AIM3

Advanced Innovative
Motherboard with PPGA
Celeron® and FC-PGA PIII
Processor

Revision	Description	Date
A	Manual Released	9/02
B	Updated for faster CPU support	8/03
C	Updated LBA Mode Control	6/04

Part Number 142215 (C)

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Chapter 1 – Introduction

Product Overview

The Xycom Automation Advanced Innovative Motherboard (AIM3) is developed expressly for use in Xycom's line of flat panel industrial personal computers. It is optimized in design, layout, and features for use with flat panel computer systems. This integrated design approach allows Xycom industrial PC/ATs to incorporate "Big PC" features in an extremely compact package. These "Big PC" features include AGP video PCI/ISA expansion, Pentium® III CPU, full-size hard disk, status LEDs, and integrated touch screen.

Module Features

- The AIM3 Supports:
  - 100 MHz and 133 MHz front side bus
  - Intel® Celeron® processors (PPGA package) and PIII processors (FC-PGA package)
- 128 MB – 512 MB DRAM DIMMs (100/133 MHz)
- AGP local bus XGA graphics, utilizing 32MB MAX System memory
- Video Scaler for flexible video expansion
- PCI fast IDE controller
- Two 16550-compatible serial ports
  - COM 1 is RS-232, or RS-485 (Double high DB 9P connector)
  - COM 2 is RS-232 port (1/2 of double stacked DB25)
  - Internal RJ45 style COM 2 connector for interruptible power supply
- Centronics® compatible parallel port
- Floppy Controller (only one floppy supported)
  - Internal FFC connector
- Touch screen interface
- PS/2 keyboard port and mouse port
- Real time clock and battery
- Disk on a chip supported (DOC 2000)
- 32Kx8 and 128Kx8 nonvolatile RAM supported
- LED status indicators
- Designed specifically for Xycom Automation industrial PC/ATs.

142215 (C)

Architecture
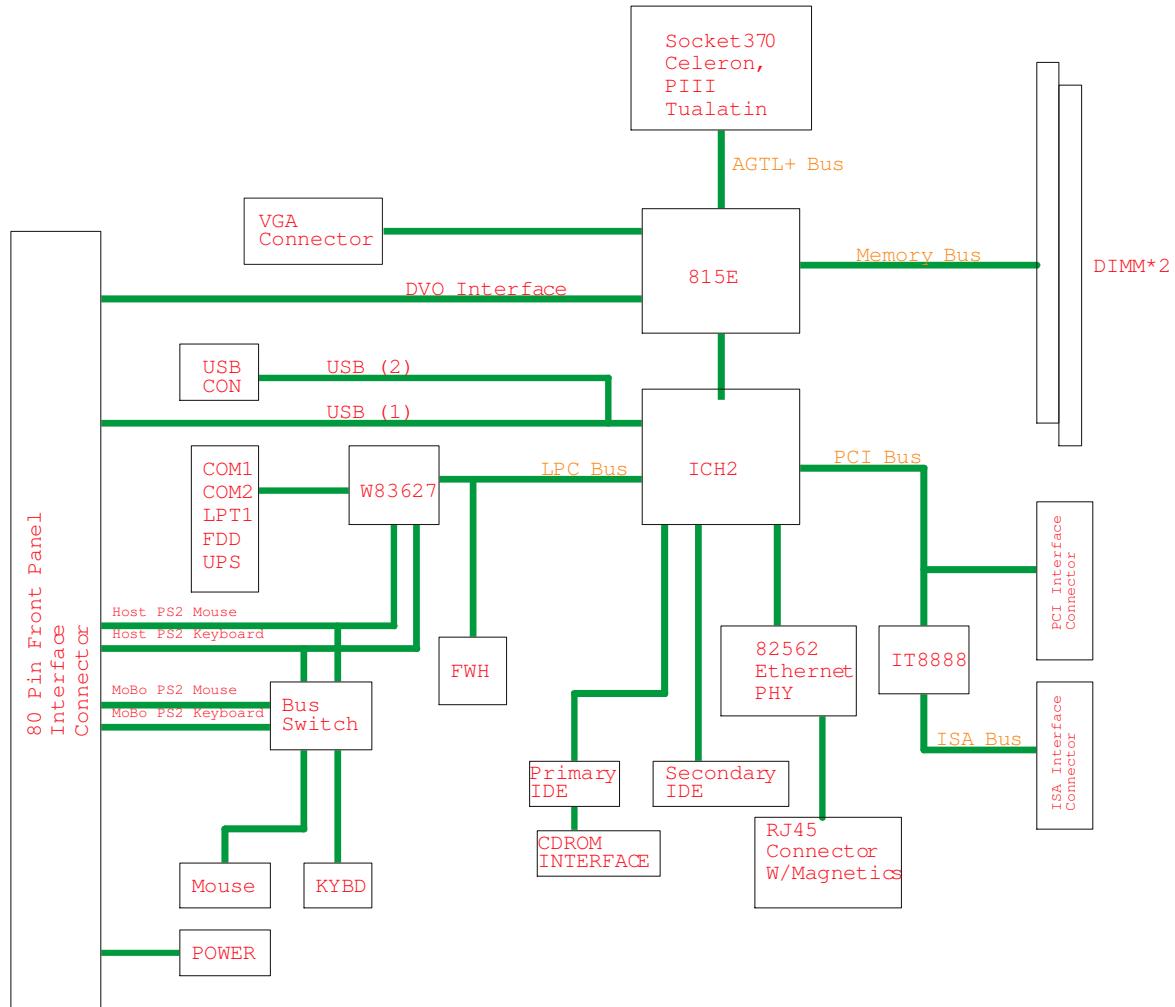
Figure 1-1. AIM3 Block diagram

Local Bus Interfaces

The Intel Universal Socket 370 design uses the 815E chipset, which consists of an Intel 82815 and an 82801 device. The 815E chipset integrates a high performance interface from PCI to IDE. This interface is capable of accelerated data transfers.

The 815E chipset provides an accelerated PCI-to-ISA interface that includes

- A high-performance enhanced IDE controller (UDMA100)
- PCI and ISA master/slave interfaces
- Plug-and-play support for on-board devices

The chipset also provides many common I/O functions found in ISA-based PC systems, including:

- Seven-channel DMA controller
- Two 82C59 interrupt controllers
- 8254 timer/counter
- Control logic for NMI generation

Fast IDE Controller

The high-speed local bus IDE controller supports programmed I/O modes 0-4. It also provides 4x32-bit read-ahead buffer and 4x32-bit write-post buffer support to enhance IDE performance. The 80-pin hard drive interface cable on the primary port allows for UDMA100. The UDMA100 capability is dependent upon the IDE device type used.

Note

The IDE controller supports enhanced PIO modes, which reduce the cycle times for 16-bit data transfers to the hard drive. Check with your drive manual to see if the drive you are using supports these modes. The higher the PIO mode the shorter the cycle time will be.

Select the PIO modes in the BIOS setup (refer to Chapter 3). The auto configure classifies the drive connected if the drive supports the auto ID command. If you experience problems, change the PIO to standard.

Accelerated Graphics Port (AGP)

Integrated Graphics Controller

The 815E chipset contains an integrated graphics controller, which supports simultaneous CRT displays and flat panel displays. The controller employs up to 32 MB of system memory for graphics functions. The controller supports resolutions of 640x480, 800x600, and 1024x768 with 64K colors. 64K color restriction only applicable in 1024x768 mode.

On-board Memory

DRAM

The AIM3 has two 168-pin DIMM memory sites, providing up to 512 MB of SDRAM. The memory site is populated with 133 MHz synchronous DRAM.

Flash BIOS

The AIM3 board uses a Flash BIOS. Flash is used for system BIOS and video BIOS.

Non-volatile RAM (NVRAM)

The AIM3 hardware supports non-volatile RAM (NVRAM).
The NVRAM comes in a module type package and contains a built-in battery and battery backup circuitry. The battery life is approximately seven years in the absence of VCC. The SRAM supports 32Kx8 and 128Kx8 memory sizes. The RAM comes in a 32-pin dip (0.6 inches wide) standard format.
NOTE: Only 16K of NVRAM can be bank switched in at a time.
SRAM can be located at: CC000, D0000, or D8000.

DiskOnChip 2000 (DOC 2000)

The DiskOnChip 2000 is a single-chip Flash disk in a standard 32-pin DIP format. It requires an 8 Kbyte window to view as an extension BIOS. During boot up, the DiskOnChip loads its software in the PC's memory and installs itself as an additional drive.

EPROM Support

The AIM3 hardware supports 32K or 64K of EPROM at address D000, 32K of EPROM at address D8000, or 16K at address CC000.

Serial and Parallel Ports

PC/AT peripherals include two high-speed, RS-232, 16550-compatible serial ports and one bi-directional Centronics-compatible parallel port:

- COM 1 of the serial ports accepts either RS-232 or RS-485 connections. (RS-485 is activated through the BIOS setup. Refer to Chapter 3.)
- COM 2 is RS-232 (male DB 25-pin).
- Parallel Port employs a DB 25-pin connector.

USB

USB (Universal Serial Bus) is a "plug-and-play" interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners,

and printers). With USB, a new device can be added to your computer without having to add an adapter card or even having to turn the computer off. USB supports a data speed of 12 megabits per second. This speed will accommodate a wide range of devices, including MPEG-2 video devices, data gloves, and digitizers.

Keyboard Interface

The keyboard interface uses a standard PS/2-style connector. A polyswitch protects the +5 V. This device opens if the +5 V is shorted to GND. Once you remove the shorting condition, the polyswitch allows current flow to resume.

