

# Premiere/PCI II Baby-AT Board & Expandable Desktop

*Technical Product Summary*

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## Premiere/PCI II Technical Product Summary

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## Introduction

The Premiere/PCI II is a state-of-the-art computer platform delivering the latest microprocessor and I/O technology in an industry standard Baby-AT form factor. It is ideal for demanding desktop applications requiring the maximum in computing performance and I/O expansion flexibility.

The Pentium™ processor at 75 MHz, 90 MHz, or 100 MHz is complemented by a 256 KB second level write-back cache to provide workstation level computing performance. A Level 5 Pentium OverDrive™ socket provides access to future enhancements (75 and 90 MHz products only), and SIMM sockets support up to 128 MB of DRAM.

The Premiere/PCI II offers outstanding I/O capabilities. Three PCI local bus slots provide a high bandwidth data path for data-movement intensive functions such as graphics. An integrated RZ1000 IDE controller on the PCI local bus provides a high performance primary IDE interface, while an SMC 37C665 Super I/O component controls a floppy drive, secondary ISA IDE interface, two FIFO serial ports and an EPP/ECP-capable parallel port. Five ISA slots complete the I/O mix.

The Premiere/PCI II provides the foundation for cost effective, high performance, highly expandable platforms which deliver the latest in CPU and I/O technology.

### STANDARD BABY-AT FORM FACTOR

The Premiere/PCI II baseboard conforms to the industry standard Baby-AT form factor. The Baby-AT form factor specifies maximum board size, board mounting locations, and connector locations for the keyboard connector, as well as expansion slot placement. In addition to complying with the standard, the Premiere/PCI II provides three slots which will accommodate high performance PCI local bus expansion cards.

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I think the appropriate place for this is under board level features.

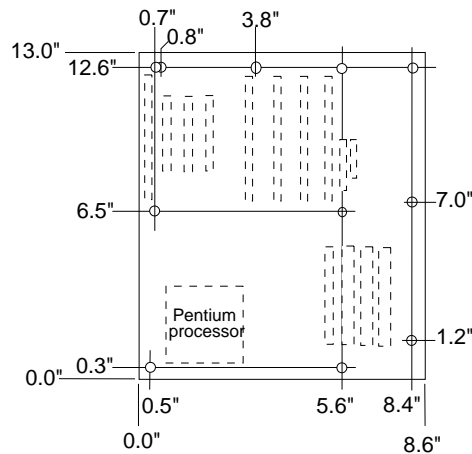


Figure 1. Premiere/PCI II Baseboard dimensions.

## Board Level Features

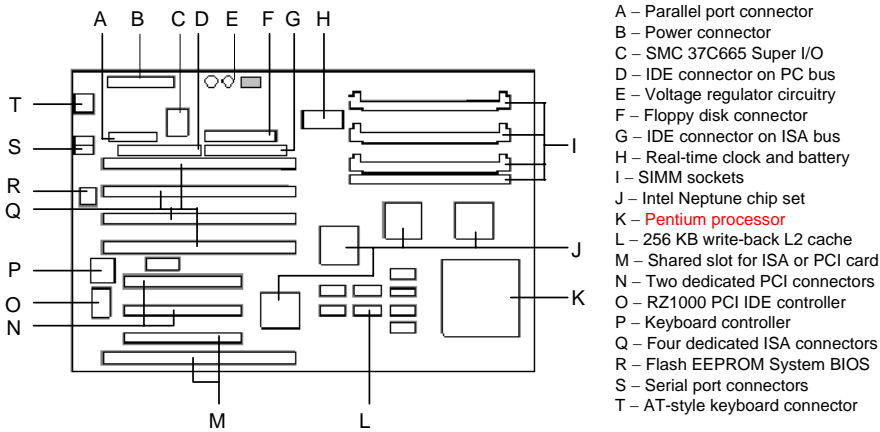


Figure 2. Premiere/PCI II baseboard components

### CPU

The Premiere/PCI II Baby-AT Baseboard is designed to operate with 3.3 volt Pentium processors and is offered with the 75 MHz, 90 MHz, or 100 MHz Pentium processor.

The following matrix summarizes which Printed Board Assemblies (PBAs) support which processor speeds:

Processor Speeds supported	75 MHz or 90 MHz	100 MHz
PBA #s	541297, 541298, 622997, 626248	631177, 631178, 631179, 631180

The Pentium processor maintains full backward compatibility with the 8086, 80286, i386™ and i486™ processors. It supports both read and write burst mode bus cycles, and includes separate 8 KB on-chip code and data caches which employ a write-back policy. Also integrated into the Pentium processor is an advanced numeric coprocessor which significantly increases the speed of floating point operations while maintaining backward compatibility with i486DX math coprocessors and complying with ANSI/IEEE standard 754-1985.

Based on a 0.6 micron process, the Pentium processor is driven by 3.3 volts Vcc (as opposed to 5 volts), reducing the power requirements of the Premiere/PCI II. A patented on-board voltage regulator circuit delivers the required 3.3 volts from the 12 volts provided by a standard PC power supply.

Some versions of the Pentium processor support Intel's SMM power-management operation. Systems using the Premiere/PCI II baseboard with these processors and low-power peripherals may qualify for the Energy Star computers program.

### PERFORMANCE UPGRADE

A 75 MHz system can be upgraded by installing a 90 MHz Pentium processor and changing the CPU Speed jumper setting (due to design differences, 75 MHz or 90 MHz Premiere/PCI II products cannot be upgraded with a 100 MHz processor). A 296-pin Zero Insertion Force socket also provides the users of 75 MHz or 90 MHz products with a Level 5 OverDrive processor performance upgrade path.

### SECOND LEVEL CACHE

The processor's internal cache is complemented by a 256 KB direct mapped, write-back second level cache implemented with 32Kx8 SRAM devices. Tag and control logic is contained in the 82434NX PCMC core logic chip.

Comentario [dc3]: Page: 4

Does the same fab (PBA) support all three speeds, 100mhz? And if so we need to make it clear how the customer can tell. This either is inaccurate, or leaving a lot to question.

Comentario [dc4]: Page: 4

Comentario [dc5]: Page: 4

What are the limitations? The phone is going to ring if we don't explain it in the "technical" product summary. Can the user reprogram to 90mhz and run the overdrive processor?

Comentario [BK6]:

## **SYSTEM MEMORY**

The Premiere/PCI II baseboard provides four 72-pin SIMM sites for memory expansion. The sockets support 256K x 36 (1 MB), 512K x 36 (2 MB), 1M x 36 (4 MB), 2M x 36 (8 MB), 4M x 36 (16 MB), and 8M x 36 (32 MB) SIMM modules. Minimum memory size is 2 MB and maximum memory size, using four 8M x 36 SIMM modules, is 128 MB. Memory timing requires 70 ns fast page devices. Parity generation and checking is provided for each byte. The parity generation and checking circuitry is automatically enabled or disabled by the system BIOS depending on the type of DRAM installed. Parity will only be enabled if all installed DRAM SIMMs are 36 bits. Any installed 32 bit SIMMs, non-parity, will disable the parity circuit.

The four sockets are arranged as Bank A and Bank B, with each bank consisting of two sockets and providing a 64-bit wide data path and an optionally functional 8 bit parity path. Both SIMMs in a bank must be of the same memory size and type, although Banks A and B may have different types of memory installed. Bank A only, Bank B only, or both banks may be populated. There are no jumper settings required for the memory size, which is automatically detected by the system BIOS. Tin lead SIMMs are required to be used when adding DRAM.

The memory array is controlled by the Intel 83434NX PCMC and data buffering is provided by two Intel 82433NX Local Bus Extension devices.

## **EXPANSION SLOTS**

Up to seven expansion slots may be populated on the Premiere/PCI II baseboard. There are five ISA bus expansion connectors and three PCI expansion connectors. One slot is shared by connectors that will accommodate either an ISA or a PCI expansion card, but not both at the same time; thus accounting for the disparity between the number of slots and connectors. All three PCI expansion slots accept PCI master cards, and fully support the PCI specification.

The board design limits the add-in card length of three slots. The height of the CPU heat sink limits the two inner PCI connectors to short PCI cards, and SIMM memory limits the length of cards installed in the outer ISA connector.

### **PCI 3.3 VOLT CAPABILITIES**

To maintain strict compliance with the PCI specification, the baseboard provides a connector which can be used to route 3.3 volt power to the PCI slots. The connector may be used with a separate 3.3 volt power supply or with a custom designed voltage converter. Note: the on-board regulator provides power to the CPU and not the PCI slots.

### **IDE SUPPORT**

The Premiere/PCI II baseboard provides two IDE interfaces. The primary interface uses the PC Tech RZ1000 chip which resides on the baseboard's PCI bus; no PCI slot is consumed. IDE mode-3 operation is supported to maximize bandwidth between the RZ1000 and the drive, and the BIOS supports 32 bit programmed I/Os to maximize bandwidth between the processor and RZ1000. A secondary IDE interface is implemented on the ISA bus using the SMC 37C665. Type F DMA access to this device is supported by the system BIOS. The system BIOS supports Logical Block Addressing on both IDE interfaces.

## **PERIPHERAL COMPONENT INTERCONNECT (PCI) CHIP SET**

The Intel Neptune chip set consists of one 83434NX PCI/Cache/Memory Controller (PCMC), two 82433NX Local Bus Extension (LBX) devices, and one 82378IB System I/O (SIO-G) bridge chip. The Neptune chip set provides the following functions:

- CPU reset control
- CPU L1 cache control
- CPU burst mode control
- CPU interface control
- Integrated second level write-back cache controller with tag comparator
- Fast Page-mode DRAM controller
- Burst memory read/write control logic
- Data bus conversion to PCI
- Parity generation/detection to memory
- AT-BUS direction control
- Chip select for keyboard controller and RTC
- Speaker control
- NMI logic
- Keyboard reset, gate A20 emulation logic
- DMA controller
- Interrupt controller and steering
- Counters/Timers

- SMI interrupt logic and timer

### 82434NX PCI/CACHE/MEMORY CONTROLLER (PCMC)

The 82434NX provides all control signals necessary to drive a second level cache and the DRAM array, including multiplexed address signals. It also controls system access to memory and generates snoop controls to maintain cache coherency.

### 82433NX LOCAL BUS EXTENSION (LBX)

There are two 82433NX components which provide data bus buffering and dual port buffering to the memory array. Controlled by the 82434NX, the 82433NX devices add one load each to the PCI bus and perform all the necessary byte and word swapping required. Memory and I/O write buffers are included in these devices.

### 82378IB-G SYSTEM I/O (SIO.G)

The 82378IB integrates seven 32-bit DMA channels, five 16-bit timer/counters, two eight-channel interrupt controllers, PCI-to-AT interrupt mapping circuitry, NMI logic, ISA refresh address generation, and PCI/ISA bus arbitration circuitry together onto the same device.

Detailed information on the chip set is available in the Intel 82430 PCISet data sheet.

