the following problems (PCI-Matrox video) are detected in video system RAM:</p> <ul style="list-style-type: none"> <li>- At location 40:87 (Video Control), Bit 4 is set to 1 which instead should be reserved.</li> <li>- At location 40:89 (Mode set optional control), Bit 5 is set to 1 which instead should be reserved.</li> </ul> <p>8) The "load font 8x16 character generator" (Int10h Ah:11 Al:04/14h) function displays an incorrect font scan in the CGA (0,1,2,3) video modes.</p> <p>9) The video test fails with the indication "Fail to get Vertical retrace". This problem occurs with Feature control register 3DA</p> <p>10) At the end of the screen display, the "Write character string" (Int10h Ah:13h Al:0/1/2/3) function scrolls the monitor instead of displaying the next screen page.</p> <p>11) Access to video RAM disable fails (Alternate Select Int10h Ah:12h Bl:32h)</p> <p>12) The system does not recall Int4Ah when an alarm is generated even though the Set Alarm (Int1Ah,Ah:06) function redirects the Int4Ah vector.</p> <p>13) The system crashes during the System Performance "Math speed" test and the message "Run-Time error M6103: Math-floating point error divide by 0" is displayed. This problem does not occur when the cache is disabled or when the cache is enabled but EMM386.exe is installed.</p> <p>14) Random characters are sent to the parallel port (SMC37C665 step C) when the system is powered off. This problem occurs with the DM324L printer.</p> <p>15) The Flash Memory Utility Ver.3.0 floppy diskette does not contain the Logo data area (*.usr) and System Bios language (*.lng) files.</p>
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BIOS (Revenge BA2121 - BA2147 Board)

LEVEL	NOTES
Ver. 1.00.05.AF2	<p>The following problems are solved with this release:</p> <ol style="list-style-type: none"> <li>1) Password bypass is corrected.</li> <li>2) SIO.G device is supported.</li> <li>3) A code is added for the allocation of IDE AT hard disk drive resources.</li> </ol> <p><b>Note:</b> This BIOS release has been developed specifically for the REVENGE board and absolutely must not be used with the BATMAN board.</p>
Ver. 1.00.06 AF2	<p>This release solves some of the problems and includes modifications for PCI support.</p> <p><b>SUMMARY OF THE PROBLEMS SOLVED BY THIS RELEASE</b></p> <ol style="list-style-type: none"> <li>1) The system will not reconfigure the motherboard I/Os if automatic peripheral management has been enabled via Setup and a serial board is installed on the bus.</li> <li>2) Monochrome video modes 7h and Fh cannot be set.</li> <li>3) The floppy disk's "Get media type" (Int13 AH:20h) function returns a "BadCommand" (AH:01 &amp;Cy).</li> <li>4) If "Dos full Screen compatibility" is accessed from an OS/2 desktop, the monitor is dark, while the cursor remains in a fixed position in "Dos windows compatibility".</li> <li>5) If the "Win-OS/2 full screen" application is accessed from an OS/2 monitor, the monitor is set incorrectly.</li> <li>6) After formatting a 2.88 MB diskette, a SCANDISK operation on this floppy will result with the following problems: <ul style="list-style-type: none"> <li>- Incorrect Media descriptor (Media byte missing)</li> <li>- Incorrect FAT backup (out of date)</li> <li>- 2.88 MB FDU driver autoselect.</li> </ul> </li> </ol> <p><b>SUMMARY OF PROBLEMS NOT YET SOLVED</b></p> <ol style="list-style-type: none"> <li>1) Serial port tests fail with the following indication: "Fail to Init ComPort". The problem concerns the extended functions (04h/05h) which returns a Line Status (xh) different than AH</li> <li>2) The BIOS uses the 1Ah and 24h functions of Int15h, which should be reserved (Int15h Ah:1A/24h).</li> <li>3) With cache enabled, the "Switch to protected mode" function (Int15h Ah:89h) returns a "Warning IRQ7 Unexpected Interrupt".</li> <li>4) The keyboard controller "Write Keyboard output buffer (D2h)" command fails when the 0 value is written.</li> <li>5) The keyboard test encounters the following problems: <ul style="list-style-type: none"> <li>- Verify INT 09H INVOKES INT 1BH AK FAIL Error: INT 1Bh is not invoked when hit LEFT CTRL_BREAK Error: INT 1Bh is not invoked when hit RIGHT CTRL_BREAK</li> <li>- Verify INT 09H INVOKES INT 05H FAIL Error: INT 05h is not invoked when hit LEFT CTRL_PRTSC Error: INT 05h is not invoked when hit RIGHT CTRL_PRTSC Error: INT 05h is not invoked when hit PRTSC</li> <li>- Verify Int 09H Invokes Int 15H (AH)=4FH Keyb. Intercept Fail Error: Intercept Flag = 0, Code Send = 0H, INT09H PassIn = 0H Error: Intercept Flag = 0, INT09H does not ignore the key stroke</li> <li>- WARNING: Extended function AX = 0309H does not support</li> </ul> <p>This test also detects incorrect scan codes:</p> <ul style="list-style-type: none"> <li>- Cache enabled : Keys 32,33 fail</li> <li>- Cache disabled: Keys 14,16,30,34,73 fail</li> </ul> </li> <li>6) If serial port 2E8 is defined in Setup it will not be configured.</li> </ol>