Mouse Interface

The mouse interface uses a standard PS/2-style connector. A polyswitch protects the +5 V. This device opens if the +5 V is shorted to GND. Once you remove the shorting condition, the polyswitch allows current flow to resume.

Floppy and Hard Drives

The floppy interface supports one floppy drive. The AIM3 can interface to a floppy via the on-board floppy connector.
The primary enhanced IDE (EIDE) interface supports up to 2 hard drives. Hard drive interface is via the on-board IDE controller. The secondary IDE (EIDE) interface can support up to two more IDE devices.

Caution

The higher the PIO mode the shorter the cycle time is. As the IDE cable length increases, this reduced cycle time can lead to erratic operation. The total IDE cable length must not exceed 18 inches. If two IDE drives are connected, they must not be more than six inches apart.

Environmental Specifications

Table 1–1. Environmental Specifications

Characteristic	Specification
Temperature	
Operating	0° to 60° C (32° to 140° F)
Non-operating	-40° to 85℃ (-40° to 185℉)
Humidity	
Operating	20% to 80% RH noncondensing
Non-operating	20% to 80% RH noncondensing
Altitude	
Operating	Sea level to 10,000 feet (3048 m)
Nonoperating	Sea level to 50,000 feet (15240 m)
Vibration[1] (3612 systems[2])	
Operating	5–2000 Hz 0.006" peak to peak displacement 1.0g maximum acceleration
Nonoperating	5–2000 Hz 0.015" peak to peak displacement 2.5 g maximum acceleration
Shock[1] (3612 systems[2])	
Operating	15g peak acceleration, 11 msec duration, ½ sine wave
Nonoperating	30g peak acceleration, 11 msec duration, ½ sine wave

[1] These values are with solid state hard drives and NOT rotating media drives

[2] Consistent with system level specifications. See your system manual if you have a system other than the 3612 model.

Hardware Specifications

Table 1–2. Hardware Specifications

Characteristic	Specification
CPU power supply*	The maximum current that the supply can deliver is 19A.
CPU speed	850 MHz, 1.0 GHz, and 1.26 GHz
AGP Super VGA Graphics Controller	640x480, 800x600, and 1024x768, 64K colors maximum resolution
Serial Ports (2)	COM1 is RS-232 or RS-485 COM2 is RS-232 Both 16550 compatible
Parallel Interface	Centronics compatible
On-board memory	Up to 512 MB; 133 MHz SDRAM

* Power Specifications: The CPU power supply on the AIM3 provides a voltage range of 1.30V to 2.05V in increments of 50mV. The CPU selects its voltage through its four outputs VID3-VID0. The supply was changed to accommodate future Socket370 CPUs, which will run at lower voltages.

Chapter 2 – Installation

This chapter provides information on configuring the AIM3 Processor Module.
Pinouts for the connectors are located in Appendix C.
Figure 2–1 illustrates the jumper and connector locations on the AIM3.
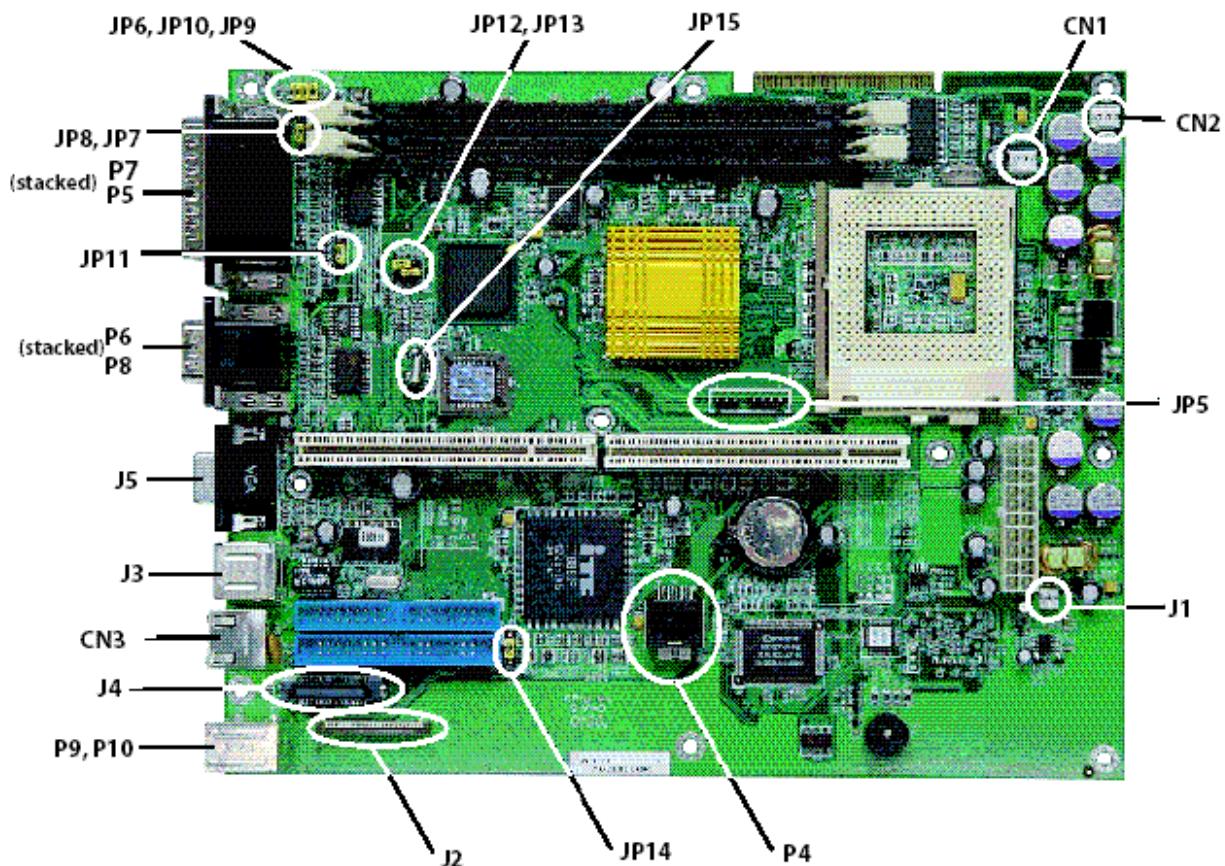
Figure 2–1. AIM3 Jumper and Connector Locations

Configuration Options

Jumpers

The following tables list AIM3 jumper positions and their functions.

Table 2–1. AIM3 Jumpers

Jumper	Position	Function
JP1 JP2 JP3 JP4	—	Not used. Not stuffed.
JP5		Not a jumper. Used to program Lattice devices.
JP6	1-2 2-3 *	Provide ground return for +12V/+5V on COM2 connector. Do not provide ground return for +12V/+5V on COM2 connector.
JP7	1-2 * 2-3	Allow high side alarm function on COM2 connector. Do not allow high side alarm function on COM2 connector.
JP8	1-2 2-3 *	Allow low side alarm function on COM2 connector. Do not allow low side alarm function on COM2 connector.
JP9	1-2 2-3 *	Supply +12V to COM2 connector. Do not supply +12V to COM2 connector.
JP10	1-2 2-3 *	Supply +5V to COM2 connector. Do not supply +5V to COM2 connector.
JP11	1-2 2-3 *	Allow external reset from COM2 connector Do not allow external reset from COM2 connector.
JP12	1-2 2-3 *	BIOS detects 40 cond cable (UDMA33 max) Primary IDE BIOS detects 80 cond cable (UDMA66/100 max) Primary IDE
JP13	1-2 * 2-3	BIOS detects 40 cond cable (UDMA33 max) Secondary IDE BIOS detects 80 cond cable (UDMA66/100 max) Secondary IDE
JP14	1-2 2-3 *	CD-ROM is master on primary IDE CD-ROM is slave on primary IDE
JP15	1-2 * 2-3	Normal operation Clear CMOS
JP16	—	Not a jumper. Is used to allow Arium Emmulator to reset the board.

* Default jumper setting

System Interrupts

The following table describes the interrupts used on the AIM3.

Table 2– 2. Interrupts Map

Interrupt	Function
IRQ0	System Timer
IRQ1	Keyboard
IRQ2	Cascade
IRQ3	Serial Port (BIOS setup controlled)
IRQ4	Serial Port (BIOS setup controlled)
IRQ5	Parallel Port (BIOS setup controlled)
IRQ6	Floppy Controller
IRQ7	Parallel Port (BIOS setup controlled)
IRQ8	Real Time Clock
IRQ9	Unused
IRQ10	Unused
IRQ11	Unused
IRQ12	Mouse Port
IRQ13	Math Co
IRQ14	Primary IDE (master, slave)
IRQ15	Secondary IDE (master, slave)

The BIOS setup menu controls the interrupts for the serial and the parallel port. There are 2 serial ports on the AIM3 that can be mapped to interrupts 3 and 4. There is one parallel port that can be mapped to IRQ5 or IRQ7. The BIOS setup menu is used to control the location and interrupts for the serial and the parallel port.

Note

The BIOS controls the mapping of the PCI interrupts to AT-bus interrupts. This means that if a PCI device is plugged into a slot and needs an interrupt, one of the AT-bus interrupts must be mapped to the PCI interrupt.

DMA Channels

Table 2–3. DMA Channels

Channel	Function
DMA0	Unused (Could be used for EPP/ECP parallel port option)
DMA1	Unused
DMA2	Floppy Controller
DMA3	Unused (Could be used for EPP/ECP parallel port option)
DMA5	Unused
DMA6	Unused
DMA7	Unused

DMA channels 0-3 are 8-bit and DMA channels 5-7 are 16-bit. When the ECP option is enabled, one of the 8-bit DMA channels is used.