## SMC 37C665 SUPER I/O CONTROLLER

Control for the integrated serial ports, parallel port, floppy drive and secondary IDE hard drive interface is incorporated into a single component, the SMC FDC37C665. This component provides:

- Two NS16C552-compatible UARTs with send/receive 16 byte FIFO
- Multi-mode bi-directional parallel port
  - Standard mode; IBM and Centronics compatible
  - Enhanced Parallel Port (EPP) with BIOS/Driver support
  - High Speed mode; Enhanced Capabilities Port (ECP) compatible
- Industry standard floppy controller with 16 byte data FIFO (2.88 MB floppy support)
- Type-F DMA capable secondary IDE interface

Header pins located near the back of the board allow cabling to use these interfaces. The serial ports can be enabled as COM1, COM2, or disabled. The parallel port can be configured via Setup as normal, extended, or disabled.

## KEYBOARD INTERFACE

An Intel 8242 surface mount microcontroller contains the Phoenix Technologies PE keyboard/mouse controller code. Besides providing traditional keyboard and mouse control functions, this keyboard controller allows hot-key sequences to immediately power-down the system.

An AT keyboard connector is located on the back panel side of the baseboard. The 5V lines to this connector is protected with a PolySwitch\* circuit which acts much like a self-healing fuse, re-establishing the connection after an over-current condition is removed. While this device eliminates the possibility of having to replace a fuse, care should be taken to turn off the system power before installing or removing a keyboard or mouse.

The 8242 microcontroller code supports Power-On/Reset (POR) password protection. The POR password is set via the Setup program. The keyboard controller also provides for the following "hot key" sequences:

- <CTRL><ALT><DEL>: System software reset. This sequence performs a software reset of the system by jumping to the beginning of the BIOS code and running the POST operation.
- <CTRL><ALT><+> and <CTRL><ALT><->: Turbo mode selection. <CTRL><ALT><-> sets the system for de-turbo mode, emulating an 8 MHz AT, and <CTRL><ALT><+> sets the system for turbo mode. Changing the Turbo mode may be prohibited by an operating system, or when the CPU is in Protected mode or virtual x86 mode under DOS.
- Power down and coffee-break sequences (available in varying levels of efficiency, depending on whether the Pentium processor supports SMM).

#### Comentario [dc7]: Page: 6

The system will still power down. ie the video, and hard drive, but the cpu only halts, it does not stop clock which save about 6-7Watts. So coffee breaking is available with Phase II it just isn't as efficient as when you have a B3 stepping of the CPU installed.

## DALLAS DS12887 REAL TIME CLOCK, CMOS RAM AND BATTERY

The Real Time Clock, RTC, is implemented using a Dallas DS12887 device. The DS12887 is accurate to within 13 minutes/year and requires no external support, the battery and oscillator are integrated into the device. The component has an estimated lifetime of ten years.

The RTC can be set via the BIOS SETUP Program. CMOS memory supports the standard 128-byte battery-backed RAM, fourteen bytes for clock and control registers, and 114 bytes of general purpose non-volatile CMOS RAM. All CMOS RAM is reserved for BIOS use. The CMOS RAM can be set to specific values or cleared to the system default values using the BIOS SETUP program. Also, the CMOS RAM values can be cleared to the system defaults by using a hardware jumper. Appendix B lists jumper configurations.

## SYSTEM BIOS

The Premiere/PCI ED baseboard uses an American Megatrends Incorporated (AMI) Pentium ROM BIOS, which is stored in Flash EEPROM and easily upgraded using a floppy disk-based program. BIOS upgrades will be downloadable from the Intel Applications Support electronic bulletin board service. In addition to the AMIBIOS, the Flash EEPROM also contains the Setup utility, Power-On Self Tests (POST), update recovery code, and the PCI auto-configuration utility. This baseboard supports system BIOS shadowing, allowing the BIOS to execute from 32-bit on-board write-protected DRAM.

The BIOS displays a sign-on message during POST identifying the type of BIOS and a five-digit revision code. The initial production BIOS in the Premiere/PCI II will be identified as 1.00.01.AX1. As BIOS updates occur the revision number will increase to 1.00.02.AX1, and so on.

Information on BIOS functions can be found in the *IBM PS/2 and Personal Computer BIOS Technical Reference* published by IBM, and the *ISA and EISA Hi-Flex AMIBIOS Technical Reference* published by AMI. Both manuals are available at most technical bookstores.

## FLASH IMPLEMENTATION

The Intel 28F001BXT 1 Mb Flash component is organized as 128K x 8 (128 KB). The Flash device is divided into five areas, as described in Table 1.

System Address		FLASH Memory Area
F0000H	FFFFFH	64 KB Main BIOS
EE000H	EFFFBH	8 KB Boot Block (Not FLASH erasable)
ED000H	EDFBFH	4 KB Plug and Play ESCD Storage Area
EC000H	ECFBFH	4 KB OEM Logo Area
E0000H	EBFBFH	48 KB System BIOS Reserved

Table 1. Flash memory organization

The Flash device resides in system memory in two 64 KB segments starting at E0000H, and can be mapped two different ways, depending on the mode of operation. In *Normal Mode*, address line A16 is inverted, setting the E000H and F000H segments so that the BIOS is organized as shown in the system address column above. *Recovery mode* removes the inversion on address line A16, swapping the E000H and F000H segments so that the 8 KB boot block resides at FE000H where the CPU expects the bootstrap loader to exist. This mode is only necessary in the unlikely event that a BIOS upgrade procedure is interrupted, causing the BIOS area to be left in an unusable state. For information on recovering in the event of a catastrophic failure, refer to Appendix I.

## BIOS UPGRADES

FLASH memory makes distributing BIOS upgrades easy. A new version of the BIOS can be installed from a diskette. BIOS upgrades will be available as downloadable files on the Intel bulletin board.

The disk-based Flash upgrade utility, FMUP.EXE, has three options for BIOS upgrades:

- The Flash BIOS can be updated from a file on a disk;
- The current BIOS code can be copied from the Flash EEPROM to a disk file as a backup in the event that an upgrade cannot be successfully completed; or
- The BIOS in the Flash device can be compared with a file to ensure the system has the correct version.

Comentario [dc8]: Page: 7  
The logo area now resides at EC000-ECFFF, and the ECSD area is from ED000-EDFFF, which changes the not used area to E0000-EBFFF.

The upgrade utility ensures the upgrade BIOS extension matches the target system to prevent accidentally installing a BIOS for a different type of system. Security to prevent unauthorized changes to the BIOS is provided via a write-protect jumper on the baseboard. The default setting is to allow BIOS upgrades. A recovery jumper is provided to allow recovery in the unlikely event of an unsuccessful BIOS upgrade. The jumper forces the ROM decode to access a 32 KB block of write protected recovery code in the Flash device.

### **SETUP UTILITY**

The ROM-based Setup utility allows the configuration to be modified without opening the system for most basic changes. The Premiere/PCI II baseboard also incorporates many new capabilities into the Flash EEPROM, including:

- Auto configuration of IDE hard disks (manual selection of the drive type is no longer required).
- Support for two IDE disk interfaces (primary and secondary) providing access to 4 IDE devices (when a second IDE controller is added on the PCI or ISA bus).
- An option allowing the user to assign a block of addresses below the 1 MB boundary as non-shadowed, non-cached. This area is primarily used for expansion card ROM which causes timing problems when shadowed and cached.
- [ISA interrupts IRQ9, IRQ10, IRQ11, and IRQ15 may be assigned to add-in card ISA adapters, thereby informing the PCI configuration utility which interrupts not to use.](#)

The Setup utility is accessible only during the Power-On Self Test, POST, by pressing the <DEL> or <F1> key after the POST memory test has begun and before boot begins. A prompt may be enabled that informs users to press the <F1> key to access Setup. A baseboard jumper can be set to prevent user access to Setup for security purposes. Setup options are detailed in Appendix G.

### **PCI AUTO-CONFIGURATION CAPABILITY**

The PCI auto-configuration utility operates in conjunction with the system Setup utility to allow the insertion and removal of PCI cards to the system without user intervention. When the system is turned on after adding a PCI add-in card, the BIOS automatically configures interrupts, DMA channels, I/O space, and other parameters. The user does not have to configure jumpers or worry about potential resource conflicts. Because PCI cards use the same interrupt resources as ISA cards, the user must specify the interrupts used by ISA add-in cards in the Setup utility. The PCI Auto-Configuration function complies with version 2.0G of the PCI BIOS specification.

### **ISA PLUG & PLAY CAPABILITY**

[The BIOS will incorporate ISA Plug and Play capabilities as delivered by Intel Architectural Labs Plug and Play Release 1.1.](#) This will allow auto-configuration of Plug and Play ISA cards, and resource management for legacy ISA cards, when used in conjunction with the ICU, ISA Configuration Utility. Copies of the IAL Plug and Play specification may be obtained via FaxBack (800) 628-2283, or via CompuServe by typing Go PlugPlay.

### **POWER MANAGEMENT CAPABILITY**

[The Premiere/PCI II baseboard supports power management via System Management Mode, SMM, interrupts to the CPU and Advanced Power Management, APM, BIOS support.](#) In general, power management capabilities allow the system to be put into a power managed state by either an explicit hot-key combination being entered by the user, or by the expiration of a hardware timer which detects system inactivity for a user-configurable amount of time. When in power managed state the board is capable of telling the disk drive and graphics controllers to enter a power managed state, and of reducing CPU power consumption.

### **FLASH LOGO AREA**

Premiere/PCI II supports a 4 KB programmable FLASH user area located at EC000-ECFFF. An OEM may use this area to display a custom logo. The Premiere/PCI II BIOS accesses the user area just after completing POST.



## SECURITY FEATURES

### BIOS Password

A BIOS password feature provides security during the boot process. A password can be set using the Setup utility, and must be entered prior to peripheral boot or keyboard/mouse operation. The second option is considered "network password"; it allows the system to fully boot, but the keyboard is nonoperational until the password is typed. To enable, disable, or change the password, refer to the Setup program options in Appendix G.

If the password is forgotten, it can be cleared by turning off the system and setting the "password clear" jumper to the clear position.

### Setup Enable Jumper

A baseboard jumper controls access to the BIOS Setup utility. By setting jumper to the disable position, the user is prevented from accessing the Setup utility during the Power-On Self Test or at any other time.

## CONNECTORS

### FRONT PANEL CONNECTIONS

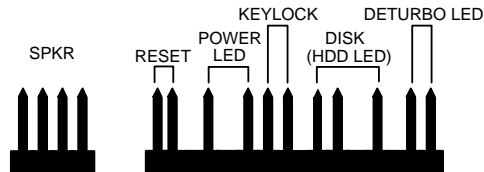


Figure 3. Front Panel Connectors

The external speaker provides error beep code information during the Power-On Self Test if the system cannot use the video interface. See Appendix H – AMIBIOS Error Messages and Beep Codes for more information about error beep codes.

### BACK PANEL CONNECTIONS

The back panel provides external access to either the standard AT-style keyboard. Figure 4 shows the general location of the keyboard connector.

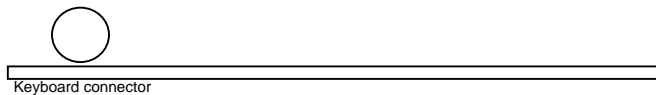


Figure 4. Premiere/PCI II AT Style Back panel.

