

---

**IBC 2600™**  
Celeron® / Pentium III®  
Single Board Computer with  
Video, SCSI, and Ethernet

**User's Guide**



---

©Copyright 2001

Doc No. 095-20081-00 Rev.B

All Rights Reserved

The information in this document is subject to change without prior notice in order to improve reliability, design, and function, and does not represent commitment on the part of the manufacturer. In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages, or the possibility of such damages, arising out of the use of this information.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

### **Trademarks**

IBM PC is a registered trademark of International Business Machines Corporation. Intel and Pentium are registered trademarks of Intel Corporation. Award is a registered trademark of Award Software, Inc. Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

### **Customer Service**

#### **Worldwide Headquarters**

I-Bus Corporation  
2391 Zanker Road #380  
San Jose  
CA 95131, USA  
Tel: +(1) 408 428 6100  
Fax: +(1) 408 428 6101  
**Toll Free: 877-777-IBUS**  
Email: sales@ibus.com

#### **European Headquarters**

I-Bus  
Unit 6, Chichester Business Park  
City Fields Way, Tangmere  
West Sussex, PO20 2LB, UK  
Tel: +44 (0) 1243 756300  
Fax: +44 (0) 1243 756301  
Email: sales@ibus.co.uk

#### **France, Italy**

I-Bus  
B.P 45 Valbonne  
06901 Sophia Antipolis CEDEX  
France  
Tel: +33 (0) 493 004 360  
Fax: +33 (0) 493 004 369  
Email: sales@ibus.com

Other countries, contact support@ibus.com

---

---

Thank You  
from the



team for  
purchasing this product

---

Dear Customer,

Thank you for purchasing an I-Bus Corporation product. We hope that this product exceeds your expectations. It is our desire to provide you with accurate, up-to-date information about the product(s) you have purchased. We welcome your comments and suggestions about our manuals.

You may email those comments and suggestions to [support@ibus.com](mailto:support@ibus.com). Please be sure to include your name, the name of your company, the product you purchased, and the manual number/revision (i.e. 00-00000-00 Rev. \*). This number is located on the title page.

At I-Bus Corporation, we value our customers and partners, and you can continue to count on I-Bus Corporation to be customer focused and to provide you a large range of solutions -- from cost-effective to fully customized industrial computer solutions.

Again, thank you for your commitment to I-Bus Corporation. We appreciate your business and look forward to continuing to work with you and helping you reach your goals.



---

## HANDLING PRECAUTIONS

---

**WARNING:** This product has components which may be damaged by electrostatic discharge.

---

To protect your single board computer (SBC) from electrostatic damage, be sure to observe the following precautions when handling or storing the board:

- S Keep the SBC in its static-shielded bag until you are ready to perform your installation.
- S Handle the SBC by its edges.
- S Do not touch the I/O connector pins. Do not apply pressure or attach labels to the SBC.
- S Use a grounded wrist strap at your workstation or ground yourself frequently by touching the metal chassis of the system before handling any components. The system must be plugged into an outlet that is connected to an earth ground.
- S Use antistatic padding on all work surfaces.
- S Avoid static-inducing carpeted areas.

## SOLDER-SIDE COMPONENTS

This SBC has components on both sides of the PCB. It is important for you to observe the following precautions when handling or storing the board to prevent solder-side components from being damaged or broken off:

- S Handle the board only by its edges.
- S Store the board in padded shipping material or in an antistatic board rack.
- S Do not place an unprotected board on a flat surface.



*This page was intentionally left blank*

## ***Table of Contents***

---

### ***Chapter 1. Specifications***

Introduction .....	1-1
Models .....	1-1
Features .....	1-2
SBC Block Diagram .....	1-3
SBC Board Layout .....	1-4
Processor .....	1-5
Bus Interfaces .....	1-5
Data Path .....	1-5
Bus Speed - PCI .....	1-5
Bus Speed CompactPCIR .....	1-5
Bus Speed - Systems & Memory .....	1-5
Mechanical Dimensions .....	1-6
System & Memory Buses .....	1-6
DMA Channels .....	1-6
Interrupts .....	1-6
BIOS Flash .....	1-6
Cache Memory .....	1-6
DRAM Memory .....	1-7
Memory Hole .....	1-8
Error Checking and Correction .....	1-8
PCI Local Bus Interface .....	1-8
Universal Serial Bus (USB) .....	1-9
Concurrent PCI .....	1-9
AGP VGA Interface .....	1-9
System Hardware Monitor .....	1-9
PCI 10/100Base-T Ethernet (Dual) .....	1-10
PCI Ultra2 SCSI Interface .....	1-11

## **Table of Contents**

---

### **Chapter 1. Specifications (continued)**

PCI Enhanced IDE Interface (Dual) .....	1-11
Floppy Drive Interface .....	1-12
Serial Interface .....	1-12
Enhanced Parallel Interface .....	1-12
PS/2 Mouse Interface .....	1-12
Keyboard Interface .....	1-13
Watchdog Timer .....	1-13
Power Fail Detection .....	1-13
Battery .....	1-13
Temperature/Environment .....	1-14
Configuration Jumpers .....	1-14
Ethernet LEDs and Connector .....	1-15
System BIOS Setup Utilities .....	1-17
Connectors .....	1-18
CompactPCI Pin Assignments1 .....	1-21

### **Chapter 2. System BIOS**

BIOS Operation .....	2-1
Password Entry .....	2-3
BIOS Errors .....	2-5
Running AMIBIOS Setup .....	2-6
AMIBIOS Setup Main Menu .....	2-7
Auto-Detect Hard Disks .....	2-12
Change Password .....	2-13
Change Supervisor Password .....	2-14
Change User Password .....	2-15
Disabling the Password(s) .....	2-16



## ***Table of Contents***

---

### ***Chapter 2. System BIOS (continued)***

Auto Configuration Options .....	2-16
Auto Configuration - Optimal .....	2-16
Auto Configuration - Fail Safe .....	2-17
Save Settings and Exit .....	2-17
Exit Without Saving .....	2-18
Key Conventions .....	2-19

### ***Chapter 3. Standard CMOS Setup***

Standard CMOS Setup .....	3-1
Standard CMOS Options .....	3-2
Boot Sector Virus Protection .....	3-7

### ***Chapter 4. Advanced Setup***

Advanced CMOS Setup .....	4-1
Advanced CMOS Setup Options .....	4-2
Advanced Chipset Setup .....	4-11
Advanced Chipset Setup Options .....	4-12

### ***Chapter 5. Power Management Setup***

Power Management Setup .....	5-1
Power Management Setup Options .....	5-2

### ***Chapter 6. PCI/Plug and Play Setup***

PCI/Plug and Play Setup .....	6-1
PCI/Plug and Play Setup Options .....	6-2

### ***Chapter 7. Peripheral Setup***

Peripheral Setup .....	7-1
Peripheral Setup Options .....	7-2

## ***Table of Contents***

---

### ***Appendix 1. BIOS Messages***

BIOS Beep Codes .....	A1-1
BIOS Error Messages .....	A1-2
ISA BIOS NMI Handler Messages .....	A1-6
Port 80 Codes .....	A1-7
Additional Bus Checkpoints .....	A1-14
High Byte .....	A1-14