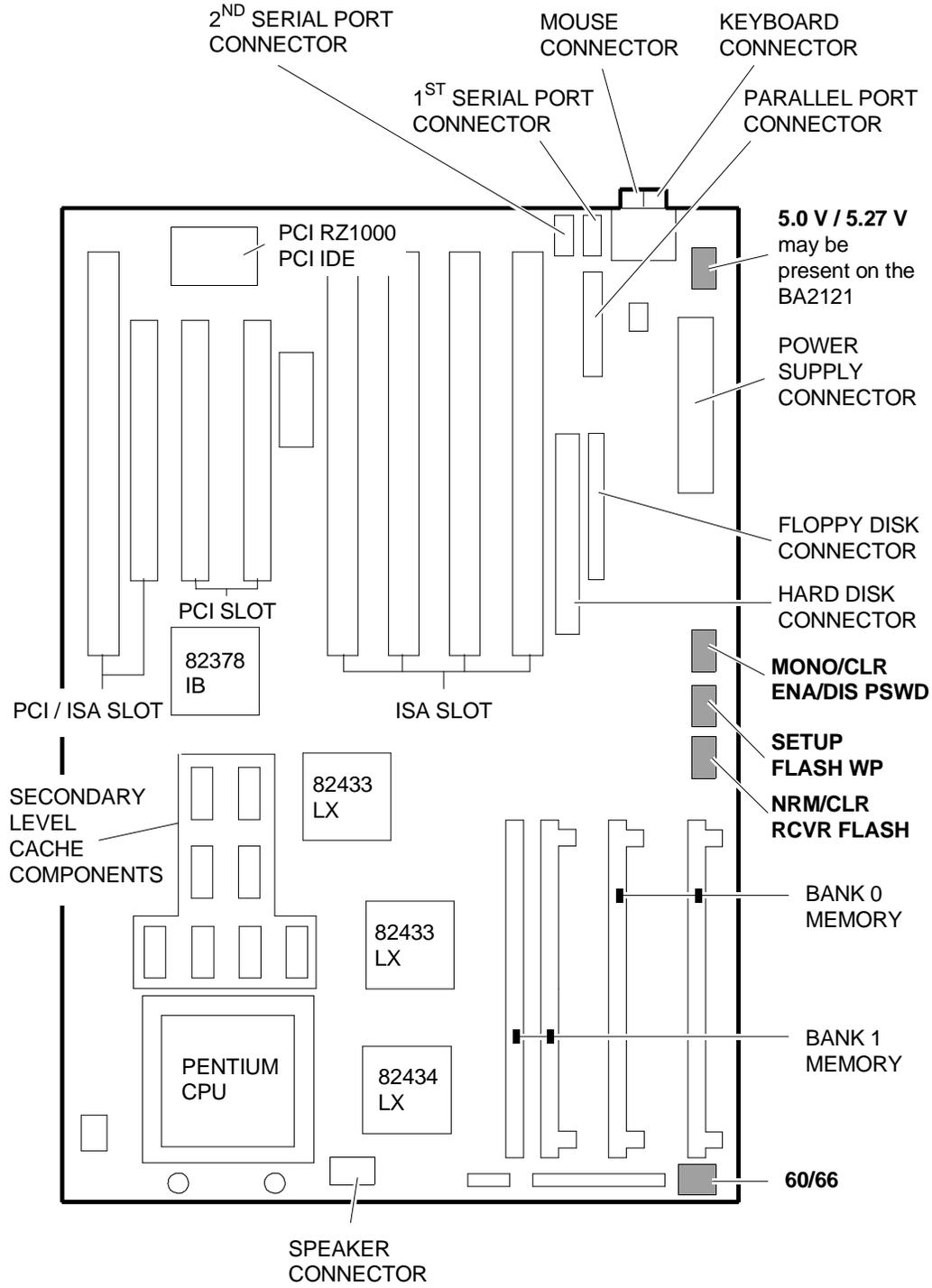
Ver. 1.00.06 AF2 (Continuation)	<p>7) In all resolutions, the following problems (PCI-Matrox video) are detected in video system RAM:</p> <ul style="list-style-type: none"> <li>- At location 40:87 (Video Control), Bit 4 is set to 1 which instead should be reserved.</li> <li>- At location 40:89 (Mode set optional control), Bit 5 is set to 1 which instead should be reserved.</li> </ul> <p>8) The "load font 8x16 character generator" (Int10h Ah:11 Al:04/14h) function displays an incorrect font scan in the CGA (0,1,2,3) video modes.</p> <p>9) The video test fails with the indication "Fail to get Vertical retrace". This problem occurs with Feature control register 3DA</p> <p>10) At the end of the screen display, the "Write character string" (Int10h Ah:13h Al:0/1/2/3) function scrolls the monitor instead of displaying the next screen page.</p> <p>11) Access to video RAM disable fails (Alternate Select Int10h Ah:12h Bl:32h)</p> <p>12) The system does not recall Int4Ah when an alarm is generated even though the Set Alarm (Int1Ah,Ah:06) function redirects the Int4Ah vector.</p> <p>13) The system crashes during the System Performance "Math speed" test and the message "Run-Time error M6103: Math-floating point error divide by 0" is displayed. This problem does not occur when the cache is disabled or when the cache is enabled but EMM386.exe is installed.</p> <p>14) Random characters are sent to the parallel port (SMC37C665 step C) when the system is powered off. This problem occurs with the DM324L printer.</p> <p>15) The Flash Memory Utility Ver.3.0 floppy diskette does not contain the Logo data area (*.usr) and System Bios language (*.lng) files.</p>
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**POWER SUPPLY**