### I/O CONNECTIONS

The baseboard contains shroud-less stake pin header connections for cabling the serial, parallel, floppy, and IDE interfaces. Appendix C shows the locations of these connectors, orientation of pin 1 on each, the numbering of each connector, and for IDE and Floppy, the missing key pin.

## System Level Features

### CHASSIS

The Premiere/PCI II Expandable Desktop easily provides the expandability required for most traditional PC applications – seven peripheral bays, seven expansion slots, an ample 200 watt power supply and an additional fan located at the front left side of the chassis to help keep the system cool. The user can access five of the peripheral bays from the front of the chassis. The Premiere/PCI II also meets stringent environmental requirements.

### PERIPHERAL BAYS

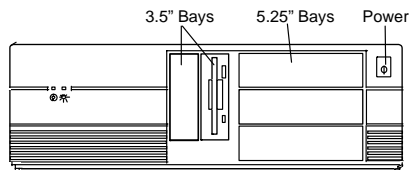


Figure 5: Premiere/PCI II Expandable Desktop Front Panel

Seven expansion bays are available for peripherals and other devices. These include three 5¼" half-height bays and two 3½" one-inch bays accessible from the front panel. Two internal 3½" bays are located above the power supply.

### FAN

The Premiere/PCI II Expandable Desktop has two fans to keep the system cool. One fan within the power supply provides 28 cfm of air movement. The second fan, located behind the card guide, provides 26 cfm across the add-in cards and the CPU. The second fan receives 12 Vdc directly from the baseboard at stake pin location J1A1.

### EXPANSION SLOTS

The Premiere/PCI II Expandable Desktop has seven expansion card slots. Several of the slots are intended for use with less than full-length cards. One ISA slot is limited in length by the 3½" peripheral bay carrier, one ISA card slot is limited in length by the left-most SIMM socket, two ISA card slots are full length, two PCI slots are limited in length by the CPU heatsink, and one is a full length shared slot, accepting either an ISA or a PCI expansion card.

### FRONT PANEL

The Premiere/PCI II Expandable Desktop front panel consists of a power switch, a power-on LED and a hard disk access LED. Five peripheral bays also can be accessed from the front panel, as shown in Figure 5.

### BACK PANEL

The back panel consists of access panels for the expansion slots (one location is unused), two DB9 RS-232 serial ports, a bi-directional parallel port, an AT-style keyboard connector, a 115/230 voltage switch, a power supply input, an auxiliary power output and the power supply fan. Punch-out locations also are provided for adding a second parallel port and a SCSI-2 connector.

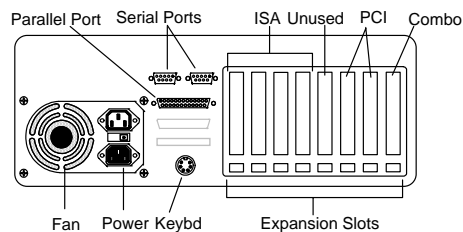


Figure 6: Premiere/PCI II Expandable Desktop Back Panel.

## POWER SUPPLY

The Premiere/PCI II Expandable Desktop integrates a 200 watt switchable power supply for all onboard resources, add-in cards, and peripherals. The Astec Corp. model SA201-3440 supports operating settings at 100-120 VAC (5 Amps AC) or 200-240 VAC (3 Amps AC). The input voltage is selected using a switch on the back of the system.

### AC POWER INPUT SPECIFICATIONS

<i>Input frequency 50/60 Hz</i>	
<i>AC Voltage</i>	<i>Current</i>
90-135	5.0 A
180-265	3.0 A

Table 2. Power Supply Input Specifications.

### DC OUTPUT SPECIFICATIONS

<i>DC Voltage</i>	<i>Max. Continuous Current</i>	<i>Peak Current 15 Seconds</i>	<i>Minimum Current Load</i>
+5V	22.0A	-	3.0A
-5V	0.5A	-	0A
+12V	8.0A	9.0 A	0A
-12V	0.5A	-	0A

Table 3. Power Supply DC Output Specifications.

## POWER CONSUMPTION

Table 4 lists the current used by system resources in a configuration which includes 8 MB of DRAM. Table 5 lists the typical power consumed by the same configuration. Note that the 3.3 volts used to drive the CPU and core logic is derived from an on-board voltage regulator from the +12 volt source. This information is preliminary and is provided only as a guide for calculating approximate total system power usage with additional resources added.

### CURRENT

<i>DC Voltage</i>	<i>Typical Current*</i>
+5V	2.7 amps
-5V	120 milliamps
+12V	780 milliamps
-12V	90 milliamps

Table 4. Premiere/PCI II current requirements (preliminary)

\*Calculated with 8 MB DRAM, VGA controller and floppy drive, while idle at DOS prompt

### WATTS

<i>Resource</i>	<i>Typical Power*</i>
Premiere/PCI II baseboard, 8 MB (4 MB in each of two banks), 256 KB cache	24.7 Watts
Teac 3½" Floppy drive	1.7 Watts

Table 5. Current use by system resources (preliminary)

\*Calculated with 8 MB DRAM, VGA controller and floppy drive, while idle at DOS prompt

## FLOPPY DRIVE

The Premiere/PCI II Expandable Desktop integrates a 3½" Teac Floppy drive Model FD-235HF into the right 3½" bay. This is the same proven floppy disk drive that has been used on many previous Intel systems.

## SPEAKER

The standard system ships with an external speaker installed. The user may enable/disable the device using the Setup utility or program the speaker via port 61H. The speaker provides error beep code information during POST if the system cannot use the video interface. The product guide contains detailed beep and error code information.

## CHASSIS COLOR

The chassis color is beige. The bottom and back of the chassis are not painted.

**Comentario [DS9]:** Page: 11  
Still need to get real power consumption figures.

## Appendix A – User-Installable Upgrades

### SYSTEM MEMORY

Table A-1 shows the possible memory combinations. The Premiere/PCI II will support both parity and non-parity SIMMs, but they cannot be mixed within the same memory bank. If both parity and non-parity SIMMs are combined in the system all memory will be treated as non-parity. SIMM requirements are 70ns, Fast Page Mode, with tin-lead connectors.

<i>SIMM 1,2 (Bank 0)</i> <i>SIMM Type (Amount)</i>	<i>SIMM 3,4 (Bank 1)</i> <i>SIMM Type (Amount)</i>	<i>Total System Memory</i>
256K X 36 (1 MB)	Empty	2 MB
256K X 36 (1 MB)	256K X 36 (1 MB)	4 MB
256K X 36 (1 MB)	512K X 36 (2 MB)	6 MB
256K X 36 (1 MB)	1M X 36 (4 MB)	10 MB
256K X 36 (1 MB)	2M X 36 (8 MB)	18 MB
256K X 36 (1 MB)	4M X 36 (16 MB)	34 MB
256K X 36 (1 MB)	8M X 36 (32 MB)	66 MB
512K X 36 (2 MB)	Empty	4 MB
512K X 36 (2 MB)	256K X 36 (1 MB)	6 MB
512K X 36 (2 MB)	512K X 36 (2 MB)	8 MB
512K X 36 (2 MB)	1M X 36 (4 MB)	12 MB
512K X 36 (2 MB)	2M X 36 (8 MB)	20 MB
512K X 36 (2 MB)	4M X 36 (16 MB)	36 MB
512K X 36 (2 MB)	8M X 36 (32 MB)	68 MB
1M X 36 (4 MB)	Empty	8 MB
1M X 36 (4 MB)	256K X 36 (1 MB)	10 MB
1M X 36 (4 MB)	512K X 36 (2 MB)	12 MB
1M X 36 (4 MB)	1M X 36 (4 MB)	16 MB
1M X 36 (4 MB)	2M X 36 (8 MB)	24 MB
1M X 36 (4 MB)	4M X 36 (16 MB)	40 MB
1M X 36 (4 MB)	8M X 36 (32 MB)	72 MB
2M X 36 (8 MB)	Empty	16 MB
2M X 36 (8 MB)	256K X 36 (1 MB)	18 MB
2M X 36 (8 MB)	512K X 36 (2 MB)	20 MB
2M X 36 (8 MB)	1M X 36 (4 MB)	24 MB
2M X 36 (8 MB)	2M X 36 (8 MB)	32 MB
2M X 36 (8 MB)	4M X 36 (16 MB)	48 MB
2M X 36 (8 MB)	8M X 36 (32 MB)	80 MB
4M X 36 (16 MB)	Empty	32 MB
4M X 36 (16 MB)	256K X 36 (1 MB)	34 MB
4M X 36 (16 MB)	512K X 36 (2 MB)	36 MB
4M X 36 (16 MB)	1M X 36 (4 MB)	40 MB
4M X 36 (16 MB)	2M X 36 (8 MB)	48 MB
4M X 36 (16 MB)	4M X 36 (16 MB)	64 MB
4M X 36 (16 MB)	8M X 36 (32 MB)	96 MB
8M X 36 (32 MB)	Empty	64 MB
8M X 36 (32 MB)	256K X 36 (1 MB)	66 MB
8M X 36 (32 MB)	512K X 36 (2 MB)	68 MB
8M X 36 (32 MB)	1M X 36 (4 MB)	72 MB
8M X 36 (32 MB)	2M X 36 (8 MB)	80 MB
8M X 36 (32 MB)	4M X 36 (16 MB)	96 MB
8M X 36 (32 MB)	8M X 36 (32 MB)	128 MB

Table A-1. Possible SIMM memory combinations  
Note: SIMMs may be parity (x 36) or non-parity (x 32)

## Appendix B – Jumpers

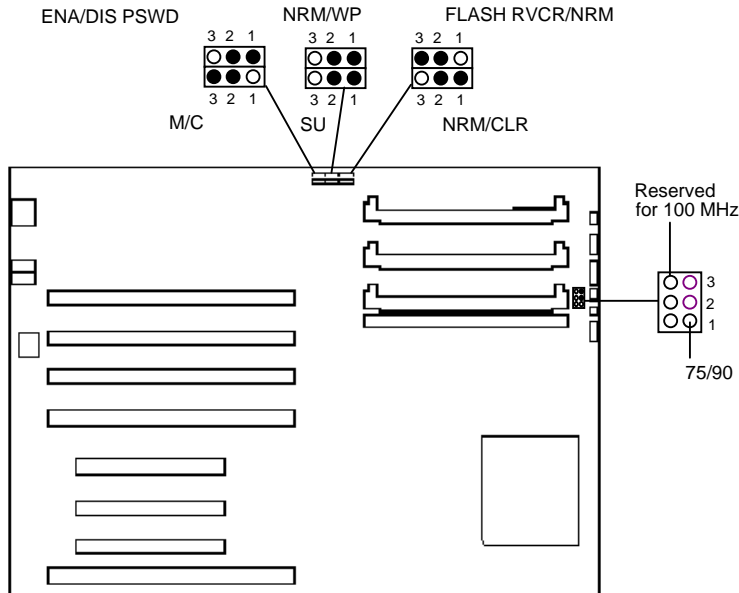


Figure B-1. Jumper locations and settings (• denotes default settings)

### **75/90 (CPU SPEED) – J1H3**

Sets the processor's internal operating frequency at 75 MHz (1-2) or 90 MHz (2-3). **The other half of the jumper set (J1H4) is used only for operation with a 100 MHz processor.**

### **RESERVED FOR 100 MHZ (CPU SPEED) – J1H4**

Used only for operation with a 100 MHz processor (1-2, with no jumper installed on J1H3).