### ***Appendix 2. Adaptec Software License***

### ***Appendix 3. Rear Transition Module***

Introduction .....	A3-1
Model .....	A3-1
Features .....	A3-1
Rear I/O Transition Module Board Layout .....	A3-2
Mechanical Dimensions .....	A3-3
Temperature/Environment .....	A3-3
Configuration Jumpers .....	A3-3
Connectors .....	A3-4
Compact PCI Pin Assignments .....	A3-12

### ***Appendix 4. Installing Microsoft Windows NT 4.0***

### ***Appendix 5. Limited Warranty***

### ***Appendix 6. FCC Information***

## **Chapter 1 - Specifications**

---

### **INTRODUCTION**

The IBC 2600 full-featured CompactPCI processor is a single board computer (SBC) which features an Intel a Pentium III (FC-PGA) microprocessor or Celeron microprocessor, Intel 440BX AGPset, 66/100MHz system and memory buses, Intel Accelerated Graphics Port (AGP) video interface, SDRAM, PCI Local Bus, cache, floppy controller, dual EIDE (Ultra DMA/33) interface, PCI Ultra2 SCSI controller, dual PCI 10/100 Base-T Ethernet controllers, two serial ports, parallel port, speaker port, mouse port and keyboard port on a single CompactPCI card. The SBC is a 6U, dual-slot CompactPCI SBC designed to fit a wide variety of applications. The IBC 2600 is used with a rear I/O transition, which provides rear I/O support.

### **MODELS**

<b>Model</b>	<b>Description</b>
<b>IBC 2600:</b>	
Pentium III (FC-PGA):	
IBC 2600-850	Pentium III CPU at 850MHz
IBC 2600-700	Pentium III CPU at 700MHz
IBC 2600-600	Pentium III CPU at 600MHz
Celeron:	
IBC 2600-566	Celeron CPU at 566MHz
IBC 2600-433	Celeron CPU at 433MHz
IBC 2600-366	Celeron CPU at 366MHz
IBC 2600-300	Celeron CPU at 300MHz

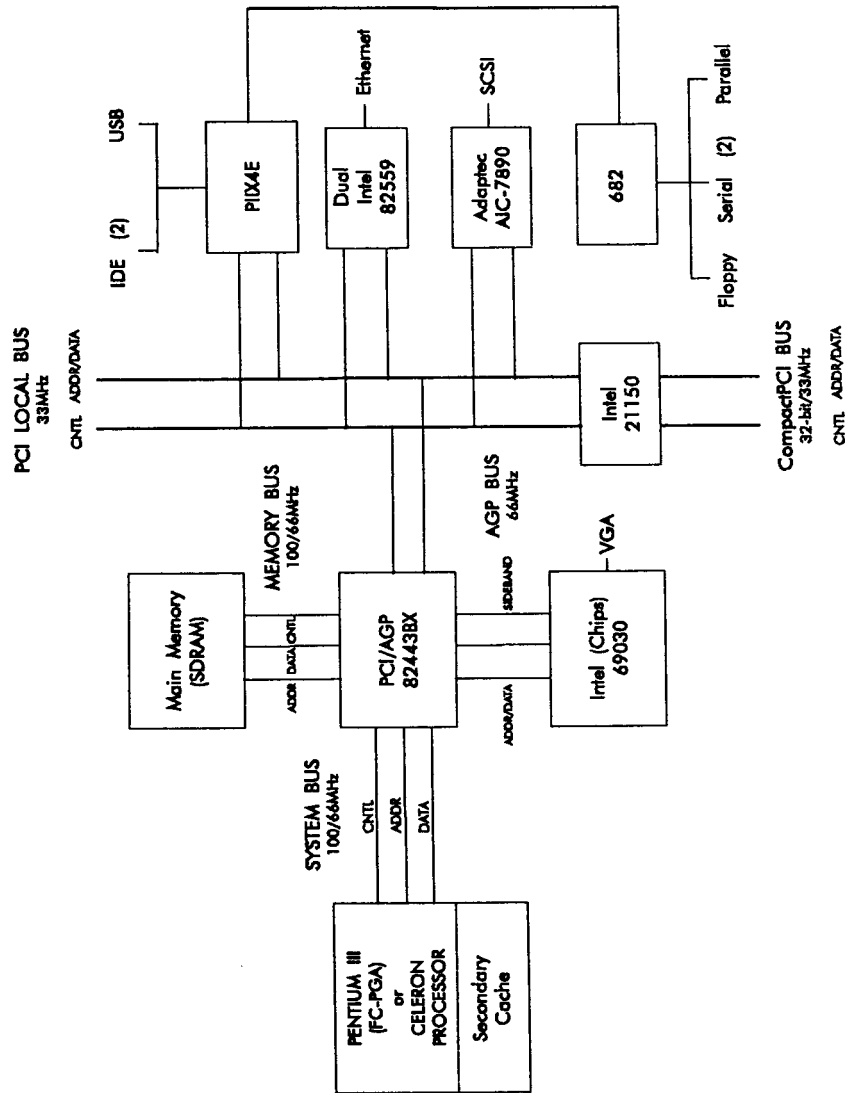
## ***Chapter 1 - Specifications***

---

### **FEATURES**

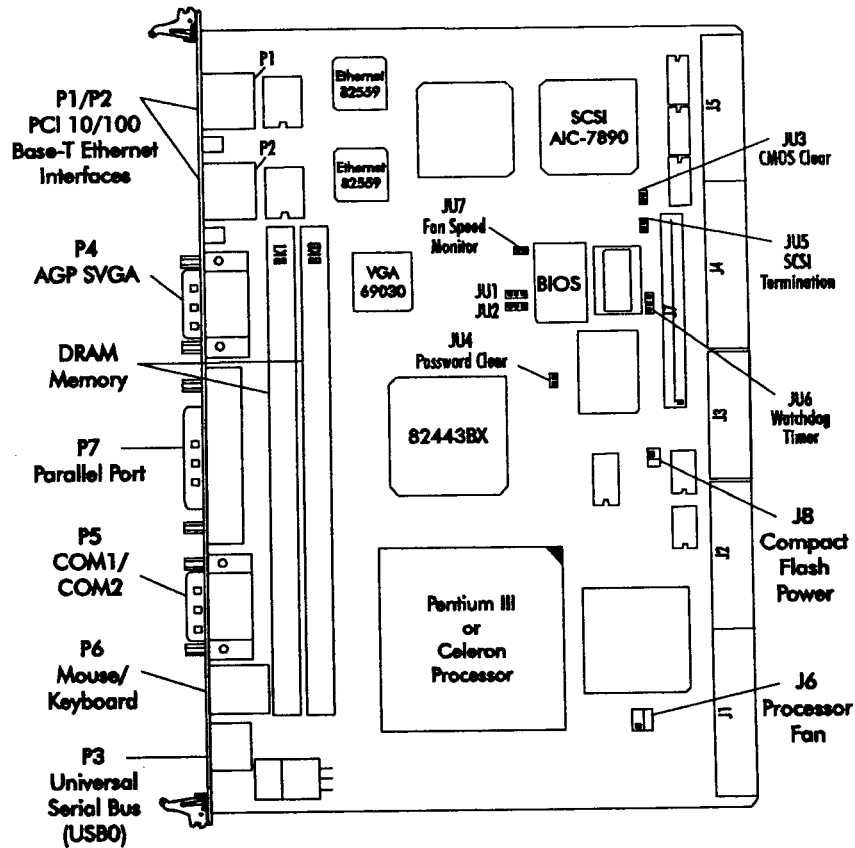
- S Pentium III (FC-PGA) microprocessor at 850MHz, 700MHz, or 600MHz
- S or Celeron microprocessor at 566MHz, 433MHz, 366 MHz or 300MHz
- S Intel 440BX AGPset with 66/100MHz system and memory buses, and PCI bandwidth greater than 100MB/second
- S Intel Accelerated Graphics Port (AGP) VGA on-board video interface
- S PCI Local Bus supports off-board CompactPCI option cards, dual PCI 10/100Base-T Ethernet controllers and on-board PCI Ultra2 SCSI controller - Adaptec AIC-7990
- S Compatible with PCI Industrial Computer Manufacturers Group (PICMG) CompactPCI Specification
- S DRAM error checking and correction (ECC) support
- S Supports up to 512MB of Synchronous DRAM (SDRAM) on-board
- S Floppy drive and dual PCI EIDE Ultra DMA/33 drive interface
- S Disk drive connectivity on rear I/O transition
- S Two serial ports and one parallel port
- S Automatic or manual peripheral configuration
- S Watchdog timer
- S System hardware monitor
- S Supports 1M x 64 to 32M x 64 DIMMs for non-ECC configurations; supports 1M x 72 to 32M x 72 DIMMs for ECC configurations
- S Shadow RAM for System BIOS and peripherals increases system speed and performance