MODEL	LEVEL	DESCRIPTION
SA 201 3450	Nasc.	115 V / 230 V
	01	To reduce radiated EMI noise a BEAD PN 35052B ferrite in inserted on the center pin of mosfet Q1, and diode D2 is removed.
	02	To: <ul style="list-style-type: none"> <li>- render the P.S. to comply with ENERGY STAR (EPA) specifications, and</li> <li>- ensure that the P.S. powers off correctly</li> </ul> the following modifications have been made: <ul style="list-style-type: none"> <li>- components D8 - Q4 - R46 - C9 have been added to the already configured PCB</li> <li>- a 33 K 1/6 W resistor has been added to the primary of the power supply.</li> </ul> An additional supplier of the 2.200 uF-16V C23 capacitor is used. In addition to NCC, supplier RUBICON used.
	03	<ul style="list-style-type: none"> <li>- The layout of the Power Good board is optimized so that capacitors C125 and C126, originally volatile, can now be mounted on the PCB.</li> <li>- The main board's printed circuit is renewed to accomodate components R62 and Z5.</li> <li>- New suppliers of components C1 - C2 (ISKRA and RIFA) - C12 (EVOX and ARCOTRONICS) - T1 (EDT39).</li> </ul>
	04	Some power supply components have been replaced to cut production costs.