### **FLASH RECOVERY (FLASH RCVR/NRM) – J6J2**

Allows recovery if the system Flash update process results in corrupted EPROM. 2-3 is normal mode, 1-2 is Flash recovery mode. Default is normal mode (2-3). See Appendix I – BIOS Recovery for more information.

### **CLEAR CMOS (NRM/CLR) – J6J1**

Allows CMOS settings to be reset to default values. 1-2 keeps the current CMOS settings, 2-3 clears the CMOS settings to default values. Default is to keep the current settings (1-2).

### **SETUP ENABLE (SU) – J7J1**

Controls access to CMOS Setup Utility. 1-2 allows user access to Setup, 2-3 prevents user access to Setup. Default is allow user access (1-2).

### **FLASH WRITE PROTECT (NRM/WP) – J7J2**

Allows reprogramming of Flash EPROM to be disabled. 1-2 allows Flash updates, 2-3 enables Flash write protect. Default is to allow Flash updates (1-2).

### **COLOR/MONO (M/C) – J7J3**

Chooses monochrome or color video mode at boot. 1-2 selects monochrome, 2-3 selects color. Default is color (2-3).

### **PASSWORD CLEAR (ENA/DIS PSWD) – J7J4**

Clears the system password when set to 2-3. Default is disabled (1-2).

## Appendix C – Connectors

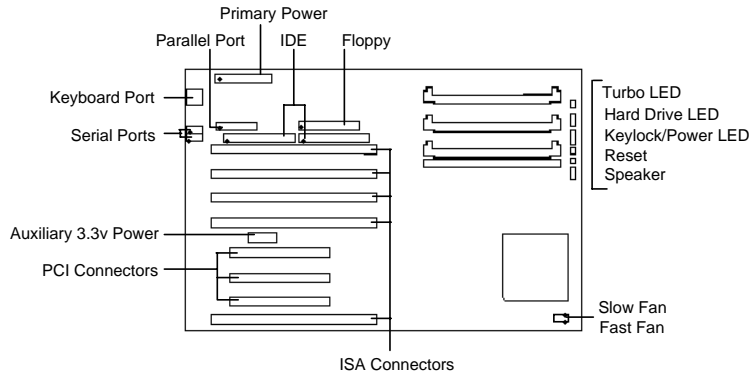


Figure C-1. Premiere/PCI II connectors (♦ indicates Pin 1 location)

### PARALLEL PORT

Signal Name	Pin	Pin	Signal Name
STROBE-	1	2	AUTO FEED-
Data Bit 0	3	4	ERROR-
Data Bit 1	5	6	INIT-
Data Bit 2	7	8	SLCT IN-
Data Bit 3	9	10	Ground
Data Bit 4	11	12	Ground
Data Bit 5	13	14	Ground
Data Bit 6	15	16	Ground
Data Bit 7	17	18	Ground
ACJ-	19	20	Ground
BUSY	21	22	Ground
PE (Paper End)	23	24	Ground
SLCT	25	26	N.C.

### IDE CONNECTORS

Signal Name	Pin	Pin	Signal Name
Reset IDE	1	2	Ground
Host Data 7	3	4	Host Data 8
Host Data 6	5	6	Host Data 9
Host Data 5	7	8	Host Data 10
Host Data 4	9	10	Host Data 11
Host Data 3	11	12	Host Data 12
Host Data 2	13	14	Host Data 13
Host Data 1	15	16	Host Data 14
Host Data 0	17	18	Host Data 15
Ground	19	20	Key
DRQ3	21	22	Ground
I/O Write-	23	24	Ground
I/O Read-	25	26	Ground
IOCHRDY	27	28	BALE
DACK3-	29	30	Ground
IRQ14	31	32	IOCS16-
Addr 1	33	34	Ground
Addr 0	35	36	Addr 2
Chip Select 0-	37	38	Chip Select 1-
Activity	39	40	Ground

### PRIMARY POWER

Pin	Name	Function
1	PWRGD	Power Good
2	+5 V	+ 5 volts Vcc
3	+12 V	+ 12 volts
4	-12 V	- 12 volts
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	-5 V	-5 volts
10	+5 V	+ 5 volts Vcc
11	+5 V	+ 5 volts Vcc
12	+5 V	+ 5 volts Vcc

### FLOPPY CONNECTOR

Signal Name	Pin	Pin	Signal Name
Ground	1	2	FDHDIN
Ground	3	4	Reserved
Key	5	6	FDEDIN
Ground	7	8	Index-
Ground	9	10	Motor Enable A-
Ground	11	12	Drive Select B-
Ground	13	14	Drive Select A-
Ground	15	16	Motor Enable B-
Ground	17	18	DIR-
Ground	19	20	STEP-
Ground	21	22	Write Data-
Ground	23	24	Write Gate-
Ground	25	26	Track 00-
Ground	27	28	Write Protect-
Ground	29	30	Read Data-
Ground	31	32	Side 1 Select-
Ground	33	34	Diskette Change-

### TURBO LED

Pin	Signal Name
1	PULL_UP_330
2	LED_TURBO-

### HARD DRIVE LED (DISK)

Pin	Signal Name
1	PULL_UP_330
2	HD ACTIVE-
3	Key
4	PULL_UP_330

### KEY LOCK/POWER LED

Pin	Signal Name
1	LED_PWR
2	Key
3	Ground
4	KEY LOCK
5	Ground

### RESET CONNECTOR

Pin	Signal Name
1	RESET
2	Ground

### SPEAKER CONNECTOR

Pin	Signal Name
1	SPKR_DAT
2	Key
3	No Connect
4	+5V Vcc

### ISA CONNECTORS

Signal Name	Pin	Pin	Signal Name
GND	B1	A1	IOCHK-
RSTDRV	B2	A2	SD7
Vcc	B3	A3	SD6
IRQ9	B4	A4	SD5
-5V	B5	A5	SD4
DRQ2	B6	A6	SD3
-12V	B7	A7	SD2
0WS-	B8	A8	SD1
+12V	B9	A9	SD0
GND	B10	A10	IOCHRDY
SMEMW-	B11	A11	AEN
SMEMR-	B12	A12	SA19
IOW-	B13	A13	SA18
IOR-	B14	A14	SA17
DACK3-	B15	A15	SA16
DRQ3	B16	A16	SA15
DACK1-	B17	A17	SA14
DRQ1	B18	A18	SA13
REFRESH-	B19	A19	SA12
SYSCLK	B20	A20	SA11
IRQ7	B21	A21	SA10
IRQ6	B22	A22	SA9
IRQ5	B23	A23	SA8
IRQ4	B24	A24	SA7
IRQ3	B25	A25	SA6
DACK2-	B26	A26	SA5
TC	B27	A27	SA4
BALE	B28	A28	SA3
Vcc	B29	A29	SA2
OSC	B30	A30	SA1
GND	B31	A31	SA0
	KEY	KEY	
MEMCS16-	D1	C1	SBHE-
IOCS16-	D2	C2	LA23
IRQ10	D3	C3	LA22
IRQ11	D4	C4	LA21
IRQ12	D5	C5	LA20
IRQ15	D6	C6	LA19
IRQ14	D7	C7	LA18
DACK0-	D8	C8	LA17
DRQ0	D9	C9	MEMR-
DACK5-	D10	C10	MEMW-
DRQ5	D11	C11	SD8
DACK6-	D12	C12	SD9
DRQ6	D13	C13	SD10
DACK7-	D14	C14	SD11
DRQ7	D15	C15	SD12
Vcc	D16	C16	SD13
Master-	D17	C17	SD14
GND	D18	C18	SD15

## PCI CONNECTORS

Signal Name	Pin	Pin	Signal Name
GND	A1	B1	-12V
+12V	A2	B2	No Connect
No Connect	A3	B3	GND
No Connect	A4	B4	No Connect
Vcc	A5	B5	Vcc
PCIINT3-	A6	B6	Vcc
PCIINT1-	A7	B7	PCIINT2-
Vcc	A8	B8	PCIINT4-
Reserved	A9	B9	No Connect
Vcc	A10	B10	Reserved
Reserved	A11	B11	No Connect
GND	A12	B12	GND
GND	A13	B13	GND
Reserved	A14	B14	Reserved
SPCIRST-	A15	B15	GND
Vcc	A16	B16	PCLKE
AGNT-	A17	B17	GND
GND	A18	B18	REQA-
Reserved	A19	B19	Vcc
AD30	A20	B20	AD31
3.3V	A21	B21	AD29
AD28	A22	B22	GND
AD26	A23	B23	AD27
GND	A24	B24	AD25
AD24	A25	B25	3.3V
AD22 (DSEL)	A26	B26	CBE3-
3.3V	A27	B27	AD23
AD22	A28	B28	GND
AD20	A29	B29	AD21
GND	A30	B30	AD19
AD18	A31	B31	3.3V

Signal Name	Pin	Pin	Signal Name
AD16	A32	B32	AD17
3.3V	A33	B33	CBE2-
FRAME-	A34	B34	GND
GND	A35	B35	IRDY-
TRDY-	A36	B36	3.3V
GND	A37	B37	DEVSEL-
STOP-	A38	B38	GND
3.3V	A39	B39	PLOCK-
SDONE	A40	B40	PERR-
SBO-	A41	B41	3.3V
GND	A42	B42	SERR-
PAR	A43	B43	3.3V
AD15	A44	B44	CBE1-
3.3V	A45	B45	AD14
AD13	A46	B46	GND
AD11	A47	B47	AD12
GND	A48	B48	AD10
AD9	A49	B49	GND
KEY	A50	B50	KEY
KEY	A51	B51	KEY
CBEO-	A52	B52	AD8
3.3V	A53	B53	AD7
AD6	A54	B54	3.3V
AD4	A55	B55	AD5
GND	A56	B56	AD3
AD2	A57	B57	GND
AD0	A58	B58	AD1
Vcc	A59	B59	Vcc
SREQ64-	A60	B60	SACK64-
Vcc	A61	B61	Vcc
Vcc	A62	B62	Vcc

## AUXILIARY (3.3V) POWER

Pin	Name	Function
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	+3.3 V	+ 3.3 volts
5	+3.3V	+ 3.3 volts
6	+3.3 V	+ 3.3 volts

## AT STYLE KEYBOARD PORT

Pin	Signal Name
1	Clock
2	Data
3	No Connect
4	Ground
5	Vcc (fused)

## SERIAL PORTS

Pin	Signal Name
1	DCD
2	DSR
3	Serial In - (SIN)
4	RTS
5	Serial Out - (SOUT)
6	CTS
7	DTR
8	RI
9	GND
10	N.C.