## Chapter 1 - Specifications



SBC Block Diagram

## Chapter 1 - Specifications



SBC Board Layout

## ***Chapter 1 - Specifications***

---

### **PROCESSOR**

- § Intel Pentium III microprocessor using the Flip Chip Pin Grid Array (FC-PGA) at 850MHz, 700MHz, or 600MHz
- § Intel Celeron microprocessor at 566MHz, 433MHz, 366 MHz, or 300MHz

### **BUS INTERFACES**

- § CompactPCI Bus compatible

### **DATA PATH**

- § DRAM/Memory - 64-bit
- § PCI Local Bus - 32-bit
- § Video - 64-bit
- § CompactPCI Bus - 32-bit

### **BUS SPEED-PCI**

- § 33MHz

### **BUS SPEED - CompactPCI**

- § 33MHz

### **BUS SPEED - SYSTEM & MEMORY**

- § 100MHz - Pentium III
- § 66MHz - Celeron

## ***Chapter 1 - Specifications***

---

### **MECHANICAL DIMENSIONS**

- S 6U CompactPCI board - 233.35 nun x 160 min.
- S Dual-slot - 8HP - 40.64 mm

### **SYSTEM & MEMORY BUSES**

- S The Intel 440BX AGPset supports the system and memory buses at both 66MHz and 100MHz speeds. The 100MHz system and memory buses provide a higher bandwidth path for transferring data between main memory/chip set and the processor.

### **DMA CHANNELS**

- S The SBC is fully PC compatible with seven DMA channels, each supporting type F transfers.

### **INTERRUPTS**

- S The SBC is fully PC compatible with interrupt steering for PCI plug and play compatibility.

### **BIOS (FLASH)**

- S The BIOS is a Hi-Flex AMIBIOS with built-in advanced CMOS setup for system parameters, peripheral management for configuring on-board peripherals, PCI-to-PCI bridge support and PCI interrupt steering. The BIOS chip is a boot block Flash device - 28F002BX-T120. The BIOS may be upgraded from the floppy disk by pressing <Ctrl> + <Home> *immediately* after reset or power-up with the floppy disk in drive A:. Custom BIOS configurations are available.

### **CACHE MEMORY**

- S For Advanced Transfer Cache Pentium III processors, the processor includes an integrated on-die, 256K 8-way set associative level two (L2) cache. The L2 cache implements the new Advanced Transfer Cache architecture with a 256-bit wide bus. The processor also includes a 16K level one (L1) instruction cache and 16K L1 data cache. These cache arrays run at the full speed of the processor core.



## Chapter 1 - Specifications

For Celeron processors, a 128K unified, non-blocking second level (L2) cache improves performance by reducing the average memory access time and providing fast access to recently used instructions and data.

### DRAM MEMORY

The DRAM interface consists of two dual in-line memory module (DIMM) sockets and supports auto detection of memory up to 512MB of Synchronous DRAM (SDRAM). Minimum memory size is 8MB. The System BIOS automatically detects memory type, size and speed.

The SBC uses industry standard 64-bit or 72-bit wide gold finger DIMM DRAM in two 168-pin DIMM sockets.

NOTE: Memory can be installed in one or both DIMM sockets. If only one DIMM module is used, it must be populated in Bank 0 (BK0) if it is a 8MB or 16MB DIMM module; single DIMMs of all other sizes must be populated in Bank 1 (BK1). If two modules are used, they must be the same DIMM type, but may be different sizes (see table below). EDO DIMMs are not supported. All DIMMs must have gold contacts.

The SBC supports DIMM memory modules which are PC-100 compliant and have the following features:

- § 168-pin DIMMs with gold-plated contacts
- § 100MHz SDRAM
- § Non-ECC (64-bit) or ECC (72-bit) memory
- § 3.3 volt
- § Single or double-sided DIMMs in the sizes listed below
- § Buffered or Registered configuration

#### DIMM

Size	DIMM Type	Non-ECC	ECC
8MB	Unbuffered	1M x 64	1M x 72
16MB	Unbuffered	2M x 64	2M x 72
32MB	Unbuffered	4M x 64	4M x 72
64MB	Unbuffered	8M x 64	8M x 72
128MB	Unbuffered	16M x 64	16M x 72
256MB	Registered	32M x 64	32M x 72

## ***Chapter 1 - Specifications***

---

NOTE: DIMM modules must not exceed 1.2" in height.

---

All memory components and DIMMs used with the SBC must be PC-100 compliant, which means that they comply with Intel's PC SDRAM specifications. These include the PC SDRAM Specification (memory component specific), the PC Unbuffered DIMM Specification, the PC Registered DIMM Specification and the PC Serial Presence Detect Specification.

### **MEMORY HOLE**

The SBC supports a 1MB memory hole option at 512KB-640KB or 15MB-16MB.

### **ERROR CHECKING AND CORRECTION**

The memory interface supports ECC modes via BIOS setting for multiple-bit error detection and detection of all errors confined to a single nibble.

### **PCI LOCAL BUS INTERFACE**

The SBC is fully compliant with the PCI Local Bus 2.1 Specification. It has optimized the PCI interface to allow the CPU to sustain the highest possible bandwidth (greater than 100 MB/sec sustained) and low latency of the PCI Bus. It supports PCI-to-PCI bridge technology, a pipelined snoop ahead feature and improved PCI to DRAM write-back policy. The PCI Local Bus interfaces to the CompactPCI Bus of the backplane and to the on-board PCI Ultra2 SCSI controller and dual PCI 10/100Base-T Ethernet controllers. The CompactPCI Bus interface to the backplane is compliant with the PCI Industrial Computer Manufacturers Group (PICMG) Specification.

Connectors J3, J4 and J5 of the CompactPCI Bus are utilized by the SBC for connection to the rear I/O transition. The SBC and Rear I/O Transition Module are designed so that the signals on J3, J4 and J5 must be routed only through those connectors between the SBC and Rear I/O Transition Module. No other connection of those signals should be made on the backplane. Specifically, this SBC must not be used in conjunction with a backplane that has signals on J3, J4 or J5 bussed to the SBC slot, i.e., some H. 110 backplanes.