System Management Bus Device Mapping

Table 2–4. Bus Device Map

Address	Device	Description
1010 000x	DIMM0	Serial Presence Detect SDRAM 0
1010 001x	DIMM1	Serial Presence Detect SDRAM 1
1101001x	ICS94201	I^2C Interface Clock Synthesizer

NOTE: x appended to address = 0 for writes, 1 for reads

Memory Map

The following table shows the AIM3 memory map. The I/O designation refers to memory viewed as part of the AT bus.

Table 2–5. Memory Map

Address Range (Hex)	Size	Device
FFFC0000 – FFFFFFFF	256K	SYSTEM BIOS
FFF90000 – FFFBFFFF	192K	Reserved for BIOS
FFF80000 – FFF8FFFF	64K	BIOS ESCD AREA
End of DRAM – FFF7FFFF	xxxK	PCI Memory space*
00100000 – end of DRAM	xxxK	DRAM **
000F0000 – 000FFFFF	64K	SYSTEM BIOS
000E0000 – 000EFFFF	64K	SYSTEM BIOS
000DC000 – 000DFFFF	16K	SYSTEM BIOS***
000CC000 – 000DBFFF	64K	AT ISA bus memory
000C0000 – 000CBFFF	48K	VGA BIOS
000A0000 – 000BFFFF	128K	VGA DRAM MEMORY
0009F800 – 0009FFFF	2K	DRAM BIOS XBDA
00000000 – 0009F7FF	638K	DRAM

* PCI steals blocks of memory in this space for various usages.
** See chipset data sheet for description of optional settings for assigning memory   holes or gaps within memory map area.
*** This part of the BIOS will automatically move to another location in the 000CC000 – 000D8FFF range if an ISA device occupies the 000DC000 – 000DFFFF range.

I/O Map

The I/O map for the AIM3 in Table 2–6 contains all the I/O ports of the IBM AT architecture with some additions.

Table 2–6. I/O Map

Hex Range	Device
000-01F	DMA controller 1, 8237A-5 equivalent
020-02D and 030-03F	Interrupt controller 1, 8259 equivalent
02E-02F	LCP SIO configuration index/data registers [5]
040-05F	Timer, 8254-2 equivalent
060, 062, 064, 066, 068-06F	8742 equivalent (keyboard) [3, 5]
061, 063, 065, 067	NMI control and status
070-07F	Real Time Clock bit 7 NMI mask [3]
080-091	DMA page register [3]
092	Reset (Bit 0) / Fast Gate A20 (Bit 1)
93-9F	DMA page registers continued [3]
0A0-0B1 and 0B4-0BF	Interrupt controller 2, 8259 equivalent [3]
0B2 and 0B3	APM control and status port respectively
0C0-0DF	DMA controller 2, 8237A-5 equivalent [3]
0E0-0EF	Available
0F0	Co-processor error register [3]
0F1	N/A
0F2-0F3	N/A
0F4	IDE ID port
0F5-0F7	N/A
0F8	IDE Index port
0F9-0FB	N/A
0FC	IDE Data port
0FD-0FF	N/A
100-179	Available
180-181	Default Xycom SRAM control register (May be remapped)
182-1EF	Available
1F0-1F7	Primary IDE Controller (AT Drive)

Hex Range	Device
1FB-22F	Available
230	Reserved
231	Xycom LED port
233	Xycom Flash control register
234	Xycom I/O port control register
235-277	Available
278-27F	Parallel Port 2 [1, 3, 5], (Aliases A[10])
280-294	Available
295-296	Windbond (SIO) features index/data [5]
297-2F7	Available
2F8-2FF	Serial Port 2 [1, 3, 5]
300-36F	Available
370-377	Alt. Floppy Disk Controller [1]
378-37F	Parallel Port 1 [1, 3, 5], (Aliases A[10])
380-3AF	Available
3B0-3BB and 3BF	Mono/VGA mode video (Aliases A[15:10])
3BC-3BE	Reserved for parallel port), (Aliases A[10])
3C0-3DF	VGA registers (Aliases A[15:10]), (note 2)
3E0-3EF	Available
3F0-3F7	Primary Floppy disk controller
3F8-3FF	Serial port 1 (note 1, 3, 5)
4D0	Master PIC Edge/Level Trigger register
4D1	Slave PIC Edge/Level Trigger register
CF8-CFB	PCI configuration address register (32 bit I/O only), [4]
CF9	Reset Control register (8 bit I/O)
CFC-CFF	PCI configuration data register [4]

[1] The serial and parallel port addresses may be changed or the port may be disabled. Therefore these addresses may be used for some applications and not for others.

[2] Reference the Intel® 82815 (GMCH) data book for detailed information.

[3] Reference the Intel® 82801BA (ICH2) data book for detailed info.

[4] Reference the PCI local bus specification rev 2.1, Intel® chip set data books for PCI configuration information.

[5] Reference the Windbond W83627HF (SIO) data book for detailed information.

AIM3 PCI Devices

Table 2–7. AIM3 PCI Devices

IDSEL (Addr)	Device Name	PCI Address	PCI DID/VID	PCI Bus #	PCI Device #	Vendor Name	Device or Func. Description
AD16+ Dev. #[1]	82815 GMHC[2]	80**000000**[3]	1130/8086	0	0d/0h Func. 0	Intel	Host-Hub Interface Bridge / DRAM Controller Device
N/A Disable	82815 GMHC[4]	80**0008**00	1131/8086	0	1d/1h Func. 0	Intel	AGP/PCI Bridge Registers (N/A)
AD16+ Dev. #[1]	82815 GMHC[5]	80**0010**00	1132/8086	0	2d/2h Func. 0	Intel	Graphics Device Registers
AD16+ Dev. #[1]	82801BA ICH2[6]	80**00F0**00	244E/8086	0	30d/1Eh Func. 0	Intel	Hub Interface to PCI Bridge Registers (D30:F0)
AD16+ Dev. #[1]	82801BA ICH2	80**00F8**00	2440/8086	0	31d/1Fh Func. 0	Intel	LPC Interface Bridge Registers (D31:F0)
AD16+ Dev. #[1]	82801BA ICH2	80**00F9**00	244B/8086	0	31d/1Fh Func. 1	Intel	IDE Controller Registers (D31:F1)
AD16+ Dev. #[1]	82801BA ICH2[7]	80**00FA**00	2442/8086	0	31d/1Fh Func. 2	Intel	USB Controller Registers, PCI Config. Registers (D31:F2)
AD16+ Dev. #[1]	82801BA ICH2	80**00FB**00	2443/8086	0	31d/1Fh Func. 3	Intel	PCI Configuration Registers (SMBUS—D31:F3)
AD16+ Dev. #[1]	82801BA ICH2[8]	80**00FC**00	2444/8086	0	31d/1Fh Func. 4	Intel	USB Controller Registers, PCI Config. Registers (D31:F4)
N/A Disable	82801BA ICH2	80**00FD**00	2445/8086	0	31d/1Fh Func. 5	Intel	AC'97 Audio Controller Registers (D31:F5)
N/A Disable	82801BA ICH2	80**00FE**00	2446/8086	0	31d/1Fh Func. 6	Intel	AC'97 Modem Controller Registers (D31:F6)
AD16+ Dev. #[1]	82801BA ICH2	80**0014**00	2449/8086	1	8d/8h Func. 0	Intel	LAN Controller Registers (B1:D8:F0)
AD22	IT8888F/BX[9]	80**0013**00	8888/1283	1	11d/Bh	ITE	PCI to ISA Bridge (Bus: any but 0)

[1] Internal IDSEL generated for this device

[2] Device 0 in the Graphics & Mem. Controller Hub

[3] Bold portion is equal to the PFA Phoenix typically refers to

[4] Device 1 in the Graphics & Memory Controller Hub. Only visible if in AGP/PCI mode (AGP connector) N/A for 3600 board because there is no external AGP connector.

[5] Device 2 in the Graphics & Memory Controller Hub. Only visible if in GFX AGP mode (Default)

[6] Intel® 82801BA I/O Controller Hub 2 (ICH2)

[7] Intel® 82801BA I/O Controller Hub 2 (ICH2) USB Func. 2, not visible if not enabled

[8] Intel® 82801BA I/O Controller Hub 2 (ICH2) USB Func. 4, not visible if not enabled

[9] Integrated Technology Express IT888F PCI to ISA Bridge Chip, Bus is typically 1, sometimes 2 for BIOS config. Address must be AD22 so the ICH2 can hide it, so plug and play doesn't see it and get confused.

Functional Configuration Options

Jumpers Located on the Backplane that the AIM3 Uses

The following table lists the AIM3 backplane jumpers, their default positions, and their functions.

Table 2–8. Jumpers on Backplane used by AIM3

Jumper	Position	Function
J1	A	* CMOS OK
	B	CLEAR CMOS
J2	A	* ROM / ROM site PIN 30 = SA(17) FOR A 32-PIN NVRAM
	B	ROM / RAM site PIN 30 = 5V FOR A 28-PIN NVRAM

* Default jumper setting

Registers

The AIM3 backplane contains two I/O ports: 231h and 234h. There are also user-definable ports (180/1h, 2E0/1h, 3E0/1h, or 300/1h). These ports are compatible with the AIM3.