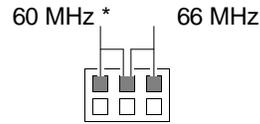
1

**COMPONENTS AND JUMPERS ON THE BA2066, BA2121 AND BA2147 MOTHERBOARDS**



GCD2A

**Jumper (60/66) - System Clock Selection**



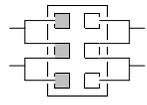
**WARNING:**  
Use this jumper very carefully since its misuse could damage the system processor.

**Jumper RCVR FLASH - Enable BIOS Recovery Mode**

**Jumper NRM/CLR - Cancel CMOS**

**NRM/CLR**

The CMOS can be cancelled  
The CMOS cannot be cancelled \*



**RCVR FLASH**

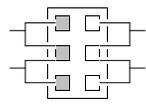
FLASH EPROM - Normal operation \*  
FLASH EPROM - Recovery Mode operation

**Jumper SETUP - Enable the Setup utilities**

**Jumper FLASH WP - Enable write to EPROM**

**SETUP**

Access not allowed to the Setup utilities  
Access allowed to the Setup utilities \*



**FLASH WP**

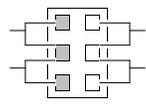
Flash EPROM cannot be updated  
Flash EPROM can be updated \*

**Jumper MONO/CLR - Selection of the type of monitor connected to the system**

**Jumper ENA/DIS PSWD - Password enable/disable**

**MONO/CLR**

Color monitor connected \*  
Monochrome monitor connected



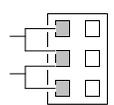
**ENA/DIS PSWD**

Password disabled  
Password enabled \*

**Jumper 5.0 V / 5.27 V (May be present on BA2121)**

**5.0 V / 5.27 V**

CPU operating at 66 MHz  
CPU operating at 60 MHz



\* Default setting

SOFTWARE COMPATIBILITY

<b>OPERATING SYSTEM</b>	
DR-DOS, Version 6.00 IBM PC-DOS, Version 5.0 IBM PC-DOS, Version 6.1	IBM OS/2 EXTENDED EDITION, Version 1.30 Rev.2.02u6 ** IBM OS/2, Version 2.1  ** A fast hard disk is required.
<b>WINDOWING APPLICATIONS</b>	
ALDUS PAGEMAKER, Version 5.0 AMI PROFESSIONAL for WINDOWS, Ver. 2.0 CORELDRAW for WINDOWS Version 4. LOTUS 1-2-3, Version 4.0 LOTUS FREELANCE GRAPHICS for WINDOWS, Version 2.01 MS-EXCEL Version 4.0 MS WINDOWS 3.1 **	MS WINDOWS for WORKGROUP, Version 3.10 MS-WORD for WINDOWS, Version 2.0 MS-WORD for WINDOWS, Version 6.0 MS WORKS, Version 2.0 MS POWERPOINT, Version 3.0 WORD PERFECT for Win. Version 5.1 XEROX VENTURA PUBLISHER for WINDOWS 3.0 and 3.1, Version 3.0  ** If Windows 3.1 is configured with the 8514/A video mode with the Vision video controller board and the Windows Program Manager icon is used to switch to the DOS environment, the top part of the screen becomes illegible. Using Windows with the 640x480x256 drivers of the 1580 SX board ruins the background of the Paintbrush environment. This problem does not occur so often on Vision and Reality boards.
<b>WORD PROCESSING PRODUCTS</b>	
AMI PRO for OS/2, Version 3.0A ARTS & LETTERS, Version 3.1 DISPLAYWRITE 4, Version 1.5 DISPLAYWRITE 5/2 for OS/2, Version 1.0 MS-WORD for DOS, Version 6.0	MS-WORD for OS/2, Version 5.0 **1 WORD PERFECT, Version 5.1 WORDPERFECT for OS/2, Version 5.0 WORDSTAR PROFESSIONAL, Version 7.0  **1 Using MS-Word under IBM OS/2 in full-screen mode, the mouse cursor disappears when the Print Preview window is displayed, but then reappears when exiting this field. The same problem occurs when switching from text mode to graphics mode using the ALT+9 key sequence.
<b>GRAPHICS PRODUCTS</b>	<b>DTP PRODUCTS</b>
AUTOCAD, Version 11 AUTOCAD, Version 12 AUTODESK 3D STUDIO, Version 3.0 CHARISMA for WINDOWS Version 2.1 DR HALO IV, Version 1.0 HARVARD GRAPHICS Version 3.0 LOTUS FREELANCE GRAP for OS/2, Ver. 2.0 LOTUS FREELANCE PLUS Version 4.0 MICROGRAFX DESIGNER Version 3.1 MS-CHART Version 3.00 PC PAINTBRUSH IV PLUS Version 5.0	ALDUS PAGEMAKER for OS/2, Version 3.01 GEM /3 DESKTOP, Version 2.01