## ***Chapter 1 - Specifications***

---

### **UNIVERSAL SERIAL BUS (USB)**

The SBC supports two USB 1.0 ports for serial transfers at 12 or 1.5Mbit/sec. The Universal Serial Bus (USB) is an interface allowing for connectivity to many standard PC peripherals via an external port. The USB connector is on the front panel; USB 1 is routed to the rear I/O transition.

### **CONCURRENT PCI**

Concurrent PCI maximizes system performance with simultaneous CPU, PCI and AGP Bus activities. It includes multitransaction timing, enhanced write performance, a passive release mechanism and support for PCI 2.1 compliant delayed transactions.

### **AGP VGA INTERFACE**

The 69030 HiQ Video video/graphic accelerator is an Accelerated Graphics Port (AGP) device. AGP is designed to off-load the PCI Bus by allowing graphics data to move directly from system memory. The 69030 integrates 4MB of high-speed SDRAM frame buffer memory into the chip.

By embedding SDRAM and graphics controller logic on the same die, the 69030 delivers uncompromised performance. The increase in the frame buffer bandwidth enables the 69030 to support high color, high-resolution graphics modes and real-time video acceleration. The interface supports pixel resolutions up to 1280 x 1024 x True Color non-interlaced. Software drivers for enhanced performance and resolution are available for most popular operating systems.

A VGA connector is available on the front panel of the SBC. The VGA port is also routed to the rear I/O transition.

Note that only one video connection may be used; the video device may be attached *either* to the front panel *or* to the Rear I/O Transition Module.

### **SYSTEM HARDWARE MONITOR**

The system hardware monitoring system monitors system voltages, temperature and fan speeds.

## ***Chapter 1 - Specifications***

---

The circuitry is based on National Semiconductor's LM80. The LM80 monitors seven system voltages, two fan speeds and the board ambient temperature. All of the voltages, fan speeds and temperature measurements have associated programmable watchdog Emits. When any of these programmed limits are exceeded, the monitor software can be used to notify the SBC. In addition, the externally available OS# signal can be used to notify external hardware of any over-temperature condition.

Fan speed monitoring can be configured to monitor two system fans.

The LM80 also monitors an external chassis intrusion switch via the system hardware monitor connector (P13) on the rear I/O transition

A general purpose output (GPO) is also provided at the system hardware monitor connector on the Rear I/O Transition Module. This signal can be used to provide a user-defined function.

The following system voltages are monitored by the LM80:

- S - 12 volts
- S 3.3 volts provided by the on-board voltage regulator for components on the SBC
- S 3.3 volts backplane power used by the option slots
- S +5 volts
- S +12 volts
- S VCC CORE, voltage provided by on-board VRM
- S 1.5 volt, VTT voltage used by processor's GTL+ bus

### **PCI 10/100BASE-T ETHERNET INTERFACE (DUAL)**

The dual PCI Ethernet interfaces are implemented using two Intel 82559 Ethernet controllers and operate in 10Base-T and 100base-TX Fast Ethernet modes. The interfaces are compliant with IEEE 802.3 and PCI Local Bus 2.0 and 2.1 Specifications.

## ***Chapter 1 - Specifications***

---

The main components of the interface are:

- S Intel 82559 for 10/100-MB/s media access control (MAC) with SYM, a serial ROM port and a PCI Bus Master interface
- S Serial ROM for storing the Ethernet address and the interface configuration and control data
- S Integrated RJ-45/Magnetics module connector on the SBC's I/O bracket for direct connection to the network. The connector requires a category 5 (CAT5) unshielded twisted-pair (UTP) 2-pair cable for a 100-MB/s network connection or a category 3 (CAT3) or higher UTP 2-pair cable for a 10-MB/s network connection.
- S Link status and activity LEDs on the I/O bracket for status indication (See *Ethernet LEDs and Connector* later in this section.)

Software drivers are supplied for most popular operating systems. Loading instructions for the software drivers are on the driver diskette provided with the SBC.

RJ-45 connectors are available on the front panel of the SBC and the interfaces are routed to the rear I/O transition.

Note that only one LAN 1 and one LAN 2 connection may be used at any time; Ethernet cables may be attached *either* to the front panel *or* to the rear I/O transition.

### **PCI ULTRA2 SCSI INTERFACE**

The SCSI interface is a PCI Bus Master device which supports Ultra2 SCSI data transfer up to 80MB per second and bursts data to the host at full PCI speeds. Active termination is provided with terminator voltage protected by self-resetting fuses. A jumper is provided to disable the termination. The SCSI controller is an Adaptec AIC-7890. Software drivers are available for most popular operating systems.

### **PCI ENHANCED IDE ULTRA DMA/33 INTERFACE (DUAL)**

Dual high performance PCI Bus Master EIDE interfaces are capable of supporting two IDE Type 4 disk drives each in a master/slave configuration. The interface supports Ultra DMA/33 with synchronous DMA mode transfers up to 33MB per second.

The IDE interface is routed to the rear I/O transition.

## ***Chapter 1 - Specifications***

---

### **FLOPPY DRIVE INTERFACE**

The SBC supports two floppy disk drives. Drives can be 360K to 2.88MB, in any combination.

The floppy drive interface is routed to the rear I/O transition.

### **SERIAL INTERFACE**

Two high-speed FIFO (16C550) serial ports with independently programmable baud rates are supported. The IRQ for each serial port has BIOS selectable addressing.

Serial port connectors are on the front panel of the SBC and the ports are routed to the rear I/O transition.

Note that only one COM 1 connector and one COM2 connector may be used at any time; serial devices may be attached *either* to the front panel *or* to the rear I/O transition.

### **ENHANCED PARALLEL INTERFACE**

The SBC provides a MAT compatible bidirectional parallel port and supports enhanced parallel port (EPP) mode and extended capabilities port (ECP) mode. The ECP mode is IEEE 1284 compliant. The IRQ for the parallel port has BIOS selectable addressing.

The parallel port connector is on the front panel of the SBC and the port is routed to the rear I/O transition.

Note that only one parallel connector may be used; the parallel device may be attached *either* to the front panel *or* to the rear I/O transition.

### **PS/2 MOUSE INTERFACE**

The SBC is compatible with a PS/2-type mouse. The mouse interface is routed to the rear I/O transition. Mouse voltage is protected by a self-resetting fuse.

Note that only one mouse may be used; it may be attached *either* to the front panel *or* to the rear I/O transition.

## **Chapter 1 - Specifications**

---

### **KEYBOARD INTERFACE**

The SBC is compatible with an AT-type keyboard. The keyboard interface is routed to the rear I/O transition. Keyboard voltage is protected by a self-resetting fuse.

Note that only one keyboard may be used; it may be attached *either* to the front panel *or* to the rear I/O transition.

### **WATCHDOG TIMER**

The watchdog timer is a hardware timer which resets the SBC if the timer is not refreshed by software periodically. The timer is typically used to restart a system in which an application becomes hung on an external event. When the application is hung, it no longer refreshes the timer. The watchdog timer then times out and resets the SBC.

The watchdog timer has two levels of enable. First, the watchdog timer jumper must be moved to the "enabled" position, which puts the watchdog timer under software control.

The second level involves software control of the watchdog's timer retriggering. Bit 6 of the 82371EB GPOREG register at I/O address 437H must be set to a zero (0), which blocks the triggering clock to the watchdog timer circuit, thus scheduling a hardware reset in about 1.5 seconds.