Register 231h – Controls Device Type Select and Clear CMOS

Table 2–9. Register 231h

Bit	Signal	Result	R/W
0	EPROM	1 = Enables EPROM	R/W
1	DOC 2000	1 = Enables EPROM	R/W
2	NVRAM	1 = Enable NVRAM	R/W
3	Reserved	0	R
4	Reserved	0	R
5	Reserved	0	R
6	Reserved	0	R
7	CLEAR/CMOS	1 = CMOS OK 0 = Clear CMOS	R

Register 234h – Controls I/O Port Location and Range

Table 2–10. Register 234h

Bit	Signal	Result	R/W
0	Reserved	0	R
1	Reserved	0	R

Bit	Signal	Result	R/W
2	Reserved	0	R
3	Reserved	0	R
4	I/O range select	I/O range select bit 0	R/W
5	I/O range select	I/O range select bit 1	R/W
6	I/O port bit 0	I/O port bit 0	R/W
7	I/O port bit 1	I/O port bit 1	R/W

I/O Range Select

The 64K range is not available for NVRAM. For the ranges available (16K and 32K) the NVRAM is must be bank switched in 16K blocks. It does not have 32K available as one complete block of memory.
The following are ranges defined by register 234h.

Table 2–11. I/O Range Select

I/O Range Selection	Range	Size
00	D0000-DFFFF	64K
01	CC000-CFFFF	16K
10	D0000-D7FFF	32K
11	D8000-DFFFF	32K

Offset Registers

The following registers are located starting at the I/O location defined by Register 234h.

Table 2–12. Offset Registers

I/O Port Selection	Range
00	180
01	2E0h
10	3E0h
11	300h

Offset 0 Page Register for Programming (Port Address)

Offset 0 is reserved.

Table 2–13. Offset 0

Bit	Signal	Result	R/W
0	Reserved	0	R
1	Reserved	0	R
2	Reserved	0	R
3	Reserved	0	R
4	Reserved	0	R

Bit	Signal	Result	R/W
5	Reserved	0	R
6	Reserved	0	R
7	Reserved	0	R

Note

Bit 0 was used for checking the Battery status for AHIP boards. This function is not available with the 3600/3700 series products.

Offset 1 Page Register for Programming (Port Address +1)

Offset 1 controls the paging bits for the NVRAM. This feature is needed to access the full capacity of the device used.

Table 2–14. Offset 1

Bit	Signal	Result	R/W
0	RAM PAGE 0	Page control bit	R/W
1	RAM PAGE 1	Page control bit	R/W
2	RAM PAGE 2	Page control bit	R/W
3	RAM PAGE 3	Page control bit	R/W
4	RAM PAGE 4	Page control bit	R/W
5	Reserved	0	R
6	Reserved	0	R
7	Reserved	0	R

EPROM / NVRAM / DOC 2000 Logic

Table 2–15. EPROM / NVRAM / DOC 2000 Logic

Signal	RAM/ROM SOCKET PIN # 32-PIN	27C040 EPROM 32-PIN	32Kx8 NVRAM 28-PIN	128x8 NVRAM 32-PIN	512x8 NVRAM 32PIN	DOC 2000 32-PIN
PIN 24	24	OE*	OE*	OE*	OE*	OE*
PIN 1	1	VPP/A19	N/A	N/C	18	NC
PIN 31	31	A18	N/A	A15	A15	WE*
PIN 30	30	A17	+5V	NC	A17	NC
PIN 2	2	A16	N/A	A16	A16	NC
PIN3	3	A15	A14	A14	A14	NC
PIN 29	29	A14	WE*	WE*	WE*	NC
SA13	28	A13	A13	A13	A13	NC
SA12	4	A12	A12	A12	A12	A12
SA11	25	A11	A11	A11	A11	A11
SA10	23	A10	A10	A10	A10	A10
SA9	26	A9	A9	A9	A9	A9
SA8	27	A8	A8	A8	A8	A8
SA7	5	A7	A7	A7	A7	A7
SA6	6	A6	A6	A6	A6	A6
SA5	7	A5	A5	A5	A5	A5
SA4	8	A4	A4	A4	A4	A4
SA3	9	A3	A3	A3	A3	A3
SA2	10	A2	A2	A2	A2	A2
SA1	11	A1	A1	A1	A1	A1
SA0	12	A0	A0	A0	A0	A0
XD7	21	D7	D7	D7	D7	D7
XD6	20	D6	D6	D6	D6	D6
XD5	19	D5	D5	D5	D5	D5
XD4	18	D4	D4	D4	D4	D4
XD3	17	D3	D3	D3	D3	D3
XD2	15	D2	D2	D2	D2	D2
XD1	14	D1	D1	D1	D1	D1
XD0	13	D0	D0	D0	D0	D0
RESET	22	CE*	CE*	CE*	CE*	CE*
+5V	32	VCC	N/A	VCC	VCC	VCC
GND	16	GND	GND	GND	GND	GND

Connectors

This section describes the connectors for the AIM3. Appendix C provides the pinouts for each of the connectors.

Table 2–16. AIM3 Connectors

Connector	Description
Parallel Port Connector (P5)	The parallel port is a female DB 25-pin connector.
Serial Port Connectors	
COM1 Connector (P6/P8)	COM1 is a "stack" of two 9-pin connectors (P6/P8) attached to one logical port. Only one connector can be used at a time, either the RS-232 port (P6) or the RS-485 port (P8). The BIOS setup determines whether COM1 is configured for RS-232 or RS-485 operation.
COM2 Connector (P7)	COM2 is a 25-pin male connector used for RS-232 communications.
PS/2 Keyboard/Mouse Connector (P9/P10)	This double-stacked connector provides an upper and lower connector for the keyboard and mouse port. P9 is for keyboard input, and P10 is for mouse connection.
VGA (Video) Connector (J5)	The 15-pin VGA connector is located on the I/O panel. This connector is only enabled when no flat panel is connected to the CPU board.
Floppy Drive Connector (J2)	There is an internal floppy connector (J2). The floppy interface supports only one floppy drive. The floppy drive connector is a 26-pin connector. Both of these ports use a poly-switch to protect VCC from directly shorting to GND.
ISA Backplane Connector (P3)	The ISA Backplane connector is a 120-pin connector. This connector provides ISA signals to the backplane.
IDE Connector (IDE1/IDE2)	IDE hard drive connectors are 40-pin headers. These headers provide connection to the IDE controller for the internal hard drive and the external remote media devices.
Power Connector (ATX1)	This 20-pin connector is a standard ATX style PC power supply connector.
PCI Backplane Connector (P2)	PCI functionality is provided through a 120-pin connector (P2). This connector provides PCI-compatible signals to the backplane.
Ethernet Connector (CN3)	Ethernet functionality is provided via an 8-pin RJ45 connector. This Ethernet port has 10/100BaseT functionality.
USB Connector (J3)	Two Type A USB ports are provided through connector J3.
UPS Connector (P4)	This RJ45 connector is used for uninterruptible power supply.

Chapter 3 – BIOS Setup Menus

The AIM3 board's customized BIOS is designed to surpass the functionality provided for normal PC/ATs. This custom BIOS allows you to access the value-added features on the module without directly interfacing to the hardware.

Moving through the Menus

General instructions for navigating through the screens are described in the table below:

Table 3–1. Menu Navigation Instructions

Key	Result
F1 or ALT-H	General Help window
F2	During specific Window in enters the CMOS setup utility.
ESC	Exits the menu
← or → arrow keys	Selects a different menu
↑ or ↓ arrow keys	Moves the cursor up or down
TAB or SHIFT +TAB	Move right or left for Time and Date.
HOME or PGUP	Moves the cursor to the top of the window
END or PGDN	Moves the cursor to the bottom of the window
F5 or -	Selects the previous value for the field
F6 or + or SPACE	Selects the next value for the field
F9	Loads the default configuration values for the menu
F10	Saves and Exits
ENTER	Executes the Command or selects submenu or displays a pop-up menu

Note

An asterisk (*) indicates fields which may or my not be visible (depending on the option selected different fields may appear).

To select an item, use the arrow keys ↑↓ ←→ to move the cursor to the field you want. Then, use the + and - keys to select a value for that field. For many fields, pressing ENTER displays a pop-up menu of all valid choices for the field.
A "➤" beside a field indicates the presence of a submenu. To enter the submenu, use the arrow keys to select the field and then press ENTER.

BIOS Main Setup Menu

You start the BIOS Setup utility as your system boots up. To access the main menu, press F2 after the memory tests and before your system loads the operating system. If the Boot Time Diagnostic Screen (in the Advanced Menu) is enabled on your system, the BIOS will display the following message: "`Press F2 to enter Setup.`"

The main menu is shown in figure 3–1, and the main menu setup options are described in table 3–2.

Phoenix BIOS Setup Utility		
Main Advanced Security Power Boot Exit		
		Item Specific Help
System Time:	[16:19:20]	
System Date:	[10/27/98]	
		If the line item you are viewing has specific help, it will be listed here.
Legacy Diskette A:	[1.44/1.25 MB, 3½"]	
➤ Primary Master:	(1082 MB)	
➤ Primary Slave:	(CD-ROM)	
➤ Secondary Master:	[None]	
➤ Secondary Slave:	[None]	
➤ Shadow Rom [384]		
➤ Memory Cache		
➤ Boot Features		
System Memory:	640 KB	
Extended Memory:	31744 KB	
F1 Help ↑↓ Select Item -/+ Change Values		F9 Setup Defaults
ESC Exit ←→ Select Menu Enter Select » Sub-menu		F10 Save and Exit

Figure 3–1. Main Setup Menu

Table 3–2. Main Setup Menu Options

Option	Description
System Time (HH/MM/SS)	Sets the real-time clock for hour, minute, and seconds. The hour is calculated according to a 24-hour military clock (i.e., 00:00:00 through 23:59:59). Use TAB to move right; SHIFT + TAB to move left. The ENTER key may be used to move from one field to the next. The numeric keys, 0-9, are used to change the field values. It is not necessary to enter the seconds or type zeros in front of numbers.
System Date (MM:DD:YYYY)	Sets the real-time clock for the month, day, and year. Use TAB to move right; SHIFT + TAB to move left. The ENTER key may be used to move from one field to the next. The numeric keys, 0-9, are used to change the field values. It is not necessary to type zeros in front of numbers.
Legacy Diskette A	Selects the floppy disk drive installed in your system.
IDE Primary Master IDE Primary Slave IDE Secondary Master IDE Secondary Slave	These items show the IDE configuration and allow entry into the IDE submenus.
System Memory	Displays the amount of conventional memory detected during boot-up. This field is not user configurable.
Extended Memory	Displays the amount of extended memory detected during boot-up. This field is not user configurable.
Cache RAM	Displays the amount of cache detected and allows entry into the cache submenu.