## SLOW FAN/ FAST FAN POWER

Pin	Slow Fan - J1A2	Fast Fan - J1A1
1	Ground	Ground
2	125 mA max.	400 mA max.
3	Ground	Ground



## Appendix D – Memory Map

Address Range (Deci-)	Address Range (hex)	Size	Description
1024K-131072K	100000-8000000	130048K	Extended Memory
960K-1023K	F0000-FFFFF	64K	AMI System BIOS
952K-959K	EE000-EFFFF	8K	FLASH Boot Block (Available as HIMEM)
948K-951K	ED000-EDFFF	4K	ECSD (Plug and Play Configuration area)
944K-947K	EC000-ECFFF	4K	OEM Logo Area (Available as UMB)
896K-943K	E0000-EBFFF	48K	BIOS Reserved (Available as UMB)
640K-895K	A0000-DFFFF	256K	Available High DOS Memory (open to the ISA & PCI bus)
639K	9FC00-9FFFF	1K	Extended BIOS Data (moveable by QEMM, 386MAX)
512K-638K	80000-9BFFF	127K	Extended conventional
0K-511K	00000-7FFFF	512K	Conventional

Table D-1. Premiere/PCI II memory map

## Appendix E – I/O Map

Address (hex)	Size	Description
0000 - 000F	16	SIO - DMA 1
0020 - 0021	2	SIO - Interrupt Controller 1
0040 - 0043	4	SIO - Timer 1
0048 - 004B	4	SIO - Timer 2
0060	1	Keyboard Controller Data Byte
0061	1	SIO - NMI, speaker control
0064	1	Kbd Controller, CMD/STAT
0070, bit 7	1 bit	SIO - Enable NMI
0070, bits 6:0	7 bits	SIO - Real Time Clock,
0071	1	SIO - Real Time Clock, Data
0073	1	Reserved - Brd. Config.
0075	1	Reserved - Brd. Config.,RD
0078	1	SIO - BIOS Timer
0080 - 008F	16	SIO - DMA Page Register
00A0 - 00A1	2	SIO - Interrupt Controller 2
00C0 - 00DE	31	SIO - DMA 2
00F0	1	Reset Numeric Error
0170 - 0177	8	Secondary IDE Channel

01F0 - 01F7	8	Primary IDE Channel
0278 - 027B	4	Parallel Port 2
02F8 - 02FF	8	On-Board Serial Port 2
0376	1	Secondary IDE Chan Cmd Port
0377	1	Secondary IDE Chan Stat Port
0378 - 037F	8	Parallel Port 1
03BC - 03BF	4	Parallel Port x
03E8 - 03EF	8	Serial Port 3
03F0 - 03F5	6	Floppy Channel 1
03F6	1	Primary IDE Channel Cmd Port
03F7 (Write)	1	Floppy Channel 1 Command
03F7, bit 7	1 bit	Floppy Disk Change Channel 1
03F7, bits 6:0	7	Primary IDE Channel Status Port
03F8 - 03FF	8	On-Board Serial Port 1
LPT + 400h	8	ECP port, LPT + 400h
0CF8	1	PCI Configuration Space Enable
0CF9	1	Deturbo Mode Enable
C000 - C0FF	256	82434NX Config. Registers *
C200 - C2FF	256	82378IB Config. Registers *

Table E-1. Premiere/PCI II I/O address map

\* Only accessible after PCI configuration space is enabled.

## Appendix F – Interrupts & DMA Channels

<i>IRQ</i>	<i>System Resource</i>
NMI	Parity Error
0	Reserved, Interval Timer
1	Reserved, Keyboard buffer full
2	Reserved, Cascade interrupt from slave PIC
3	Serial Port 2
4	Serial Port 1
5	Parallel Port 2
6	Floppy
7	Parallel Port 1
8	Real Time Clock
9	User available
10	User available
11	User available
12	On-board Mouse Port
13	Reserved, Math coprocessor
14	Primary IDE if enabled, else available to user
15	Secondary IDE if enabled, else available to user

Table F-1. Premiere/PCI II interrupts

<i>DMA</i>	<i>Data Width</i>	<i>System Resource</i>
0	8- or 16-bits	Open
1	8- or 16-bits	Open - Normally used for LAN
2	8- or 16-bits	Floppy
3	8- or 16-bits	Parallel Port
4		Reserved - Cascade channel
5	16-bits	Open
6	16-bits	Open
7	16-bits	ISA IDE

Table F-2. Premiere/PCI II DMA map

## Appendix G – AMIBIOS Setup

The BIOS Setup utility has four major menus: Main, Advanced, Security and Exit. Each of these menus occupies the left and center sections of the screen. Selecting certain fields within the menus will drop the user into sub-menus. On the right side of the display is a Command Screen for interacting with the Setup utility. In each of the following sections, the field which is being displayed is in **bold** type. If there are user selectable options for that field they are displayed in *italic* type. Explanations and comments about the fields and options are contained within boxes.

### COMMAND SCREEN NAVIGATION

The right side of the Setup screen contains a list of commands which are available to the user and are displayed at all times, for each menu and sub-menu.

F1 Help

Help is provided for a subset of the fields. It can not be invoked when parameter options are being displayed.

ESC Back

The ESC key provides a mechanism for backing out of any field. When the ESC key is entered from the top level of any field, the field options cease to be displayed. When the ESC key is entered from the top level of any sub-menu, the parent menu is re-entered. When the ESC key is entered from the top level of any major menu the following screen is displayed:

Exit Discarding Changes
Press Enter to Continue
Press ESC to Abort

At this point pressing the Enter key will cause the user to leave the Setup Utility without saving any changes they might have made. Pressing the ESC key will bring them back to the top level of the current menu.

Enter Select

The Enter key is used to activate sub-menus, change parameters and select parameter options.

↑ Previous Item

The up arrow is used to move to the menu item above the current item. It does not wrap around.

↓ Next Item

The down arrow is used to move to the menu item below the current item. It does not wrap around.

↔ Select Menu

The left and right arrow keys are used to move between the 4 major menus. They do not wrap around.

F5 Setup Defaults

The F5 key is used to set all Setup Parameters to default values. When this key is pressed the following message appears:

Load Setup Defaults?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then all Setup Parameters will be set to their default values. If the ESC key is selected, then the user is returned to where they were before F5 was pressed without effecting any change.

F6 Previous Values

The Previous Values key is used to set all parameters to their previous values. When pressed, the following message appears:

Discard Changes?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then all Setup Parameters will be return to the values selected when Setup was entered. If the ESC key is selected, then the user is returned to where they were before F6 was pressed without effecting any change.

F10 Save & Exit

The Save & Exit key is used to exit the Setup Utility saving the current state of all parameters When this key is pressed the following message appears:

Exit Saving Changes?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then the Setup Utility will be exited with all parameters set to their current values. If the ESC key is selected, then the user is returned to where they were before F10 was pressed without effecting any change.

### MAIN MENU NAVIGATION

Each menu contains a number of parameters. Most parameters can be changed by the user, although some are only

informative. Parameters which can be changed by the user are displayed in black, informative only parameters are displayed in blue. Depending on the security option chosen and in effect (via password), a parameter can be either changeable or non-changeable. A parameter which is non-changeable due to insufficient security privilege or other reasons will be grayed out. Parameters which have no effect based on the value other parameters are not displayed.

**MAIN MENU LEVEL**

System Date  
Month-Day-Year

The **System Date** field specifies the current date .

System Time  
Hour:Minute:Second

The **System Time** field specifies the current time.

Floppy A:  
Floppy B:  
*Disabled*  
*360 Kb, 5.25"*  
*1.2 Mb, 5.25"*  
*720Kb, 3.5"*  
*1.44 Mb, 3.5"*  
*2.88 Mb, 3.5"*

The **Floppy A: Type** and **Floppy B: Type** fields specify the physical size and maximum supported media size of the floppy drives attached to the floppy interface.

Hard Disk C:  
Hard Disk D: ....  
*Identification string returned from drive*  
*Not Installed*

The **Hard Disk C:** through **Hard Disk F:** fields report the presence of, and identification string reported by, up to 4 physical IDE drives. When the cursor is placed on one of these fields and it is selected by hitting the *Enter* Key, the **Hard Disk Sub-Menu** appears (see below) allowing parameters which affect the drives to be set.

Disk drive assignments  
Drive letters will be assigned to physical drives as follows:

Primary IDE Interface Only	
Master	C:
Slave	D:

Secondary IDE Interface Only	
Master	C:
Slave	D:

Primary & Secondary Interface, Two Drives Used	
Primary Master	C:
Secondary Master	D:

Primary & Secondary Interfaces, Three Drives Used	
Primary Master	C:
Primary slave	D:
Secondary Master	E:

Primary Master	C:
Secondary Master	D:
Secondary slave	E:

Primary & Secondary Interfaces, Four Drives Used	
Primary Master	C:
Primary Slave	D:
Secondary Master	E:
Secondary Slave	F:

When drives have multiple partitions on them, partitions beyond the primary partition will be assigned in ascending order, based on available drive letters and other installed drives. Partitions are assigned to primary partitions first (across multiple drives), and then to secondary partitions. This means that when there are multiple drives with multiple partitions, the logical drive numbering scheme may result in discontinuous logical partitions on the same physical drive.

For instance, if there is a "Drive 1" with two partitions which is a Master on the Primary IDE interface, a "Drive 2" with three partitions which is a Slave on the Primary interface, and a "Drive 3" with two partitions which is a master on the Secondary interface the drive letters will be assigned as follows:

<b>Drive 1</b>	Primary Partition	C:
	Secondary Partition	F:
<b>Drive 2</b>	Primary Partition	D:
	Secondary Partition	G:
	Tertiary Partition	H:
<b>Drive 3</b>	Primary Partition	E:
	Secondary Partition	I:

### Hard Disk Sub-Menu

Hard Disk Type

*Auto Configured -- default*

*User Definable*

**Number of Cylinders**

**Number of Heads**

**Number of Sectors**

*If Hard Disk Type = Auto Configured*

*Then parameters reported by drive*

*If Hard Disk Type = User Definable*

*Then parameters entered by user*

The **Number of Cylinders**, **Number of Heads**, and **Number of Sectors** fields display what is reported by the drive if **Hard Disk Type** is set to *Auto Configured*. If **Hard Disk Type** is set to *User Definable* then these fields are entered by the user. **Hard Disk Type** should be set to *Auto Configured* unless the drive was formatted on another system with parameters different than those reported by the drive.

Maximum Capacity

*Value calculated from Cylinder, Head, and Sector info above*

Initialization Timeout

*Disabled*

*5 Seconds*

*10 Seconds -- default*

*31 Seconds*

**Initialization Timeout** selects the number of seconds the BIOS will wait to determine if an IDE drive is present, after initiating a transaction with the drive. If a drive is present and responds to the BIOS before the Initialization Timeout period, then the BIOS will proceed, i.e. there is no boot-time penalty for a large value when a drive is present. If a drive is not present, then the BIOS will wait the Initialization Timeout period before proceeding. If a drive is present, but does not respond to the BIOS within the Initialization Timeout range, then the BIOS will not see the drive and it will not be accessible. This value should be set to *Disabled* for any IDE drives not installed. This parameter works in conjunction with the **Hard Disk Pre-Delay** parameter contained in the **Boot Options** sub-menu of the Main menu.

IDE Translation Mode

*Standard CHS -- default*

*Logical Block*

*Extended CHS*

*Auto Detected*

The **IDE Translation Mode** parameter controls the way in which the BIOS interacts with the drive in terms of drive geometry. Proper choice is dependent upon the drive's size, capabilities, and the operating system (OS) used.