To refresh the watchdog timer, the software in the application toggles bit 6 of the GPOREG register. First the bit must be set to a one (1) to clear the watchdog timer delay; then it must be set to a zero (0), which schedules a system reset in 1.5 seconds. Toggling bit 6 of the GPOREG must occur within a period of less than 1.5 seconds to insure that a system reset is not issued.

A set of watchdog timer software code and sample programs are available from Technical Support.

### **POWER FAIL DETECTION**

A hardware reset is issued when on-board +5V or 3.3V voltage drops below 4.75 volts.

### **BATTERY**

A built-in lithium battery is provided, for ten years of data retention for CMOS memory.

# Chapter 1 - Specifications

---

## Lithium Battery Replacement

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben Herstellers.

## TEMPERATURE/ENVIRONMENT

Operating Temperature: 0°C. to 50°C.

Storage Temperature: -40°C. to 70°C.

Humidity: 5% to 90% non-condensing

## CONFIGURATION JUMPERS

The setup of the configuration jumpers on the SBC is described below.  
\* indicates the default value of each jumper.

---

**NOTE:** For two-position jumpers (3-post), "LEFT" is toward the front panel end of the board.

---

<u>Jumper</u>	<u>Description</u>	<u>JU1</u>	<u>JU2</u>
JU1/JU2	System Flash ROM Operational Modes  The Flash ROM has two programmable sections: the Boot Block for "flashing" in the BIOS and the Main Block for the executable BIOS and PnP parameters. Normally only the Main Block is updated when a new BIOS is flashed into the system.		
	Program All (Boot and Main)	Bottom	Bottom
	Normal PnP (Program Main Block)	Bottom*	Top*
	Write Protect	Top	Top
JU3	CMOS Clear  Install to clear Remove to operate		



## ***Chapter 1 - Specifications***

---

**NOTE:** The CMOS Clear jumper works on power-up. To clear the CMOS, power down the system, install the jumper, then turn the power back on. CMOS is cleared during the POST routines. Then power down the system again and remove the jumper before the next power-up.

---

<u>Jumper</u>	<u>Description</u>
JU4	Password Clear  Install for one power-up cycle to reset the password to the default (null password). Remove for normal operation.*
JU5	SCSI Termination Enable  Install to enable on-board active termination for the SCSI interface.* Remove to disable active termination.
JU6	Watchdog Timer  Install on the LEFT for normal reset operation.* Install on the RIGHT to enable watchdog timer operation.
JU7	Fan Speed Monitor  Install to enable the processor fan monitor Remove to disable the processor fan monitor.*

### **ETHERNET LEDS AND CONNECTOR**

Each Ethernet interface has two LEDs for status indication and an RJ-45 network connector. These LEDs and connector are described on the next page.

## ***Chapter 1 - Specifications***

---

### **ETHERNET LEDS AND CONNECTOR (continued)**

<u>LED/Connector</u>	<u>Description</u>
Link/Activity LED	Green LED which indicates the link status
Off	The Ethernet interface did not find a valid link on the network connection. Transmit and receive are not possible.
On (solid)	The Ethernet interface has a valid link on the network connection and is ready for normal operation. The Speed LED identifies connection speed.
On (flashing)	Indicates network transmit or receive activity
Speed LED	Amber LED which identifies connection speed.
Off	Indicates a 10MB/s connection.
On	Indicates a 100MB/s connection.
RJ-45 Network Connector	The RJ-45 network connector requires a category 5 (CAT5) unshielded twisted-pair (UTP) 2-pair cable for a 100-MB/s network connection or a category 3 (CAT3) or higher UTP 2-pair cable for a 10-MB/s network connection.

## ***Chapter 1 - Specifications***

---

### **SYSTEM BIOS SETUP UTILITIES**

The System BIOS is a Hi-Flex AMIBIOS with ROM-resident setup utilities. The following Setup utilities are selectable from the AMIBIOS Hi-Flex Setup Utility Menu:

- S Standard CMOS Setup
- S Advanced CMOS Setup
- S Advanced Chipset Setup
- S Power Management Setup
- S PCI/Plug and Play Setup
- S Peripheral Setup
- S Auto-Detect Hard Disks
- S Change User Password
- S Change Supervisor Password
- S Auto Configuration with Optimal Settings
- S Auto Configuration with Fail Safe Settings
- S Save Settings and Exit
- S Exit Without Saving

## Chapter 1 - Specifications

---

### CONNECTORS

---

NOTE: Pin 1 on the connectors is indicated by the square pad on the PCB.

---

<b>J6-</b>	<b>Processor Fan</b> 3 pin single row header, Molex #22-23-2031																		
	<table><thead><tr><th><u>PIN</u></th><th><u>SIGNAL</u></th></tr></thead><tbody><tr><td>1</td><td>Gnd</td></tr><tr><td>2</td><td>+12V</td></tr><tr><td>3</td><td>FanTach</td></tr></tbody></table>	<u>PIN</u>	<u>SIGNAL</u>	1	Gnd	2	+12V	3	FanTach										
<u>PIN</u>	<u>SIGNAL</u>																		
1	Gnd																		
2	+12V																		
3	FanTach																		
<b>J8 -</b>	<b>Compact Flash Power Connector</b> 2 pin header, Amp #640456-2																		
	<table><thead><tr><th><u>PIN</u></th><th><u>SIGNAL</u></th></tr></thead><tbody><tr><td>1</td><td>Gnd</td></tr><tr><td>2</td><td>33V</td></tr></tbody></table>	<u>PIN</u>	<u>SIGNAL</u>	1	Gnd	2	33V												
<u>PIN</u>	<u>SIGNAL</u>																		
1	Gnd																		
2	33V																		
<b>P1 -</b>	<b>PCI 10/100Base-T Ethernet Connector</b> 8 pin shielded RJ-45 connector, Molex #43202-8110																		
	<table><thead><tr><th><u>PIN</u></th><th><u>SIGNAL</u></th></tr></thead><tbody><tr><td>1</td><td>TD+</td></tr><tr><td>2</td><td>TD</td></tr><tr><td>3</td><td>RX+</td></tr><tr><td>4</td><td>NC</td></tr><tr><td>5</td><td>NC</td></tr><tr><td>6</td><td>RX</td></tr><tr><td>7</td><td>NC</td></tr><tr><td>8</td><td>NC</td></tr></tbody></table>	<u>PIN</u>	<u>SIGNAL</u>	1	TD+	2	TD	3	RX+	4	NC	5	NC	6	RX	7	NC	8	NC
<u>PIN</u>	<u>SIGNAL</u>																		
1	TD+																		
2	TD																		
3	RX+																		
4	NC																		
5	NC																		
6	RX																		
7	NC																		
8	NC																		
<b>P2 -</b>	<b>PCI 10/100Base-T Ethernet Connector</b> 8 pin shielded RJ-45 connector, Molex #43202-8110																		
	<table><thead><tr><th><u>PIN</u></th><th><u>SIGNAL</u></th></tr></thead><tbody><tr><td>1</td><td>TD+</td></tr><tr><td>2</td><td>TD</td></tr><tr><td>3</td><td>RX+</td></tr><tr><td>4</td><td>NC</td></tr><tr><td>5</td><td>NC</td></tr><tr><td>6</td><td>RX</td></tr><tr><td>7</td><td>NC</td></tr><tr><td>8</td><td>NC</td></tr></tbody></table>	<u>PIN</u>	<u>SIGNAL</u>	1	TD+	2	TD	3	RX+	4	NC	5	NC	6	RX	7	NC	8	NC
<u>PIN</u>	<u>SIGNAL</u>																		
1	TD+																		
2	TD																		
3	RX+																		
4	NC																		
5	NC																		
6	RX																		
7	NC																		
8	NC																		