IDE Submenu

The IDE submenus are used to configure IDE hard drive information. If only one drive is attached to an IDE adapter, then only the parameters in the Master Submenu need to be entered. If two drives are connected, both Master and Slave Submenu parameters will need to be entered. All IDE submenus contain the same information and operate the same.

The IDE submenu is shown in figure 3–2, and the IDE submenu options are described in table 3–3.

Phoenix BIOS Setup Utility		
Main		
IDE Primary Master (C: 1082 Mb)		Item Specific Help
Type:	[Auto]	If the line item you are
Cylinders:	[2097]	viewing has specific
Heads:	[16]	help, it will be listed
Sectors	[63]	here.
Maximum Capacity	1082 Mb	
Multi-Sector Transfers:	[8 Sectors]	
LBA Mode Control:	[Enabled]	
32-Bit I/O:	[Disabled]	
Transfer Mode:	[Fast PIO 4]	
Ultra DMA Mode	[Disabled]	
SMART Monitoring	[Disabled]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save and Exit		

Figure 3–2. IDE Submenu

Table 3–3. IDE Adapter Submenu Options

Option	Description
Type	Options include Auto, None, CD-ROM, other ATAPI, and User. "Auto" autotypes at each boot. "None" indicates no device is attached. "CD-ROM" indicates that a CD-ROM drive is attached. "Other ATAPI" indicates that a removable disk drive is attached. "User" allows the user to specify device parameters.
Cylinders[1, 2]	Indicates the number of cylinders on the hard drive. This information is automatically entered if Type is set to "Auto."
Heads[1, 2]	Indicates the number of read/write heads on the hard drive. This information is automatically entered if Type is set to "Auto."
Sectors[1, 2]	Indicates the number of sectors per track on the hard drive. This information is automatically entered if Type is set to "Auto."
Maximum Capacity[1]	Indicates the maximum storage capacity of the drive.
Multi-Sector Transfers[3, 4]	Sets the number of sectors per block. Options are Auto, 2, 4, 8, or 16 sectors. "Auto" sets the number of sectors per block to the highest number supported by the drive.
LBA Mode Control[3, 4]	Enables Logical Block Access. The default is enabled and should work with most hard drives. However, if your compact flash will not boot, you will need to set the LBA Mode Control to disabled.
32-Bit I/O[3]	Enables 32-bit communication between CPU and IDE interface.
Transfer Mode[3, 4]	Selects the method for transferring the data between the hard disk and system memory. The drive type and cable length determine available options.
Ultra DMA Mode[3, 4]	Selects the method for transferring the data between the hard disk and system memory. The drive type and cable length determine available options.

[1]   Visible only when type is "Auto" or "User"
[2]   Editable only when Type is "User"
[3]   Not visible when Type is set to "None"
[4]   Not editable when Type is set to "Auto"

Shadow RAM Submenu

Shadow RAM [384 KB]		
		Item Specific Help
Shadow CC000 – CFFFF: [Disabled] Shadow D0000 – D3FFF: [Disabled] Shadow D4000 – D7FFF: [Disabled] Shadow D8000 – DBFFF: [Disabled] Shadow DC000 – DFFFF: [Disabled]		Disabled – this block is not shadowed Enabled – this block is shadowed.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

Figure 3–3. Shadow RAM Submenu

Memory Cache Submenu

Enabling cache increases CPU performance by holding data most recently accessed in a special high-speed static RAM area called cache. The AIM3 provides two levels of cache memory; level one is 16 K internal to the Pentium processor, and level two, or external cache, is the cache-on-a-stick site (COAST), which can accommodate 256 or 512 K of high-speed cache memory.

The cache memory submenu is shown in figure 3–4, and the cache memory options are described in table 3–4.

Phoenix BIOS Setup Utility		
Main		
Memory Cache		Item Specific Help
L2 Memory Cache:	[Enabled]	If the line item you are
Cache System BIOS area:	[Write Protect]	viewing has specific help, it
Cache Video BIOS area:	[Write Protect]	will be listed here.
Cache Base 0-512K:	[Write Back]	
Cache Base 512K-640K:	[Write Back]	
Cache Extended Memory Area:	[Write Back]	
Cache C800-CBFF		
Cache CC00-CFFF	[Disabled]	
Cache D000-D3FF	[Disabled]	
Cache D400-D7FF	[Disabled]	
Cache D800-DBFF	[Disabled]	
Cache DC00-DFFF	[Disabled]	
Cache E000-E3FF	[Disabled]	
Cache E400-E7FF	[Disabled]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

Figure 3–4. Memory Cache Submenu

Table 3–4. Memory Cache Submenu Options

Option	Description
Memory Cache	Controls the state of Pentium II memory cache.
Cache System BIOS Area	Allows the system BIOS memory area to be cached if enabled. Enabling also increases system performance. The default is enabled and write protected.
Cache Video BIOS Area	Allows the video BIOS memory area to be cached if enabled. Enabling also increases system performance. The default is enabled and write protected.
Cache 0 - 512K	Controls caching of 512K base memory. Default is Write Back Caching.
Cache 512K - 640K	Controls caching of 512K and 640K base memory. Default is Write Back Caching.
Cache Extended Memory Area	Controls caching of system memory above 1 MB. Default is Write Back Caching.

Option	Description
Cache Memory Region	Caches the corresponding memory when enabled. Memory in this area is usually extended BIOS or AT-bus memory. Enabling cache may increase system performance, depending on how the extended BIOS is accessed. The default is disabled.

Boot Features Submenu

Boot Features		
		Item Specific Help
Floppy Check: [Disabled] Summary Screen: [Disabled] Boot-time Diagnostic Screen [Disabled] Quick Boot Mode: [Enabled]		If the line item you are viewing has specific help, it will be listed here.
F1 Help ↑↓ Select Item -/+ Change Values ESC Exit ←→ Select Menu Enter Select » Sub-menu		F9 Setup Defaults F10 Save & Exit

Figure 3–5. Boot Features Submenu

Table 3–5. Boot Features Submenu

Feature	Description
Floppy Check	Enabled – verifies floppy type on boot. Disabled – speeds boot
Summary Screen	Display system configuration on boot
Boot-Time Diagnostic Screen	Display the diagnostic screen on boot
Quick Boot Mode	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Advanced Menu

The advanced menu allows you to change the peripheral control, advanced chipset control, and disk access mode.

The advanced menu is shown in figure 3–6, and the advanced menu options are described in table 3–6.

Phoenix BIOS Setup Utility	
Main **Advanced** Security Power Boot Exit	
	Item Specific Help
Setup Warning Setting items on this menu to incorrect values may cause your system to malfunction. ► PCI Configuration ► Advanced Chipset Control ► I/O Device Configuration ► On-board Socket Site: Local Bus IDE adapter: [Both] Large Disk Access Mode: [DOS] Installed O/S: [Win98] Reset Configuration Data: [No]	Peripheral Configuration
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Previous Values	

Figure 3–6. Advanced Setup Menu

Table 3–6. Advanced Menu Option

Feature	Description
I/O Device Configuration	Allows entry into the I/O submenu.
Advanced Chipset Control	Allows entry into the chipset submenu.
Installed O/S	Select "Win95" if you are using an operating system with Plug & Play capabilities. Default is [Other].
Reset Configuration Data	Used to reset the Plug & Play configuration data table when new devices are added/removed or whenever the BIOS is upgraded.
Large Disk Access Mode	Select "DOS" if your system has DOS. Select "Other" if you have another operating system, such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector.
Local Bus IDE Adapter	Controls configuration of local bus IDE adapter. Default is [Both] (primary and secondary).
On-board Socket Site	Allows entry into socket site submenu.
Flat Panel	Allows entry into flat panel submenu.

PCI Configuration Submenu

PCI Configuration	
	Item Specific Help
► PCI Device, Slot #1 ► PCI Device, Slot #2 ► PCI Device, Slot #3 ► PCI/PNP ISA UMB Region Exclusion ► PCI/PNP ISA IRQ Resource Exclusion	If the line item you are viewing has specific help, it will be listed here.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit	

Figure 3–7. PCI Configuration Submenu

Table 3–7. PCI Configuration

Feature	Description
PCI Device	Setup items for configuring the specific PCI device
UMB Exclusion	Reserve specific upper memory blocks for use by legacy ISA devices
IRQ Exclusion	Reserve specific IRQs for use by legacy ISA devices.