*Standard CHS* is the translation mode that has been in use for years. Its use limits IDE capacity to a maximum of 528 Megabytes regardless of the size of the drive used.

*Logical Block* mode overcomes the 528 MB maximum size limitation imposed by *Standard CHS* mode. It should be used only when the drive supports LBA (Logical Block Addressing), and the OS supports LBA, or uses the BIOS to access the disk.

*Extended CHS* mode also overcomes the 528 MB maximum size limitation imposed by *Standard CHS* mode. It can be used with drives which are larger than 528 MB, but do not support LBA mode.

*Auto Detected* allows the BIOS to examine the drive and determine the optimal mode. The first choice is to utilize *Logical Block* mode if it is supported by the drive. The second choice is to utilize *Extended CHS* mode if the drive topology allows. If neither of the above two methods are possible, then *Standard CHS* mode is used. **Important NOTE: When set to Auto Detected the BIOS will detect what the drive is capable of, not the translation mechanism which was used to format the drive. If a drive is run in a mode other than the mode in which it was partitioned and formatted, unpredictable results may occur, including data loss.**

Different operating systems have different abilities regarding IDE Translation Modes:

**UNIX** operating systems (as currently implemented) do not support either LBA or ECHS and must utilize the Standard CHS method. UNIX can support drives larger than 528 MB, but does so in its own way.

**OS/2 2.1** can support LBA, ECHS or Standard CHS methods. Note that LBA support may require a switch setting on an OS/2 driver in order to operate in that mode. (\*)

**OS/2 2.0 & Novell Netware** can support either ECHS or Standard CHS methods, but not LBA.

**DOS & Windows** can support LBA, ECHS or Standard CHS methods. If the "Fast 32-bit IDE" option of Windows is utilized, make sure to

use the Standard CHS setting only, unless a version of WDCDRV.386 is being used which supports these advanced geometrys. You will get better performance NOT using "Fast 32-bit IDE" if using a drive which employs Mode 3 PIO on the PCI interface, unless using a version of WDCDRV.386 which supports these advanced modes.

Multiple Sector Setting  
*Disabled*  
*4 Sectors/Block*  
*8 Sectors/Block*  
*Auto Detected -- default*

The **Multiple Sector Setting** field controls the number of sectors which are transferred by an IDE drive per interrupt generated. If set to *Disabled*, then an interrupt will be generated for each sector transferred, even if the OS issues a multi-sector transfer. If set to *4 Sectors/Block* or *8 Sectors/Block* then 4 or 8 sectors will be transferred per interrupt (for a request that is as large as, or larger than 4 or 8 sectors). If *Auto Detected* is chosen, then x sectors will be transferred per interrupt, where x is the maximum value supported by the drive. If a drive does not support multiple sectors/block then the BIOS will ignore this setting. If the drive does not support the specific number (4 or 8) of sectors chosen, then the BIOS will default to the largest number of sectors smaller than the chosen value supported by the drive.

Fast Programmed I/O Modes  
*Disabled*  
*Auto Detected -- default*

The **Fast Programmed I/O Modes** field controls the speed in which Programmed I/O (PIO) transfers occur on the PCI IDE interface. If set to *Disabled*, transfers occur at an un-optimized (Mode 0) speed. If set to *Auto Detected*, transfers occur at the rate which the drive reports as its maximum (up to and including the maximum mode 3 timing). This field should only be set to *Disabled* if a drive is being used which incorrectly reports an ability to function with advanced timings.

## MAIN MENU LEVEL

Language  
*English (US)*  
..  
..

The **Language** field controls the language of the text strings used in Setup and the BIOS. Any installed language will appear as an option in its own language (for example, German will appear as Deutsch). Only installed languages will appear as options.

Boot Options

When the cursor is placed the **Boot Options** field and it is selected by hitting the *Enter* Key, the **Boot Options** Sub-Menu appears allowing parameters which affect the boot process to be set.

### Boot Options Sub-Menu

Boot Sequence  
*C: First, Then A:*  
*A: First, Then C: -- default*  
*C: Only*  
*A: Only*

The field controls the order in which the BIOS attempts to boot from the hard and floppy drives.

System Cache  
*Disabled*  
*Enabled -- default*

The **System Cache** field controls both the primary and secondary caches. Setting **System Cache** *Disabled* to will hurt performance, but might be required when running software which utilizes software timing loops and needs to be slowed down to execute properly.

Boot Speed  
*Turbo -- default*  
*De-turbo*

The **Boot Speed** field controls the system CPU cycles. De-turbo mode slows the CPU by disabling system cache and adding increased refresh cycles. It does not reduce CPU speed to 4.77Mhz or 8Mhz AT class machines.

Num Lock  
*Off -- default*  
*On*

The **Num Lock** field controls whether the keyboard Num Lock function is turned on or off when the system is booted.

Setup Prompt  
*Disabled*  
*Enabled -- default*

The **Setup Prompt** field controls whether the "Press <F1> Key To Enter Setup" message is displayed during POST (Power On Self Test). It does not control access, just the message.

Hard Disk Pre-Delay  
*Disabled*  
*1 Second*  
*2 Seconds*  
*3 Seconds -- default*  
*4 Seconds*  
*5 Seconds*  
*6 Seconds*  
*7 Seconds*

The **Hard Disk Pre-Delay** provides a mechanism which delays the BIOS's attempt to initialize the first IDE drive in the system. It is necessary because certain drives take longer than others to "spin up" and might hang if they are accessed too soon after being powered up or reset. The delay is only honored for the first drive accessed. This parameter works in conjunction with the **Initialization Timeout** parameter contained in the Hard Disk Sub-menu of the **Main** menu. The two are added together.

It should be noted that this new addition to the BIOS Setup is the result of our speeding up the POST process.

Typematic Rate Programming  
*Default -- default*  
*Override*

The parameter controls whether default or user configurable values are used for **Typematic Rate Delay** and **Typematic Rate** (see below). If *Default* is chosen then **Typematic Rate Delay** is set to 500 msec and **Typematic Rate** is set to 15. If *Override* is chosen the following two screens appear allowing the user to customize these values.

Typematic Rate Delay  
*250 msec -- default*  
*500 msec*  
*750 msec*  
*1000 msec*

The **Typematic Rate Delay** field controls how long it takes for the keyboard auto-repeat function to start when a key is held down.

Typematic Rate  
*6 char/sec -- default*  
*8 char/sec*  
*10 char/sec*  
*12 char/sec*  
*15 char/sec*  
*20 char/sec*  
*24 char/sec*  
*30 char/sec*

The **Typematic Rate Delay** field controls the speed characters repeat when you hold down a keyboard key. The higher the number, the faster the repeat.

## MAIN MENU LEVEL

Video Mode

The **Video Mode** field is informative only.

Mouse

The **Mouse** field is informative only. If the system supports a PS/2 style mouse, and the mouse is installed, this field will be displayed. If the system does not support a PS/2 style mouse, or if it does and the mouse is not installed, this field will not be displayed.

Base Memory

This **Base Memory** field is informative only. There is another **Base Memory** field which can be changed in the **Advanced Chipset Configuration** Sub-Menu of the **Advanced** menu.

Extended Memory

The **Extended Memory** field is informative only. Amount of system memory above 1 Megabyte

## ADVANCED MENU

Processor Type  
Processor Speed  
Cache Size

The **Processor Type**, **Processor Speed**, and **Cache Size** fields are informative only and can not be changed by the user. **Cache Size** refers to the L2 cache only.

Peripheral Configuration  
Advanced Chipset Configuration  
Power Management Configuration  
Plug and Play Configuration

The **Peripheral Configuration**, **Advanced Chipset Configuration**, **Power Management**, and **Plug and Play Configuration** fields are used to enter sub-menus where these areas are configured. Press Enter to access.

## PERIPHERAL CONFIGURATION SUB-MENU

Configuration Mode  
*Auto -- default*  
*Manual*

The **Configuration Mode** fields controls whether on board resources are manually or automatically set up. When set to *Auto*, on board system peripherals (IDE drives, Floppy Drive, Serial Ports, Parallel Port) are automatically configured during power up. When set to *Manual*, system peripherals must be explicitly configured. The following 6 fields (**PCI IDE Interface** to **Parallel Port Address**) are only user accessible when **Configuration Mode** is set to *Manual*.

PCI IDE Interface  
*Enabled -- default*  
*Disabled*  
Floppy Interface  
*Enabled -- default*  
*Disabled*

**PCI IDE Interface** and **Floppy Interface** allow these drive interfaces to be individually enabled or disabled.

Serial Port 1 Address  
*Disabled*  
*COM1, 3F8h -- default*  
*COM2, 2F8h*  
*COM3, 3E8h*  
*COM4, 2E8h*  
Serial Port 2 Address  
*Disabled*  
*COM1, 3F8h*  
*COM2, 2F8h -- default*  
*COM3, 3E8h*  
*COM4, 2E8h*

The **Serial Port 1 Address**, **Serial Port 2 Address** fields allow the user to select the I/O ports used by these interfaces. If a COM port is chosen for one of the Serial Port Addresses, it will not appear in the option list for the other Serial Port Address, i.e. if one of the Serial Port Addresses is set to *Disabled*, then there will be four choices for the other serial port address. Otherwise there will be three choices.

Parallel Port Address  
*Disabled*  
*LPT3, 3BCh*  
*LPT1, 378h -- default*  
*LPT2, 278h*

The **Parallel Port Address** fields allow the user to select the I/O ports used by these interfaces.

Parallel Port Mode  
*Compatible -- default*  
*Extended*  
*EPP*  
*ECP*

When set to *Compatible*, the parallel port will be set up in a mode compatible with the original AT. When set to *Extended* the parallel port will be set up in the most advanced mode allowed by the chipset (ex. EPP, ECP). EPP and ECP modes can also be set manually.

**Comentario [dc10]:** Page: 25  
Parallel modes supported on Phase II, plato were Compatible, EPP,ECP, both ecp and epp. This is changing on BIOS 11 to be compatible, Extended, EPP, ECP. This is most likely where all systems will end up.



Serial Port 1 IRQ  
*Interrupt Used*  
 Serial Port 2 IRQ  
*Interrupt Used*  
 Parallel Port IRQ  
*Interrupt Used*

The **Serial Port 1 IRQ**, **Serial Port 2 IRQ** and **Parallel Port IRQ** fields display the interrupts used by the Serial and Parallel Ports. These values may not be changed by the user. If an interface is disabled via the **Serial Port 1 Address**, **Serial Port 2 Address**, or **Parallel Port Address** fields, then the associated interrupt is not displayed, and is available for use by add in cards.

### ADVANCED CHIPSET CONFIGURATION SUB-MENU

Base Memory Size  
 512KB  
 640 KB -- default

The **Base Memory Size** field controls the mapping of addresses between 512K and 640K (80000h-9FFFFh). If 512KB is chosen then accesses between 512K and 640K are directed to the ISA bus. When 640 KB is selected accesses between 512K and 640K are directed to system DRAM. Unless using an ISA card which requires access to this particular address range this field should be set to 640 KB.