## Chapter 1 - Specifications

**P3 - Universal Serial Bus (USB) Connector**  
 Right angle single port, Amp #787616-1  
 (+5V fused with self-resetting fuses)

<u>PIN</u>	<u>SIGNAL</u>
1	+5V-USB
2	USB
3	USB+
4	Gnd-USB

**P4 - PCI SVGA Interface Connector**  
 15 pin VGA connector, Amp #748390-5

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Red	6	Gnd	11	NC
2	Green	7	Gnd	12	EEDI
3	Blue	8	Gnd	13	HSYNC
4	NC	9	NC	14	VSYNC
5	Gnd	10	Gnd	15	EECS

**P5 - COM1/COM2 Connectors**  
 Dual 9 pin D, Amp #750593-4

Pin-out for each 9 pin D is as follows:

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Carrier Detect	6	Data Set Ready-I
2	Receive Data-I	7	Request to Send-O
3	Transmit Data-O	8	Clear to Send-I
4	Data Terminal Ready-O	9	Ring Indicator-I
5	Signal Gnd		

## **Chapter 1 - Specifications**

---

**P6**                    **Keyboard Connector/Mouse Connector**  
Stacked dual 6 pin right angle mini DIN, Amp  
#440173-3

**Keyboard Connector:**

<u>PIN</u>	<u>SIGNAL</u>
1	Kbd Data
2	Reserved
3	Gnd
4	Kbd Power (+5V fused) with self-resetting fuse
5	Kbd Clock
6	Reserved

**PS/2 Mouse Connector:**

<u>PIN</u>	<u>SIGNAL</u>
1	Ms Data
2	Reserved
3	Gnd
4	Kbd Power (+5V fused) with self-resetting fuse
5	Ms Clock
6	Reserved

**P7 -**                    **Parallel Port Connector**  
25 pin D, Amp #747846-4

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Strobe	14	Auto Feed XT
2	Data Bit 0	15	Error
3	Data Bit 1	16	Init
4	Data Bit 2	17	Slct In
5	Data Bit 3	18	Gnd
6	Data Bit 4	19	Gnd
7	Data Bit 5	20	Gnd
8	Data Bit 6	21	Gnd
9	Data Bit 7	22	Gnd
10	ACK	23	Gnd
11	Busy	24	Gnd
12	Paper End	25	Gnd
13	Slct		

## Chapter 1 - Specifications

---

### CompactPCI PIN ASSIGNMENTS

J1 and J2 comprise the 32-bit/33MHz CompactPCI Bus as defined by the CompactPCI Specification.

J3, J4 and J5 are used for connection to the rear I/O transition. The pin assignments for these connectors are defined in the tables which follow.

#### J3

Pin	F	E	D	C	B	A
19	GND		SIRQ	SIORDY		SRESET
18	GND	SDAK#			CS1P#	CS3P#
17	GND	SDREQ	SDD12	SDD13	SDD14	SDD15
16	GND		SDD8	SDD9	SDD10	SDD11
15	GND		SDA2	VCC	SDA1	SDA0
14	GND	SDIOW#	SDD4	SDD5	SDD6	SDD7
13	GND	SDIOR#	SDD0	SDD1	SDD2	SDD3
12	GND	WDATA#	INDEX#	MTR0#	DRV DEN1	DRV0#
11	GND	RDATA#	DRV DEN0	MTR1#	DSKCHG	DRV1#
10	GND	STEP#	TRK0	DIR#	HDSEL#	WP#
9	GND	USB+	BUSY	AFD#	ERR#	WGATE#
8	GND	USB-	STB#	VCC	SLIN#	PE
7	GND	INIT#	PPD4	PPD5	PPD6	PPD7
6	GND	ACK#	PPD0	PPD1	PPD2	PPD3
5	GND	SLCT	KBDATA	SPKR	MSDATA	
4	GND	RXD1	KBCLK	VCC	MSCLK	PBRST#
3	GND	TXD1	DCD1	DSR1	RTS1	CTS1
2	GND	RXD2	DTR1	RI1	DTR2	RI2
1	GND	TXD2	DCD2	DSR2	RTS2	CTS2

## Chapter 1 - Specifications

---

### CompactPCI PIN ASSIGNMENTS (continued)

#### J4

Pin	F	E	D	C	B	A
25	GND					
24	GND					
23	GND					
22	GND					
21	GND					
20	GND					
19	GND					
18	GND					
17	GND					
16	GND					
15	GND					
14	KEY					
13						
12						
11	GND	MON_FAN2	MON_CI			MON_RST#
10	GND	MON_FAN1	MON_GPO			
9	GND					
8	GND					
7	GND		PIRQ	PIORDY		PRESET
6	GND	PDACK#				
5	GND	PDREQ	PDD12	PDD13	PDD14	PDD15
4	GND		PDD8	PDD9	PDD10	PDD11
3	GND		PDA2		PDA1	PDA0
2	GND	PDIOW#	PDD4	PDD5	PDD6	PDD7
1	GND	PDIOR#	PDD0	PDD1	PDD2	PDD3



## Chapter 1 - Specifications

### CompactPCI PIN ASSIGNMENTS (continued)

#### J5

Pin	F	E	D	C	B	A
21	GND	ACTLED1	GND	LAN1RX+	GND	LAN1TX-
20	GND	LNKLED1	GND	GND	GND	GND
19	GND	SPDLED2	GND	LAN2RX-	GND	LAN2TX+
18	GND	ACTLED2	GND	LAN2RX+	GND	LAN2TX-
17	GND	LNKLED2	GND	GND	GND	GND
16	GND	TRMPWR	SCD#15	SCD#14	SCD#13	SCD#12
15	GND	TRMPWR	SCD15	SCD14	SCD13	SCD12
14	GND	TRMPWR	SCD#2	SCD#1	SCD#0	SCDPH#
13	GND	TRMPWR	SCD2	SCD1	SCD0	SCDPH
12	GND	TRMPWR	SCD#6	SCD#5	SCD#4	SCD#3
11	GND	TRMPWR	SCD6	SCD5	SCD4	SCD3
10	GND	SCLED#	GND	SCATN#	SCDPL#	SCD#7
9	GND	DIFSENSE	GND	SCATN	SCDPL	SCD7
8	GND	VGASCK	GND	SCRST#	SCACK#	SCBSY#
7	GND	VGASDA	GND	SCRST	SCACK	SCBSY
6	GND	HSYNC	GND	SCCD#	SCSEL#	SCMSG#
5	GND	VSYNC	GND	SCCD	SCSEL	SCMSG
4	GND	GND	GND	SCD#8	SCIO#	SCREQ#
3	GND	RED	GND	SCD8	SCIO	SCREQ
2	GND	GREEN	GND	SCD#11	SCD#10	SCD#9

## ***Chapter 1 - Specifications***

---

*This page was intentionally left blank*

## **Chapter 2 - System BIOS**

---

### **BIOS OPERATION**

Sections 3 through 7 of this manual describe the operation of the American Megatrends Hi-Flex AMIBIOS and the AMIBIOS Setup Utility. Refer to *Running AMIBIOS Setup* later in this section for standard Setup screens, options and defaults. The available Setup screens, options and defaults may vary if you have a custom BIOS.