PCI Device Submenu (for slots 1,2, and 3)

PCI Configuration		
		Item Specific Help
Enable Master: [Disabled] Latency Timer: [0040h]		If the line item you are viewing has specific help, it will be listed here.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

Figure 3–8. PCI Device Submenu

Table 3–8. PCI Device Submenu

Feature	Description
Enable Master	Enable selects device as a PCI bus master
Latency Timer	Minimum guaranteed time slice allotted for bus master in units of PCI bus clocks.

PCI/PNP ISA UMB Region Exclusion Submenu

PCI/PNP ISA UMB Region Exclusion		
		Item Specific Help
CC00 – CFFF: [Available] D000 – D3FF: [Available] D400 – D7FF: [Available] D800 – DBFF: [Available] DC00 – DFFF: [Available]		Reserves the specified block of upper memory for use by legacy ISA devices.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

Figure 3–9. PCI/PNP ISA UMB Region Exclusion

PCI/PNP ISA IRQ Resource Exclusion Submenu

PCI/PNP ISA IRQ Resource Exclusion		
		Item Specific Help
IRQ 3:	[Available]	
IRQ 4:	[Available]	Reserves the specified IRQ
IRQ 5:	[Available]	for use by legacy ISA
IRQ 7:	[Available]	devices.
IRQ 9:	[Available]	
IRQ 10:	[Available]	
IRQ 11:	[Available]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

Figure 3–10. PCI/PNP ISA IRQ Resource Exclusion

I/O Device Configuration Submenu

The I/O Device Configuration submenu is used to configure the COM ports, parallel ports, and enable/disable the diskette and enhanced IDE controllers.
The I/O device configuration submenu is shown in figure 3–11, and the submenu options are described in table 3–9.

Phoenix BIOS Setup Utility		
Advanced		
I/O Device Configuration		Item Specific Help
Serial port A:	[Enabled]	Configure serial port A
* Base I/O Address	[3F8]	using options:
* Interrupt	[IRQ 4]	[Disabled]
► Protocol Menu:		No configuration
Serial port B:	[Enabled]	[Enabled]
* Base I/O Address	[2F8]	No configuration
* Interrupt	[IRQ 3]	[Auto]
Parallel port:		BIOS or OS chooses
* Base I/O Address	[378]	configuration
* Interrupt	[IRQ 7]	(OS controlled)
Mode:	[ECP]	Displayed when
* DMA channel:	[DMA 3]	controlled by OS
Floppy disk controller:	[Enabled]	
* Base I/O address:	[Primary]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults		
ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit		

*   Depending on the selected mode, these items might not be displayed.

Figure 3–11. I/O Device Configuration Submenu

Table 3–9. I/O Device Configuration Submenu Options

Option	Description
Serial Port A	Allows the COM A port to be enabled, disabled, or autoselected.
Serial Port B	Allows the COM B port to be enabled, disabled, or autoselected.
Parallel Port	Allows the parallel port to be enabled, disabled, or autoselected.
Floppy Disk Controller	Allows the floppy drive controller to be enabled, disabled, or autoselected.
Base I/O Address[1]	Select a unique address for the corresponding peripheral.
Interrupt[1]	Select an interrupt request for the corresponding peripheral.
Protocol Menu	Controls the protocol for Serial Port A.

[1] Visible only when corresponding peripheral is "Enabled"

Advanced Chipset Control Submenu

The advanced chipset control submenu allows you to change the values in the chipset registers and optimize your system's performance.

The advanced chipset control submenu is shown in figure 3–12, and the submenu options are described in table 3–10.

Phoenix BIOS Setup Utility		
Advanced		
Advanced Chipset Control		Item Specific Help
Video boot type	[Onboard Video 1MB]	Select "Onboard Video" to
Graphics Aperture:	[64MB]	enable the onboard video
		controller as the boot display
Enable Memory Gap	[Disabled]	device. Select either 512K or
Frequency Ratio:	[2x]	1MB of System Memory to be
		allocated to the onboard video
		controller.
		Select "Disable Onboard
		Video" to disable the onboard
		video controller. No System
		Memory will be allocated for
		video.
F1 Help ↑↓	Select Item -/+ Change Values	F9 Setup Defaults
ESC Exit ←→	Select Menu Enter Select » Sub-menu	F10 Save & Exit

Figure 3–12. Advanced Chipset Control Submenu

Note

Most system configurations will work best with these options in their default configurations. Fast processors may cause I/O failures at the default recovery values. You can increase the number of cycles when encountering this problem; however, slowing down the clock too much may cause I/O initialization

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problems. You should increase the number of clock cycles incrementally, until you see an improvement in I/O performance.

Table 3–10. Advanced Chipset Control Submenu Options

Option	Description
Video Boot Type[1]	Determines default video adapter type and amount of system memory required.
Enable Memory Gap	Allows creation at a 128K memory gap in conventional memory from 512K to 640K, or a 1MB memory gap in extended memory from 15 MB to 16 MB. Requires use of conventional or extended memory. Default is [Disabled].
Graphics Aperture	Determines size of aperture.

[1] If the on-board video is disabled, FP video will no longer be available.

On-board Socket Site Submenu

Phoenix BIOS Setup Utility	
Advanced	
On-board Socket Site	Item Specific Help

`32-pin Socket Site Type        [SRAM]`
`32-pin ROM Site I/O            [180h-181h]`
`32-pin Socket Site Address     [CC000h-CFFFFh=16KB]`
	Select "Disabled" to disable decoding of the socket site.
	
	Select "EPROM" if the 32-pin socket site is populated with EPROM.
	
	Select "SRAM" if the 32-pin socket site is populated with NVRAM or SRAM.
	
	Select "Disk-On-Chip" if site contains a DOC2000.

F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Save & Exit	

Figure 3–13. On-board Socket Site Submenu

Table 3–11. On-board Socket Site Submenu Options

Option	Description
32-pin Socket Site Address	Allows on-board 32-pin socket site to be disabled or mapped to a memory range. Default is [Disabled].
32-pin Socket Site Type[1]	Indicates type of memory installed in on-board 32-pin socket site. Default is [SRAM].
32-pin Socket Site I/O	Allows configuration of I/O address used by on-board 32-pin socket site. Default is [180h-181h].

[1] Visible only when Socket Site Address is "Enabled"

Security Menu

Use the security menu to define system passwords and set other security options. If you change the supervisor or user password, you must enter the password a second time for verification. Passwords can prevent access to setup menus or unauthorized booting of the unit. If you use the supervisor password, you can also change the user password.

The security menu is shown in figure 3–14, and the security menu options are described in table 3–12.

Phoenix BIOS Setup Utility		
Main Advanced **Security**Power Boot Exit		
		Item Specific Help
Supervisor Password is: Clear User Password is: Clear Set Supervisor Password: [Enter] Set User Password: [Enter] Diskette access: [Supervisor] Password on boot: [Disabled]		Supervisor Password controls access to the setup utility.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Previous Values		

Figure 3–14. Security Menu

Table 3–12. Security Menu Options

Option	Description
Supervisor Password	Displays status of supervisor password. The supervisor password provides full access to setup menus.
User Password	Displays status of user password. The user password provides limited access to setup menus. The User Mode field (see below) defines access.
Set Supervisor Password	Enter the new password twice to set it. You may use up to eight alphanumeric characters. You can set the password to nothing by hitting a carriage return.
Set User Password	Enter the new password twice to set it. You may use up to eight alphanumeric characters. You can set the password to nothing by hitting a carriage return.
Password on Boot	If the supervisor password is set and this option is disabled, BIOS assumes the user is booting.
Diskette Access	Restricts access to floppy drives to the supervisor when set to "Supervisor." Requires setting the Supervisor password.

Power Menu

Phoenix BIOS Setup Utility	
Main Advanced Security **Power** Boot Exit	
	Item Specific Help
Power Savings: [Disabled]	Maximum Power Savings conserves the greatest amount of system power. Maximum Performance conserves power but allows greatest system performance. To alter these settings, choose Customized. To turn off power management, choose Disabled.
Idle Mode: [Off]	
Hard Disk Timeout: [Disabled]	
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ←→ Select Menu Enter Select » Sub-menu F10 Previous Values	

Figure 3–15. Power Menu

Table 3–13. Power Menu Options

Option	Description
Power Savings	Enables or disables power management. Options include disabled, maximum power, performance, and customized. The customized option may be used to individually set standby timeout, suspend timeout, standby CPU speed, fixed disk timeout, and CRT values.
Idle Mode	Idle mode slows down the CPU during brief periods when the system is not busy.
Hard Disk Timeout [1]	When enabled activity on the IDE interface will keep the system from entering suspend mode.

[1] Selectable only when power saving is "Customized"

Boot Menu

The boot menu allows you to specify the boot order for the unit. When you power the unit up, it will attempt to boot off each of the listed devices, starting at the first device. To change this order, select items with the arrow keys and move them up or down the list with the <+> (up) and <–> (down) keys. A moveable item may be a single device or a group of devices.

The removable and fixed drives are device groups that may contain more than one device. You can change the listed order of devices in a group with the <+> (up) and <–> (down) keys, but the system will only attempt to boot off the first listed device in a group before it continues through the boot order.

You can toggle between viewing or not viewing the devices in a group by selecting the group and pressing <ENTER>, and you can press <CTRL ENTER> to view all devices in all groups. ATAPI removable devices, such as LS120 or Iomega IDE Zip® drives, may appear under either the removable or fixed groups. You can move these devices between the groups by selecting them and pressing the <n> key.

The boot menu is shown in figure 3–16.

Note

Any time the configuration data (see Table 3–6) is reset, the boot order resets to the default settings.