## COMPATIBILITA HARDWARE

1

<p><b>MODEM PRODUCTS</b></p> <p>HAYES SMART MODEM, 2400 B          INTEL SatiFAXtion Modem/200          INTEL SatiFAXtion Modem/30          DIGICOM MODEM FAX Mod. SNM41 PC          AT&amp;T 4000 Series Mod. 2224 CEO          ROBOTICS World Port 1200</p>	<p><b>GRAPHICS PRODUCTS</b></p> <p>ATI Ultra Plus Pro PCI          INFOTRONIC XGC          NUMBER NINE GXi Graphics Coprocessor          MATROX HIPER VGA CAD          MATROX MGA II PCI          MATROX MGA Impression /3Z          ORCHID KELVIN 64</p>
<p><b>MOUSE PRODUCTS</b></p> <p>IBM PS/2 MOUSE          LOGITECH BUS MOUSE          LOGITECH RADIO MOUSE          MS BALL POINT MOUSE          MS-BUS MOUSE, Version 1.0          MS SERIAL MOUSE (PS/2)</p>	<p><b>DISPLAY PRODUCT</b></p> <p>IBM PS/2 COLOR DISPLAY 8518          NEC MULTISYNC 5FG          SONY Multiscan CPD 1430          SONY Multiscan CPD 1730          SONY Multiscan GDM 2038</p>
<p><b>INTELLIGENT MULTIPOINT PRODUCTS</b></p> <p>CHASE AT 16+ Serial I/O Controller          DIGIBOARD MULTIPOINT PC/8          SPECIALIX SI/8</p>	<p><b>CONTROLLER DEVICES</b></p> <p>ADAPTEC 1540C SCSI HOST ADAPTER          ADAPTEC 1540CF SCSI HOST ADAPTER          ADAPTEC 1542B SCSI HOST ADAPTER          ADAPTEC AHA-2940 SCSI PCI          BUSLOGIC BT-946C Fast SCSI PCI HostAdap          FUTURE DOMAIN SCSI/PCI Controller          QLOGIC FAST SCSI IQ-PCI          SONY COR-334 KIT          SONY OPA-474 KIT          TRANTOR MINISCSI PLUS</p>
<p><b>NETWORK and LAN PRODUCT SOFTWARE</b></p>	
<p>BANYAN VINES, Version 5.0          DEC PATHWORKS FOR OS/2, Version 2.0          IBM PC LAN, Version 1.30          IBM PC LAN SUPPORT PROGRAM, Ver. 1.2</p>	<p>IBM OS/2 LAN SERVER, Version 3.0          INTEL LANDESK MANAGER, Version 1.5          MS LAN MANAGER for OS/2, Version 2.1          PROLOGUE 5, Version 5.1B</p>
<p><b>NETWORK and LAN PRODUCT HARDWARE ISA</b></p>	
<p>3COM ETHERLINK 16 (3C507)          3COM ETHERLINK II (3C503)          3COM ETHERLINK PLUS (3C505)          3COM ETHERLINK ADAPTER (3C501)          3COM ETHERLINK III (3C509)          3COM TOKENLINK PLUS ADAPTER (3C603)          DEC ETHERWORKS TURBO TP ADAPTER **          DEC ETHERWORKS TURBO ADAP DE200 **          D-LINK DT-220 ADAPTER          IBM TOKEN RING 16/4 ADAPTER **1          IBM TOKEN RING PC ADAPTER II **1          INTEL ETHEREXPRESS 16 ETHERNET ADAP</p>	<p>INTEL TOKEN EXPRESS ISA 16 TOKEN - RING ADAPTER          MADGE 16/4 AT RING NODE ADAPTER          NOVELL NE1000 LAN ADAPTER          NOVELL NE2000 ETHERNET ADAPTER          NOVELL NE2000 PLUS ETHERNET ADAPTER</p> <p>** During installation the system will issue an error message even though the board is installed correctly and works.</p> <p>**1 Shadow memory needs to be disabled in system configuration.</p>
<p><b>NETWORK and LAN PRODUCT HARDWARE PCI</b></p>	
<p>Z'NYX 32BIT ETHERNET LAN ADAPTER ZX312</p>	
<p><b>CD ROM</b></p>	
<p>PHILIPS CD-RECORDER CDD521          SONY CD ROM DRIVER, Version CDU 33A          SONY CD ROM DRIVER, Version CDU 541</p>	<p>SONY CD ROM DRIVER, Version CDU 561          SONY CD ROM DRIVER, Version CDU 7305          SONY CD ROM DRIVER, Version CDU 7811</p>