When the system is powered on, AMIBIOS performs the Power-On Self Test (POST) routines. These routines are divided into two phases:

1. **System Test and Initialization.** Test and initialize system boards for normal operations.
2. **System Configuration Verification.** Compare defined configuration with hardware actually installed.

If an error is encountered during the diagnostic tests, the error is reported in one of two different ways. If the error occurs before the display device is initialized, a series of beeps is transmitted. If the error occurs after the display device is initialized, the error message is displayed on the screen. See BIOS Errors later in this section for more information on error handling.

The following are some of the Power-On Self Tests (POST's) which are performed when the system is powered on:

- S CMOS Checksum Calculation
- S Keyboard Controller Test
- S CMOS Shutdown Register Test
- S 8254 Timer Test
- S Memory Refresh Test
- S Display Memory Read/Write Test
- S Display Type Verification
- S Entering Protected Mode
- S Memory Size Calculation
- S Conventional and Extended Memory Test
- S DMA Controller Tests
- S Keyboard Test
- S System Configuration Verification and Setup

## Chapter 2 - System BIOS

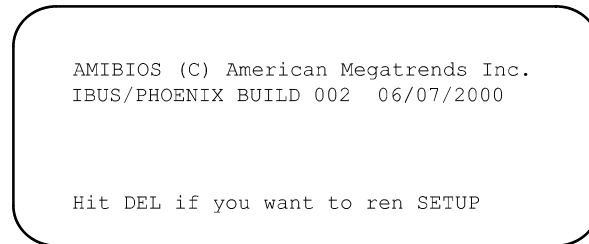
---

NOTE: When you perform a warm boot by pressing <Ctrl> + <Alt> + <Del>, all memory tests are bypassed.

---

AMIBIOS checks all system and cache memory and reports them on both the initial AMIBIOS screen and the AMIBIOS System Configuration screen which appears after POST is completed. AMIBIOS attempts to initialize the peripheral devices by verifying the validity of the system set-up information stored in the system CMOS RAM. (See the *Running AMI-BIOS Setup* section of this manual.) If AMIBIOS detects a fault, the screen displays the error condition(s) which has/have been detected. If no errors are detected, AMIBIOS attempts to load the system from any bootable device, such as a floppy disk or hard disk.

Normally, the only POST routine visible on the screen is the memory test. The following screen displays when the system is powered on:

A screenshot of the initial power-on screen, enclosed in a rounded rectangular border. The text is centered and reads: "AMIBIOS (C) American Megatrends Inc." followed by "IBUS/PHOENIX BUILD 002 06/07/2000" on the next line. There is a blank line, and then "Hit DEL if you want to ren SETUP" on the final line.

```
AMIBIOS (C) American Megatrends Inc.  
IBUS/PHOENIX BUILD 002 06/07/2000  
  
Hit DEL if you want to ren SETUP
```

### Sample Initial Power-On Screen

## Chapter 2 - System BIOS

---

You have two options:

- S Press <Del> to access the AMIBIOS Setup Utility.

This option allows you to change various system parameters such as date and time, disk drives, etc. The *Running AMIBIOS Setup* section of this manual describes the options available.

You may be requested to enter a password before gaining access to the AMIBIOS Setup Utility. (See *Password Entry* later in this section.)

If you enter the correct password or no password is required, the AMIBIOS Setup Main Menu displays. (See *Running AMIBIOS Setup* later in this section.)

- S Allow the bootup process to continue without invoking the AMIBIOS Setup Utility.

In this case, after AMIBIOS loads the system, you may be requested to enter a password. (See *Password Entry* later in this section.)

Once the POST routines complete successfully, a screen displays showing the current configuration of your system, including processor type, base and extended memory amounts, floppy and hard drive types, display type and peripheral ports.

In systems with more than 1MB of memory, AMIBIOS reports 384KB less RAM than it finds, because it accounts for the address space between 640K and 1024K which is unavailable to DOS. This space is used for video RAM, video BIOS, system BIOS and adapter ROMs.

### Password Entry

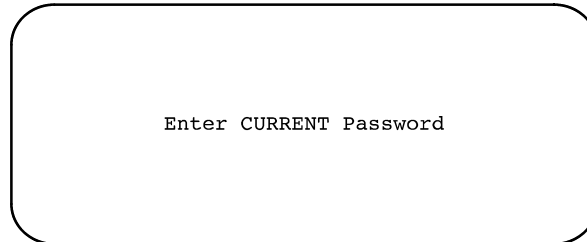
The system may be configured so that the user is required to enter a password each time the system boots or whenever an attempt is made to enter AMIBIOS Setup. The password function may also be disabled so that the password prompt does not appear under any circumstances.

The **Password Check** option in the Advanced CMOS Setup program allows you to specify when the password prompt displays: Always or only when **Setup** is attempted. The supervisor and user passwords may be changed using the **Change Supervisor Password** and **Change User Password** options on the AMIBIOS Setup Main Menu. If the passwords are null, the password prompt does not display at any time. A more detailed description of the password setup function may be found in the *Running AMIBIOS Setup* section of this manual.

## Chapter 2 - System BIOS

---

When password checking is enabled, the following password prompt displays:



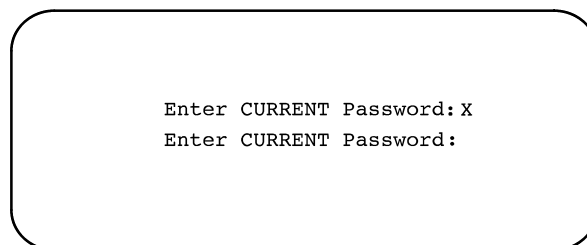
Type the password and press <Enter>.

---

NOTE: The null password is the system default and is in effect if a password has not been assigned or if the CMOS has been corrupted. In this case, the password prompt does not display. To set up passwords, you may use the **Change Supervisor Password and Change User Password** options on the AMIBIOS Setup Main Menu. (See the *Running AMI-BIOS Setup* section of this manual.)

---

If an incorrect password is entered, the following screen displays:



## **Chapter 2 - System BIOS**

---

You may try again to enter the correct password. If you enter the password incorrectly *three* times, the system responds in one of two different ways, depending on the value specified in the **Password Check** option on the Advanced CMOS Setup screen:

1. If the Password Check option is set to Setup, the system does not let you enter Setup, but does continue the booting process. You must reboot the system manually to retry entering the password.
2. If the **Password Check** option is set to Always, the system locks and you must reboot. After rebooting, you will be requested to enter the password.

Once the password has been entered correctly, you are allowed to continue.

### **BIOS Errors**

If an error is encountered during the diagnostic checks performed when the system is powered on, the error is reported in one of two different ways:

1. If the error occurs before the display device is initialized, a series of beeps is transmitted.
2. If the error occurs after the display device is initialized, the screen displays the error message. In the case of a non-fatal error, a prompt to press the <F1> key may also appear on the screen.

Explanations of the beep codes and BIOS error messages may be found in *Appendix A - BIOS Messages*.

As the POST routines are performed, test codes are presented on Port 80H. These codes may be helpful as a diagnostic tool and are listed in *Appendix A - BIOS Messages*.