ISA Bus Speed  
 Compatible -- default  
 Enhanced

The **ISA Bus Speed** field controls the speed of the ISA Bus clock. If set to *Compatible* the speed will fall within the limits defined by the IBM AT Technical Reference (6-8.33 Mhz). If set to *Enhanced* the speed will be greater than the maximum defined by the IBM AT Technical Reference manual. Modern ISA cards can operate with the enhanced speeds, however some older cards can experience difficulties. ISA performance will be enhanced when **ISA Bus Speed** is set to enhanced. The actual value of the Bus Clock when set to *Compatible* or *Enhanced* is dependent upon the external frequency of the CPU:

External Frequency	Compatible	Enhanced
60 Mhz	7.5 Mhz	10 Mhz
66 Mhz	8.25 Mhz	11 Mhz

Byte Merging  
 Enabled  
 Disabled -- default

**Byte Merging** is a feature which increases performance for older applications which write to video memory in bytes instead of words. However, this feature is not supported on all PCI video cards. For best performance this field should be *enabled* unless a PCI graphics card which does not support this feature is used. If this field is *enabled* and used with a card which lacks support video corruption will be seen in some video modes.

ISA LFB Size  
 Disabled -- default  
 1 MB  
 3 MB  
 7 MB

The **ISA Video Linear Frame Buffer Size** provides a mechanism for creating a hole in the system memory map. Accesses made to addresses within this hole will be directed to the ISA bus instead of main memory. This should be set to *Disabled* unless you are using an ISA card which has memory greater than 64K which needs to be accessed by the CPU, and you are not using the Plug and Play run-time utilities (Configuration Manager & ISA Configuration Utility).

ISA LFB Base Address  
 Dependent upon ISA LFB Size

If	ISA LFB Size	Then	ISA LFB Base Address
	Disabled		N.A.
	1 MB		15 MB
	3 MB		13 MB
	7 MB		9 MB

The **ISA Video LFB Base Address** field displays the starting address of the ISA memory hole if a value other than Disabled is chosen for the **ISA Video LFB Size** parameter. If **ISA Video LFB Size** is set to *disabled*, then this field does not appear. This field is informative only, i.e. it cannot be changed by the user.

Video Palette Snoop  
 Disabled  
 Enabled -- default

The **Video Palette Snoop** field controls the ability of a PCI graphics cards to "snoop" write cycles to an ISA video card's color palette registers. This should normally be set to *Enabled*. It should only be set to *Disabled* if:

- AND That ISA card connects to a PCI graphics card via the VESA connector
- AND That ISA card connects to a color monitor
- AND That ISA card uses the RAMDAC on the PCI card
- AND The Palette Snooping feature (also called RAMDAC shadowing) is broken on the PCI card.

Latency Timer (PCI Clocks)  
 Number between 0 and 256  
 66 -- default

The **Latency Timer (PCI Clocks)** field controls the length of time an agent on the PCI bus can hold the bus when another agent has requested the bus. Its default value is 66. In general this should not be changed. If there are latency sensitive cards in the system (such as audio cards and/or network cards with small buffers) this can be set to a lower value to reduce latency. If there are no latency sensitive cards in the system, but I/O intensive applications are being run, this can be increased to slightly improve performance.

## POWER MANAGEMENT CONFIGURATION SUB-MENU

Advanced Power Management  
 Enabled  
 Disabled -- default

The **Advanced Power Management** field enables or disables Advanced Power Management (APM) support in the BIOS. If set to *enabled* the BIOS will work with APM aware Operating Systems to manage the power consumed by the CPU, IDE drives, and graphics cards. If set to *Disabled* then none of the other fields in the Power Management Configuration Sub-Menu are displayed.

IDE Drive Power Down  
 Enabled  
 Disabled -- default

The IDE Drive Power Down field controls whether or not a spin down command will be issued to the IDE drives when the system goes into low power mode.

VESA Video Power Down  
 Disabled -- default  
 Standby  
 Suspend  
 Sleep

The **VESA Video Power Down** field controls the VESA power management command issued to the graphics card when the system goes into low power mode. The proper setting is dependent upon the VESA mode(s) supported by your graphics card.

Inactivity Timer (Minutes)  
 0 to 255  
 0 -- default

**Inactivity Timer (Minutes)** controls the number of minutes that the system will detect no user activity before going into low power mode.

Hot Key  
 User definable

The **Hot Key** field is used to define a key which when entered will cause the APM BIOS to ask an APM (Advanced Power Management) aware Operating Systems to go into immediate power managed mode. There will be some delay, typically about a minute before the system actually goes into power managed mode, however the speaker will issue 2 descending tones.

If there is a User Password in effect then upon going into power managed mode the Num Lock, Caps Lock, and Scroll Lock LEDs on the keyboard will flash on and off in sequence, indicating to the user that the system is in Secure Mode. In this case the correct password will have to be entered before the user regains control of the system. This password will not be echoed to the screen, whether the screen is active or inactive at the time the password is entered (see **Set User Password** field in Security Menu). The following table describes how the Power Down hot key interacts with the Security Hot Key:

	Power-Down Hot Key Entered	Security Hot Key Entered
<b>Power-Down Hot Key Only Enabled</b>	1. System powers down $\approx$ 1 minute (can include screen blanking if enabled) 2. Powers up when any key/mouse activity is detected	N.A.
<b>Security Hot Key Only Enabled</b>	N.A.	1. System Secure Immediately 2. LEDs sequence 3. Input accepted when password typed
<b>Both Hot Keys Enabled</b>	1. System Secure Immediately 2. System powers down $\approx$ 1 minute (can include screen blanking if enabled) 3. LEDs sequence 4. Input accepted when password typed 5. Powers up when any key/mouse activity is detected	1. System Secure Immediately 2. System powers down $\approx$ 1 minute (can include screen blanking if enabled) 3. LEDs sequence 4. Input accepted when password typed 5. Powers up when any key/mouse activity is detected

## PLUG AND PLAY CONFIGURATION SUB-MENU

### Configuration Mode

*Use Setup Utility -- default*  
*Use ICU*

The **Configuration Mode** field is used to choose the method in which information about legacy ISA cards (ISA cards which do not have Plug and Play capabilities) is conveyed to the BIOS to allow the BIOS to set up PCI cards and ISA Plug and Play cards without conflicting with the legacy ISA cards.

If *Use ICU* is chosen, then the BIOS will depend upon information provided by run-time Plug and Play software (Configuration Manager and ISA Configuration Utility) to ensure that there are no conflicts with legacy ISA cards. Only choose this method if your system is configured with these utilities and they are used. When *Use ICU* is chosen no other fields are displayed in this Sub-Menu.

If *Use Setup Utility* is chosen, then the BIOS will depend upon information provided by the user in the fields below to prevent conflicts between Plug and Play cards and legacy ISA cards. If the *Use Setup Utility* is chosen then the user should not install and use run-time Plug and Play software (Configuration Manager and ICU).

ISA Shared Memory Size  
*Disabled -- default*  
*16 KB*  
*32 KB*  
*48 KB*  
*64 KB*

The **ISA Shared Memory Size** field is used to set a block of system memory which will not be shadowed (shadowing is a technique which copies a block of memory from an add in card's ROM to the same address in system memory to allow faster access to the code and achieve higher performance). By default all upper memory is shadowed unless a block is un-shadowed using this and the **ISA Shared Memory Base Address** fields.

This field should be set to *Disabled* unless an ISA card is used which communicates with the CPU through a block of shared memory located in the upper memory area. If set to a value other than *Disabled* the **ISA Shared Memory Base Address** field will appear below. Note that if a value of *64 KB* is chosen, then the **ISA Shared Memory Base Address** field can only be set to *D0000h* or below.

ISA Shared Memory Base Address  
*C0000h*  
*C4000h*  
*C8000h*  
*CC000h*  
*D0000h*  
*D4000h*  
*D8000h*  
*DC000h*

The **ISA Shared Memory Base Address** field works in conjunction with the **ISA Shared Memory Size**. See above.

IRQ 3\*  
IRQ 4\*  
IRQ 5  
IRQ 7\*  
IRQ 9  
IRQ 10  
IRQ 11  
IRQ 15\*  
*Available*  
*Used By ISA Card*

\* These options will not be visible if consumed by on-board resources (IRQ3 Serial Port 1, IRQ4 Serial Port 2, IRQ7 Parallel Port, IRQ 15, both IDE interfaces used).

The **IRQ 3 - IRQ 15** fields are used to indicate whether individual interrupts are used by ISA legacy cards. If not used, then they should be set to *Available*. If used they should be set to *Used By ISA Card*. **Note: All but one can be set to *Used By ISA Card*. One must remain available for PCI cards which use interrupts to function.**

## SECURITY MENU

There are two types of passwords available, **User Password** and **Administrative Password**. The User password can be used to control access to the Setup Utility, the keyboard upon initial boot, and the keyboard when used in conjunction with the Security Hot Key. The **Administrative Password** is used to control access to the Setup Utility. The following table describes the interaction between these passwords:

Password In Effect	Enter Setup with User Password	Enter Setup with Admin. Password	Boot
User Password Only	Can change all fields	N.A.	User Password Required
Administrative Password Only	N.A.	Can change all fields	No Password Required
Both	Can change limited number of fields	Can change all fields	User or Administrative Password Required

If the **Administrative Password** is in effect and Setup is entered with the **User Password** only the following fields may be changed: **System Date**, **System Time**, **User Password**, and **Security Hot Key**.

User Password is  
*Disabled -- default*  
*Enabled*  
 Administrative Password is  
*Disabled -- default*  
*Enabled*

The **User Password is** and **Administrative Password is** fields indicate whether the User and Administrative passwords have been set. If neither the **User Password is** or the **Administrative Password is** fields are set to *Enabled* neither the **Unattended Start** or **Security Hot Key (CTRL-ALT-)** fields will be displayed.

### Set User Password

When the **Set User Password** field is chosen the user is presented with one of two sub-menus. If there is currently no User Password in effect the following menu appears:

Enter New Password_____
Confirm New Password_____
Press Enter or TAB to Accept
Press ESC to Abort

If there is already a User Password in effect, the following menu appears. To disable the password, use a carriage return as the new password.

Enter Current Password_____
Enter New Password_____
Confirm New Password_____
Press Enter or TAB to Accept
Press ESC to Abort

### Set Administrative Password

When the **Set Administrative Password** field is chosen the user is presented with one of two sub-menus. If there is currently no Administrative Password in effect the following menu appears:

Enter New Password_____
Confirm New Password_____
Press Enter or TAB to Accept
Press ESC to Abort

If there is already an Administrative Password in effect, the following menu appears. To disable the password, use a carriage return as the new password.

Enter Current Password_____
Enter New Password_____
Confirm New Password_____
Press Enter or TAB to Accept
Press ESC to Abort

Unattended Start  
*Disabled -- default*  
*Enabled*

The **Unattended Start** field controls the point at which the User Password is required. If set to *Disabled* the User Password is required before the system boots, either from disk or the network. The user will be prompted for the password with the text string "Enter Password (1):"

If set to *Enabled* the system will go through automatic boot activity (for instance running CONFIG.SYS and AUTOEXEC.BAT when booting DOS from disk), however the keyboard will be locked and the User Password must be entered to unlock it. The BIOS does not provide any prompt string so it is suggested that the last thing that the automatic login sequence does is prompt the user for the password.