Phoenix BIOS Setup Utility		
Boot		
		Item Specific Help
+Removable Devices		
+Fixed Drives		If the item you are
ATAPI CD-ROM Drive		viewing has specific
Network Drive		help, it will be listed
		here.
F1 Help ↑↓ Select Item -/+ Change Values		F9 Setup Defaults

ESC	Exit	←→	Select Menu	Enter Select » Sub-menu	F10	Previous Values

Figure 3–16. Boot Menu

Exit Menu

This menu serves as the exit point for the setup menus. You can save the current configuration, restore the previous configuration, or load the default configuration.

Saved items are stored in battery backed CMOS RAM. The next time you boot your computer, the BIOS configures your system according to the setup selections stored in CMOS. If those values cause the system boot to fail, reboot and press F2 to enter setup. In setup, you can get the default values (as described below) or try to change the selections that caused the boot to fail.

The exit menu is shown is figure 3–17, and the exit menu options are described in table 3–14.

Phoenix BIOS Setup Utility						
Main Advanced Security Power Boot **Exit**						
					Item Specific Help	
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes					If the item you are viewing has specific help, it will be listed here.	
F1 Help	↑↓	Select Item	-/+ Change Values		F9 Setup Defaults	
ESC Exit	←→	Select Menu	Enter Select » Sub-menu		F10 Previous Values	

Figure 3-17. Exit Menu

Table 3-14. Exit Menu Options

Option	Description
Exit Saving Changes	Use this option to save the current configuration and exit.
Exit Discarding Changes	Use this option to exit Setup without storing any new selections you may have made in CMOS. The selections previously in effect remain in effect. If you have changed some items, the program asks if you want to save before exiting.
Load Setup Defaults	Use this option to load the default values for all setup items. You can return to the other menus if you want to review and change your selections. The default values are not in effect until the configuration is saved.
Discard Changes	Use this option to discard all changes since the configuration last changed (i.e., this option loads previous configuration). You can return to the other menus if you want to review and change your selections. The default values are not in effect until the configuration is saved.
Save Changes	Use this option to save all the selections without exiting Setup. You can return to the other menus if you want to review and change your selections.

BIOS Compatibility

This BIOS is IBM PC/AT compatible with additional CMOS RAM and BIOS data areas used.

Appendix A – DRAM Installation

The AIM3 has two 168-pin DIMM sockets in which to add memory. Memory modules operate at 3.3 Volts and must be PC-100 or PC-133 compliant. SDRAM sizes of 32, 64, 128, and 256 MB may be used to accommodate 100 MHz or 133 MHz FSB.

DIMM
MEMORY

LOCKING
MECHANISM

Insert memory vertically

DIMM
SOCKET

Memory inserted
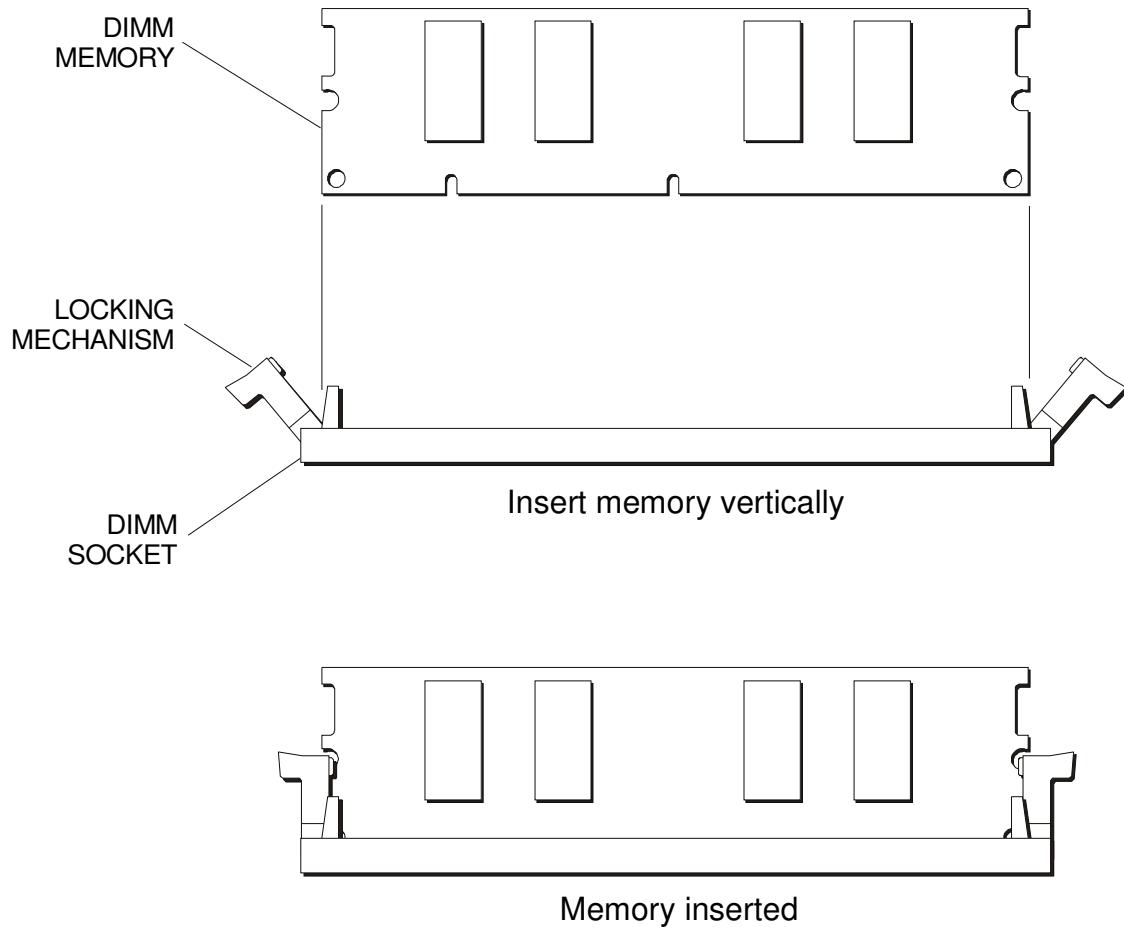
Figure A–1. SDRAM Installation

Appendix B – Video Modes

Introduction

Appendix B defines the video modes and the panels the AIM3 supports.

Video Modes

The Intel VGA controller supports many standard, VESA, and extended modes. The Intel graphics controller runs at 100 MHz or 133 MHz. The following tables list the standard and extended video modes and whether they passed, failed or are not supported with the CRT and TFT active color displays.

Standard Modes

Table B–1. Standard Modes

Mode IBM	VESA Mode[1]	Number of Colors	Pixels	Display Mode	CRT	TFT
00	—	16/256	320x200	text	OK	OK
01	—	16/256	320x350	text	OK	OK
02	—	16/256	640x200	text	OK	OK
03	—	16/256	640x200	text	OK	OK
04	—	4/256	320x200	graphics	OK	OK
05	—	4/256	320x200	graphics	OK	OK
06	—	2/256	640x200	graphics	OK	OK
07	—	mono	720x350	text	OK	OK
0D	—	16/256	320x200	graphics	OK	OK
0E	—	16/256	640x200	graphics	OK	OK
0F	—	mono	640x350	graphics	OK	OK
10	—	16/256	640x350	graphics	OK	OK
11,20	—	2/256	640x480	graphics	OK	OK
12	—	16/256	640x480	graphics	OK	OK
13	—	256/256	320x200	graphics	OK	OK

— Not supported by BIOS

[1] Execute the VESA.EXE device driver to initiate VESA modes

Extended Modes

Table B–2. Extended Modes

Mode Intel	VESA Mode[1]	Number of Colors	Pixels	Display Mode	CRT	TFT
20	109	—	—	text	OK	OK
21	10A	—	—	text	OK	OK
22	10B	—	—	text	OK	OK
23	10C	—	—	text	OK	OK
6A	102	16	800x600	graphics	OK	OK

[1] Execute VESA.EXE device driver to initiate VESA modes

Windows 98

Table B–3. Windows 98 Driver

Intel GMHC Drivers for 815E	CRT[1]	TFT
1024X768X256	YES	YES
1024X768X16bit (High Color)	YES	YES
1024x768x24bit (True Color)	YES	YES
640x480x16	YES	YES
640x480x256	YES	YES
640x480x16bit	YES	YES
640x480x24bit	YES	YES
800x600x256	YES	YES
800x600x16bit	YES	YES
800x600x24bit	YES	YES

[1] All Windows drivers were tested on an NEC multi-sync XE21 monitor

Windows NT

Table B–4. Windows NT-supported Video Modes

Video Modes Supported on Windows NT	CRT[1]	TFT
640x480x256	YES	YES
800x600x256	YES	YES
1024x768x256	YES	YES
640x480x65536	YES	YES
800x600x65536	YES	YES
1024x768x65536	YES	YES
640x480x16777216	YES	YES
800x600x16777216	YES	YES
1024x768x16777216	YES	YES

[1] All Windows drivers were tested on an NEC multi-sync XE21 monitor

Windows 2000

Table B–5. Windows 2000-supported Video Modes

Video Modes Supported on Windows 2000	CRT[1]	TFT
640x480x256	YES	YES
800x600x256	YES	YES
1024x768x256	YES	YES
640x480x16bit (High Color)	YES	YES
800x600x16bit (High Color)	YES	YES
1024x768x16bit (High Color)	YES	YES
640x480x24bit (True Color)	YES	YES
800x600x24bit (True Color)	YES	YES
1024x768x24bit (True Color)	YES	YES

[1] All Windows drivers were tested on an NEC multi-sync XE21 monitor

Appendix C – Pinouts

This appendix describes the pinouts for the AIM3 connectors defined in Chapter 2.