<b>MULTIMEDIA ENVIRONMENT SOFTWARE</b>	
AIMTEK ICON AUTHOR, Version 5.0 ** ALDUS PHOTO STYLER VER. 1.1 ASYMMETRIC TOOL BOOK, Version 1.53 AUTHOWARE STAR for Windows, Version 1.0a CD SPEED Version 1.0 IM-AGE version 3.0 MPC SAMPLER, Version 1.0 **1 MS VIDEO for WINDOWS, Version 1.0	MS WINDOWS SOUND SYSTEM, Version 1.0 MS WINDOWS SOUND SYSTEM, Version 2.0 ** Se si utilizza la piastra Videologic DVA 4000, i colori cambiano nel passaggio da Windows 3.1 a dos. **1 Solo il programma MPC MOVIE non funziona sul M4-82 con la piastra di governo video Reality.
<b>MULTIMEDIA ENVIRONMENT HARDWARE (DVO/DVI)215</b>	
ACTIONMEDIA II CAPTURE MODULE ** INTEL SMART VIDEO RECORDER LIFE VIEW VIDEO **1 FAST SCREEN MACHINE (ISA) Mod. I	SUPER VIDEO WINDOWS (N.M.G.) CM **2 VIDEO BLASTER **3 VIDEOLÓGIC DVA 4000/ISA WIN/TV **4
** With the Reality video controller, when connecting the ActionMedia II board to the feature connector and the monitor to this same board, the screen background becomes white and the character fonts become red. **1 Only certain resolutions work correctly with the 1580 and Vision video controller boards. The Life board does not work with the Reality board. **2 With the Reality video controller board, the video background becomes red when connecting the Super Video Windows CM board to the feature connector and when connecting the monitor to this same board. **3 With the Reality video controller board, the images which are displayed when the VBTEST is run are moved to the left. This problem occurs less with the Vision video controller board. **4 The board only works with a few resolutions when the Vision video controller board is installed. The colors change and the images are illegible with the Reality video controller board.	
<b>MPC BOARDS</b>	<b>ACOUSTIC DEVICE</b>
LOGITECH AUDIOMAN PRO AUDIO SPECTRUM 16 SDLC PRO AUDIO SPECTRUM PAS2 PRO AUDIO SPECTRUM PAS 16 SOUND BLASTER PRO 2 SOUND BLASTER 16 APS SOUND BLASTER 16 SCSI 2 SOUND GALAXY NX PRO	SONY SRS 170 SONY SRS 77G  <b>VIDEO DEVICE</b> PIONEER LASER DISC CLD-V2300D PIONEER LASER DISC V4300D SONY LASER DISC PLAYER LDP3600D