The **Unattended Start** field can only be set if a User Password is in effect.

Security Hot Key (CTRL-ALT-)  
*Alpha-Numeric Key*

The **Security Hot Key (CTRL-ALT-)** field can be used to define a key which when entered in conjunction with the CTRL and ALT keys puts the system into secure mode (locks the keyboard). When this Hot Key combination is entered the Num Lock, Caps Lock, and Scroll Lock LEDs on the keyboard will flash on and off in sequence, indicating to the user that the system is in secure mode (as opposed to being hung).

## EXIT MENU

Exit Saving Changes

The Exit Saving Changes field is used to exit the Setup Utility saving the current state of all parameters. When the Enter key is entered the following sub-menu is displayed:

Exit Saving Changes?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then the Setup Utility will be exited with all parameters set to their current values. If the ESC key is selected, then the user is returned to the Exit menu without effecting any change.

Exit Discarding Changes

The **Exit Discarding Changes** field is used to exit the Setup Utility discarding any changes made to Setup parameters. When the Enter key is entered the following sub-menu is displayed:

Exit Discarding Changes?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then the Setup Utility will be exited with changes to Setup parameters lost. If the ESC key is selected, then the user is returned to the Exit menu without effecting any change.

Load Setup Defaults

The **Load Setup Defaults** field is used to load default values into all Setup parameters, except for the passwords. When the Enter key is entered the following sub-menu is displayed:

Load Setup Defaults?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then defaults are loaded into all Setup parameters, except for the passwords. If the ESC key is selected, then the user is returned to the Exit menu without effecting any changes.

Discard Changes

The **Discard Changes** field is used undo any changes made to Setup parameters during this Setup session. When the Enter key is entered the following sub-menu is displayed:

Discard Changes?
Press Enter to Continue
Press ESC to Abort

If the Enter key is selected then any changes made to Setup parameters are discarded. If the ESC key is selected, then the user is returned to the Exit menu without effecting any changes.

## Appendix H – AMIBIOS Error messages and Beep Codes

Errors can occur during POST (Power On Self Test) which is performed every time the system is powered on. Fatal errors, which prevent the system to continue the boot process, are communicated through a series of audible beeps. Other errors are displayed in the following format:

ERROR Message Line 1

ERROR Message Line 2

For most displayed error messages, there is only one message. If a second message appears, it is "RUN SETUP". If this message occurs, press <F1> to run AMIBIOS Setup.

### BEEP CODES

Beeps	Error Message	Description
1	Refresh Failure	The memory refresh circuitry on the baseboard is faulty.
2	Parity Error	Parity error in the first 64 KB of memory.
3	Base 64 KB Memory Failure	Memory failure in the first 64 KB.
4	Timer Not Operational	Memory failure in the first 64 KB of memory, or Timer 1 on the baseboard is not functioning.
5	Processor Error	The CPU on the baseboard generated an error.
6	8042 - Gate A20 Failure	The keyboard controller (8042) may be bad. The BIOS cannot switch to protected mode.
7	Processor Exception Interrupt Error	The CPU generated an exception interrupt.
8	Display Memory Read/Write Error	The system video adapter is either missing or its memory is faulty. This is not a fatal error.
9	ROM Checksum Error	ROM checksum value does not match the value encoded in BIOS.
10	CMOS Shutdown Register Rd/Wrt Error	The shutdown register for CMOS RAM failed.
11	Cache Error / External Cache Bad	The external cache is faulty.

### ERROR MESSAGES

Error Message	Explanation
8042 Gate - A20 Error	Gate A20 on the keyboard controller (8042) is not working. Replace the 8042.
Address Line Short!	Error in the address decoding circuitry on the baseboard.
Cache Memory Bad, Do Not Enable Cache!	Cache memory is defective. Replace it.
CH-2 Timer Error	Most AT systems include two timers. There is an error in timer 2.
CMOS Battery State Low	CMOS RAM is powered by a battery. The battery power is low. Replace the battery.
CMOS Checksum Failure	After CMOS RAM values are saved, a checksum value is generated for error checking. The previous value is different from the current value. Run AMIBIOS Setup.
CMOS System Options Not Set	The values stored in CMOS RAM are either corrupt or nonexistent. Run Setup.
CMOS Display Type Mismatch	The video type in CMOS RAM does not match the type detected by the BIOS. Run AMIBIOS Setup.
CMOS Memory Size Mismatch	The amount of memory on the baseboard is different than the amount in CMOS RAM. Run AMIBIOS Setup.

### ERROR MESSAGES (CONT.)

CMOS Time and Date Not Set	Run Standard CMOS Setup to set the date and time in CMOS RAM.
Diskette Boot Failure	The boot disk in floppy drive A: is corrupt. It cannot be used to boot the system. Use another boot disk and follow the screen instructions.
Display Switch Not Proper	Some systems require a video switch on the baseboard be set to either color or monochrome. Turn the system off, set the switch, then power on.
DMA Error	Error in the DMA controller.
DMA #1 Error	Error in the first DMA channel.
DMA #2 Error	Error in the second DMA channel.
FDD Controller Failure	The BIOS cannot communicate with the floppy disk drive controller. Check all appropriate connections after the system is powered down.
HDD Controller Failure	The BIOS cannot communicate with the hard disk drive controller. Check all appropriate connections after the system is powered down.
INTR #1 Error	Interrupt channel 1 failed POST.
INTR #2 Error	Interrupt channel 2 failed POST.
Invalid Boot Diskette	The BIOS can read the disk in floppy drive A:, but cannot boot the system. Use another boot disk.
Keyboard Is Locked...Unlock It	The keyboard lock on the system is engaged. The system must be unlocked to continue.
Keyboard Error	There is a timing problem with the keyboard. Set the <i>Keyboard</i> option in Standard CMOS Setup to <i>Not Installed</i> to skip the keyboard POST routines.
KB/Interface Error	There is an error in the keyboard connector.
Off Board Parity Error	Parity error in memory installed in an expansion slot. The format is:  OFF BOARD PARITY ERROR ADDR (HEX) = (XXXX)  XXXX is the hex address where the error occurred.
On Board Parity Error	Parity error in baseboard memory. The format is:  OFF BOARD PARITY ERROR ADDR (HEX) = (XXXX)  XXXX is the hex address where the error occurred.
Parity Error ????	Parity error in system memory at an unknown address.

### ISA NMI MESSAGES

<i>ISA NMI Message</i>	<i>Explanation</i>
Memory Parity Error at xxxxx	Memory failed. If the memory location can be determined, it is displayed as xxxxx. If not, the message is <i>Memory Parity Error ????</i> .
I/O Card Parity Error at xxxxx	An expansion card failed. If the address can be determined, it is displayed as xxxxx. If not, the message is <i>I/O Card Parity Error ????</i> .
DMA Bus Time-out	A device has driven the bus signal for more than 7.8 microseconds.

## Appendix I – BIOS Recovery

The Premiere/PCI II incorporates the AMIBIOS in a Flash memory component. Flash BIOS allows easy upgrades without the need to replace an EPROM. The upgrade utility fits on a floppy diskette and provides the capability to save, verify, and update the system BIOS. The upgrade utility can be run from a hard drive or a network drive, but no memory managers can be installed during upgrades.

The latest upgrade utility and BIOS code are available in the *BIOS* section of the iPAN bulletin board.

### **USING THE UPGRADE UTILITY**

If the utility is obtained from the bulletin board, UNZIP the archive and copy the files to a bootable MS-DOS 3.3, 4.01, 5.0, or 6.0 diskette. Reboot the system with the upgrade diskette in the bootable floppy drive and follow the directions in the easy to use menu-driven program.

### **RECOVERY MODE**

In the unlikely event that a FLASH upgrade is interrupted catastrophically, it is possible the BIOS may be left in an unusable state. Recovering from this condition requires the following steps (be sure a power supply and speaker have been attached to the board, and a floppy drive is connected as drive A.):

1. Change Flash Recovery jumper (RCVR FLASH) to the recovery mode position.
2. Install the bootable upgrade diskette into drive A:
3. Reboot the system.
4. Because of the small amount of code available in the non-erasable boot block area, no video is available to direct the procedure. The procedure can be monitored by listening to the speaker and looking at the floppy drive LED. When the system beeps and the floppy drive LED is lit, the system is copying the recovery code into the FLASH device. As soon as the drive LED goes off, the recovery is complete.
5. Turn the system off.
6. Change the Flash Recovery jumper back to the default position.
7. Leave the upgrade floppy in drive A: and turn the system on.
8. Continue with the original upgrade.



## Appendix J – Environmental Standards

<i>Parameter</i>	<i>Condition</i>	<i>Specification</i>
Temperature	Non-Operating	-40°C to +70°C
	Operating	+0°C to +55°C
Humidity	Non-Operating	92% Relative Humidity max. @ 36°C
	Operating	80% Relative Humidity max. @ 36°C
Altitude	Non-Operating	50,000 feet (15,240 meters)
	Operating	10,000 feet (3048 meters)
ESD	1.0kV	No Errors
	2.5kV	No Errors
	5.0kV	5% Soft Errors, 0% Hard Errors, No physical damage
	7.5kV	10% Soft Errors, 0% Hard Errors, No physical damage
	10.0kV	25% Soft Errors, 5% Hard Errors, No physical damage
	12.5kV	50% Soft, 10% Hard, No physical damage
	15.0kV	100% Soft, 25% Hard, No physical damage
	25.0kV	100% Soft, 100% Hard, No physical damage
Shock	Non-Operating	30.0G, 11ms, 1/2 sine

Table J-1. Environmental standards

## Appendix K – Reliability Data

The Mean-Time-Between-Failures (MTBF) data is calculated from predicted data @ 55C.

Premiere/PCI II baseboard with 4 MB

81,832 hours

## Appendix L – Customer Support

The Premiere/PCI II is backed by Intel's industry-leading support groups in the OEM Products and Services Division (OPSD), including IntelTechDirect, which includes these major services:

### **INTEL APPLICATIONS SUPPORT**

- A direct link to highly qualified and well trained technical personnel.
- Toll-free access to Intel support engineers for problem resolution
- Responses within 24 hours Monday-Friday
- Expert assistance geared to the special needs of OEMs and VARs

### **INTEL APPLICATIONS SUPPORT BBS**

- A full service bulletin board with product information, demo software and more.
- Available worldwide through direct-dial
  - Americas 916-356-3600
  - Europe 44-793-496340
- Modem speeds up to 14.4k baud with standard software
- FLASH BIOS upgrade files
- Modem set at no parity, 8 data bits, 1 stop bit.
- Master BBS file list and FaxBack catalog available at 800-897-2536.

### **WINDOWS HELP FILES**

- Monthly Product updates available to qualified users on the bulletin board
- Official notification of engineering changes and technical data
- Easy information retrieval using Windows Help file format
- Intel platform system, board, and BIOS revision histories
- Hardware and software compatibility notes
- Documentation updates, spare parts and order information

### **FAXBACK**

- Product descriptions and technical data sent to any fax machine from a touch-tone phone
- Information on End-of-Life products
- Available worldwide through direct dial
  - U.S. Toll Free 800-628-2283
  - Americas 916-356-3105
  - Europe 44-793-496646