VGA Connector (J5)

Table C–1. VGA Connector (J5)

Pin	Signal	Pin	Signal
1	RED	9	Fused VCC
2	GREEN	10	ORB_GND
3	BLUE	11	NC*
4	NC	12	DDCDAT
5	ORB_GND	13	HSYNC
6	ORB_GND	14	VSYNC
7	ORB_GND	15	DDCCLK
8	ORB_GND		

Note

NC (No Connect) is internally pulled up to +5 Volts through a 1 KΩ resistor).

COM1 Connector RS-232/RS-485 (P6/P8)

Table C–2. COM1 Connector (P6/P8)

RS-232 Connector (P6)		RS-485 Connector (P8)	
Pin	Signal	Pin	Signal
1	DCD1	1	TXD-
2	RXD1	2	TXD+
3	TXD1	3	TXD TERM -
4	DTR1	4	TXD TERM +
5	GND	5	GND
6	DSR1	6	RXD-
7	RTS1	7	RXD+
8	CTS1	8	RXD TERM +
9A	RI1	9B	RXD TERM -

Note

For TXD termination in the RS-485 connector (P8), connect a 150Ω, ½ watt resistor from pin 3 to pin 4, with pin 1 connected to pin 3 and pin 2 connected to pin 4.

For RXD termination, connect a 150Ω, ½ watt resistor from pin 8 to pin 9, with pin 6 connected to pin 9 and pin 7 connected to pin 8.

COM2 RS-232 Connector (P7)

Table C–3. COM2 Connector (P7)

Pin	Signal	Pin	Signal
1	ORB_GND	14	NC
2	TXD2	15	NC
3	RXD2	16	NC
4	RTS2	17	NC
5	CTS2	18	NC
6	DSR2	19	NC
7	GND	20	DTR2
8	DCD2	21	NC
9	NC	22	RI2
10	NC	23	NC
11	PB_RESET*	24	NC
12	NC	25	NC
13	NC		

Note

The P7 connector also contains the remote system reset option. The reset jumper (JP11) must be in position 1-2 for this option to work.

*   The PB_RESET pin must be switched to GND to reset the entire board.

LPT1 Parallel Port Connector (P5)

Table C–4. LPT1 Parallel Port Connector (P5)

Pin	Signal	Pin	Signal
1	STROBE	14	NC
2	PD(0)	15	NC
3	PD(1)	16	NC
4	PD(2)	17	NC
5	PD(3)	18	GND
6	PD(4)	19	GND
7	PD(5)	20	GND
8	PD(6)	21	GND
9	PD(7)	22	GND
10	PACK	23	GND
11	PBUSY	24	GND
12	PE	25	GND
13	SELECT		

DCIN1 Power Connector (ATX1)

Table C–5. DCIN1 Power Connector (ATX1)

Pin	Signal	Pin	Signal
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PSON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWROK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

Note

-5V is not provided by the power supplies and will have to be created on the backplane board.

Internal Floppy Connector (F2)

Table C–6. Internal Floppy Connector (F2)

Pin	Signal	Pin	Signal
1	+5V	14	FSTEP*
2	IDX*	15	GND
3	+5V	16	FWD*
4	FDS1*	17	GND
5	+5V	18	FWE*
6	DCHG*	19	GND
7	NC	20	FTK0*
8	NC	21	GND
9	NC	22	FWP*
10	MO1*	23	GND
11	NC	24	FRDD*
12	FDIRC*	25	GND
13	NC	26	FHS*

IDE Connector (IDE1/IDE2)

Table C–7. IDE Connector

Pin	Signal	Pin	Signal
1	IDERESET*	21	HDRQ0
2	GND	22	GND
3	HDD7	23	HDIOW*
4	HDD8	24	GND
5	HDD6	25	HDIOR*
6	HDD9	26	GND
7	HDD5	27	HDIORDY
8	HDD10	28	ALE (pullup)
9	HDD4	29	HDAK0
10	HDD11	30	GND
11	HDD3	31	IRQ14
12	HDD12	32	HDIOCS16*
13	HDD2	33	HDA1
14	HDD13	34	NC
15	HDD1	35	HDA0
16	HDD14	36	HDA2
17	HDD0	37	HDCS0*
18	HDD15	38	HDCS1*
19	GND	39	IDEACTP*
20	NC	40	GND

ISA Backplane Connector (P3)

Table C–8. ISA Backplane Connector (P3)

Pin	Signal	Pin	Signal
B1	GND	A1	IOCHK*
B2	RESETDRV	A2	SD7
B3	+5V	A3	SD6
B4	IRQ0	A4	SD5
B5	+5V	A5	SD4
B6	DRQ2	A6	GND
B7	-12V	A7	SD3
B8	0WS*	A8	SD2
B9	+12V	A9	SD1
B10	GND	A10	SD0
B11	SMEMW*	A11	GND
B12	SMEMR*	A12	IOCHRDY
B13	GND	A13	AEN
B14	IOW*	A14	SA19
B15	IOR*	A15	SA18
B16	GND	A16	SA17
B17	DACK3*	A17	SA16
B18	DRQ3	A18	GND
B19	DACK1*	A19	SA15
B20	DRQ1	A20	SA14
B21	GND	A21	SA13
B22	RFSH*	A22	SA12
B23	GND	A23	GND
B24	SYSCLK	A24	SA11
B25	GND	A25	SA10
B26	IRQ7	A26	SA9
B27	IRQ6	A27	SA8
B28	IRQ5	A28	GND
B29	IRQ4	A29	SA7
B30	IRQ3	A30	SA6
B31	GND	A31	SA5
B32	DACK2*	A32	SA4
B33	TC	A33	GND
B34	GND	A34	SA3

142215(C)

Pin	Signal
B35	BALE
B36	GND
B37	+5V
B38	GND
B39	OSC
B40	GND
B41	MEMCS16*
B42	IOCS16*
B43	GND
B44	IRQ10
B45	IRQ11
B46	IRQ12
B47	IRQ15
B48	IRQ14
B49	GND
B52	DACK0*
B53	DRQ0
B54	DACK5*
B55	DRQ5
B56	DACK6*
B57	DRQ6
B58	DACK7*
B59	DRQ7
B60	+5V
B61	MASTER16*
B62	GND

Pin	Signal
A35	SA2
A36	SA1
A37	SA0
A38	GND
A39	
A40	LA23
A41	LA22
A42	LA21
A43	LA20
A44	GND
A45	LA19
A46	LA18
A47	LA17
A48	GND
A49	MEMR*
A52	MEMW*
A53	GND
A54	SD8
A55	SD9
A56	SD10
A57	SD11
A58	GND
A59	SD12
A60	SD13
A61	SD14
A62	SD15

PCI Backplane Connector (P2)

Table C–9. PCI Backplane Connector (P2)

Pin	Signal		Pin	Signal
B1	-12V		A1	
B2	TCK		A2	+12V
B3	GND		A3	
B4	TD0		A4	TD1
B5	+5V		A5	+5V
B6	+5V		A6	INTA*
B7	INTB*		A7	INTC*
B8	INTD*		A8	+5V
B9	PRBNT*1		A9	RESERVED
B10	RESERVED		A10	+5V(I/O)
B11	PRBNT*2		A11	RESERVED
B12	GND		A12	GND
B13	GND		A13	GND
B14	RESERVED		A14	RESERVED
B15	GND		A15	RST*
B16	CLK		A16	+5V(I/O)
B17	GND		A17	GNT
B18	REQ*		A18	GND
B19	+5V(I/O)		A19	PME*
B20	AD31		A20	AD30
B21	AD29		A21	+3.3V
B22	GND		A22	AD28
B23	AD27		A23	AD26
B24	AD25		A24	GND
B25	+3.3V		A25	AD24
B26	C/BE*3		A26	IDSEL
B27	AD23		A27	+3.3
B28	GND		A28	AD22
B29	AD21		A29	AD20
B30	AD19		A30	GND
B31	+3.3V		A31	AD18
B32	AD17		A32	AD16
B33	C/BE*2		A33	+3.3V
B34	GND		A34	FRAME*

Pin	Signal
B35	IRDY*
B36	+3.3V
B37	DEVSEL*
B38	GND
B39	LOCK*
B40	PERR*
B41	+3.3V
B42	SERR*
B43	+3.3V
B44	C/BE*1
B45	AD14
B46	GND
B47	AD12
B48	AD10
B49	GND
B52	AD8
B53	AD7
B54	+3.3V
B55	AD5
B56	AD3
B57	GND
B58	AD1
B59	+5V(I/O)
B60	ACK64*
B61	+5V
B62	+5V

Pin	Signal
A35	GND
A36	TRDY*
A37	GND
A38	STOP*
A39	+3.3V
A40	SDONE
A41	SBO*
A42	GND
A43	PAR
A44	AD15
A45	+3.3V
A46	AD13
A47	AD11
A48	GND
A49	AD0
A52	C/BE*0
A53	+3.3V
A54	AD6
A55	AD4
A56	GND
A57	AD2
A58	AD0
A59	+5V(I/O)
A60	REQ64*
A61	+5V
A62	+5V

USB Connector (J3)

Table C–10. USB Connector (J3)

Pin	Description		Pin	Description
1A	5V Fused		1B	5V Fused
2A	USBP0-		2B	USBP1-
3A	USBP0+		3B	USBP1+
4A	GND		4B	GND

Ethernet Connector (CN3)

Table C–11. Ethernet Connector (CN3)

Pin	Description
1	TX+
2	TX-
3	RX+
4	N/C
5	N/C
6	RX-
7	N/C
8	N/C

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