## I/O ADDRESS MAP

ADDRESS	FUNCTION	ADDRESS	FUNCTION
0000 - 000F h	DMA 1 (SIO) controller	01F0 - 01F7 h	Primary IDE channel
0020 - 0021 h	Interrupt 1 (SIO) controller	0278 - 027B h	Parallel port 2
0040 - 0043 h	Timer 1 (SIO)	02F8 - 02FF h	Motherboard serial port 2
0048 - 004B h	Timer 2 (SIO)	0376 h	Secondary IDE channel commands port
0060 h	Keyboard controller - data	0377 h	Secondary IDE channel status port
0061 h	NMI, speaker controller (SIO)	0378 - 037F h	Parallel port 1
0064 h	Keyboard controller - commands	03BC - 03BF h	Parallel port X
0070 h (bit 7)	NMI enable (SIO)	03E8 - 03EF h	Serial port 3
0070 h (bit 6:0)	RTC addresses (SIO)	03F0 - 03F5 h	Floppy channel 1
0071 h	RTC data (SIO)	03F6 h	Primary IDE channel commands port
0073 h	Reserved - board configuration	03F7 h (write)	Floppy 1 channel commands
0075 h	Reserved - board configuration	03F7 h (bit 7)	Floppy disk channel 1 exchange
0078 h	BIOS timer (SIO)	03F7 h (bit 6:0)	Primary IDE channel status port
0080 - 008F h	DMA page register (SIO)	03F8 - 03FF h	Motherboard serial port 1
00A0 - 00A1 h	Interrupt controller 2 (SIO)	0CF8 h	PCI configuration area enable
00C0 - 00DE h	DMA 2 (SIO) controller	0CF9 h	<i>Deturbo</i> mode enable
00F0 h	Numeric error reset	C000 - C0FF	82434LX configuration registers
0170 - 0177 h	Secondary IDE channel	C200 - C2FF h	82378IB configuration registers

**NOTE:** Addresses 2E8 - 2EF are reserved and therefore cannot be used.

## DMA CHANNELS

CHANNEL	NUMBER OF BITS	FUNCTION
0	8 or 16	Free
1	8 or 16	Free
2	8 or 16	Floppy disk transfers
3	8 or 16	Hard disk transfers
4	16	Used for the cascade connection of DMA 1
5	16	Free
6	16	Free
7	16	PCI IDE hard disk controller

## INTERRUPT LEVELS

LEVEL	NAME	CONTROLLER	FUNCTION
1	IRQ0	1	Channel 0 timer OUT
2	IRQ1	1	Keyboard
3 to 10 *	IRQ2	1	Interrupt issued to controller 1 from controller 2
3	IRQ8	2	Real time clock
4	IRQ9	2	Free
5	IRQ10	2	Free
6	IRQ11	2	Free
7	IRQ12	2	Mouse
8	IRQ13	2	Coprocessor
9	IRQ14	2	Primary hard disk controller
10	IRQ15	2	Secondary hard disk controller
11	IRQ3	1	Serial port 2
12	IRQ4	1	Serial port 1
13	IRQ5	1	Parallel port 2 - Parallel port 3
14	IRQ6	1	Floppy disk controller
15	IRQ7	1	Parallel port 1

\* The priority level depends on the interrupt selected. For example, if interrupt IRQ11 is selected, the priority level is 6, or if interrupt IRQ15 is selected the priority level is 10.

# SYSTEM MEMORY MAP