## Chapter 2 - System BIOS

---

If certain non-fatal error conditions occur, you are requested to run the AMIBIOS Setup Utility. The error messages are followed by this screen:

```
AMIBIOS (C) 1999 American Megatrends Inc.  
IBUS/PHOENIX BUILD 002    06/07/2000  
  
RUN SETUP UTILITY  
Press F1 to Resume
```

Press <F1>. You may be requested to enter a password before gaining access to the AMIBIOS Setup Utility. (See *Password Entry* earlier in this section.)

If you enter the correct password or no password is required, the AMI-BIOS Setup Main Menu displays.

### **RUNNING AMIBIOS SETUP**

AMIBIOS Setup keeps a record of system parameters, such as date and time, disk drives, display type and other user-defined parameters. The Setup parameters reside in the Read Only Memory Basic Input/Output System (ROM BIOS) so that they are available each time the system is turned on. AMIBIOS Setup stores the information in the complementary metal oxide semiconductor (CMOS) memory. When the system is turned off, a backup battery retains system parameters in the CMOS memory.

Each time the system is powered on, it is configured with these values, unless the CMOS has been corrupted or is faulty. The AMIBIOS Setup Utility is resident in the ROM BIOS (Read Only Memory Basic Input/Output System) so that it is available each time the computer is turned on. If, for some reason, the CMOS becomes corrupted, the system is configured with the default values stored in this ROM file.

As soon as the system is turned on, the power-on diagnostic routines check memory, attempt to prepare peripheral devices for action, and offer you the option of pressing <Del> to run AMIBIOS Setup.

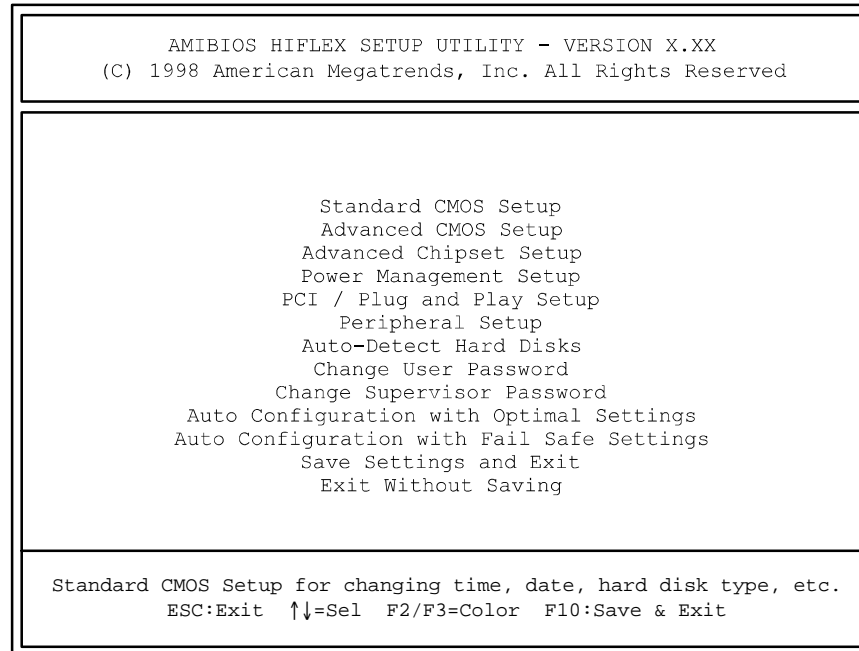
If certain non-fatal errors occur during the Power-On Self Test (POST) routines which are run when the system is turned on, you may be prompted to run AMIBIOS Setup by pressing <F1>.



## Chapter 2 - System BIOS

### AMIBIOS SETUP MAIN MENU

When you press <F1> in response to an error message received during the POST routines or when you press the <Del> key to enter the AMI-BIOS Setup Program, the following screen displays:



### AMIBIOS Setup Main Menu

Use the Down Arrow key to highlight the desired option and press <Enter>.

Select **Standard CMOS Setup** to make changes to Standard CMOS Setup parameters. The Setup program is described in the *Standard CMOS Setup* section of this manual. The following options may be changed:

- S Date/Time
- S Floppy Drive A:/Floppy Drive B: Types
- S Primary Master and Slave Disk Types

## **Chapter 2 - System BIOS**

---

- S Secondary Master and Slave Disk Types
- S Logical Block Address (LBA) Mode
- S Block Mode
- S PIO Mode
- S 32Bit Mode
- S Boot Sector Virus Protection

Select **Advanced CMOS Setup** to make changes to Advanced CMOS Setup parameters. The Setup program is described in the *Advanced Setup* section of this manual. The following options may be changed:

- S Quick Boot
- S ARMD Emulation for IDE Devices
- S 1st Boot Device
- S 2nd Boot Device
- S 3rd Boot Device
- S Try Other Boot Devices
- S Initialize 120 Devices
- S Display Mode at Add-On ROM Init
- S Floppy Access Control
- S Hard Disk Access Control
- S S.M.A.R.T. for Hard Disks
- S BootUp Num-Lock
- S PS/2 Mouse Support
- S System Keyboard
- S Primary Display
- S Password Check
- S Parity Check

## **Chapter 2 - System BIOS**

- S Boot to OS/2
- S Internal Cache
- S External Cache
- S System BIOS Cacheable
- S Video and Adapter ROM Shadow

S Select **Advanced Chipset Setup** to make changes to Advanced Chipset Setup parameters. The Setup program is described in the *Advanced Setup* section of this manual. The following options may be changed:

- S USB Function
- S USB KB/Mouse Legacy Support
- S Port 64/60 Emulation
- S System Error Signal (SERR#)
- S Parity Error Signal (PERR#)
- S USWC Write Post
- S BX Master Latency Timer
- S Multi-Transaction Timer
- S PCI 1 to PCI 0 Access
- S DRAM Integrity Mode
- S DRAM Refresh Rate
- S Memory Hole
- S Graphics Aperture Size
- S AGP Multi-Transaction Timer
- S AGP Low-Priority Timer
- S AGP System Error Signal (SERR)
- S AGP Parity Error Response
- S 8bit and 16bit I/O Recovery Time

## **Chapter 2 - System BIOS**

---

- S PIIX4 System Error Signal (SERR#)
- S USB Passive Release Enable
- S PIIX4 Passive Release
- S PIIX4 Delayed Transaction
- S TypeF DMA Buffer Controls 1 and 2
- S DMA-0, DMA-1, DMA-2, DMA-3, DMA-5, DMA-6 and DMA-7 Types

S Select **Power Management Setup** to make changes to Power Management Setup parameters. The Setup program is described in the *Power Management Setup* section of this manual. The following options may be changed:

- S ACPI Aware O/S
- S Power Management/APM
- S Power Button Function
- S Green PC Monitor Power State
- S Video Power Down Mode
- S Hard Disk Power Down Mode
- S Hard Disk Time Out
- S Power Saving Type
- S Standby/Suspend Timer Unit
- S Standby Time Out
- S Suspend Time Out
- S Slow Clock Ratio
- S Display Activity
- S Device 0 through Device 8 Monitor

## **Chapter 2 - System BIOS**

---

§ Select **PCI/Plug and Play Setup** to make changes to PCI/Plug and Play Setup parameters. The Setup program is described in the *PCI/Plug and Play Setup* section of this manual. The following options may be changed:

- § On Board LAN
- § On Board Video
- § On Board SCSI
- § Plug and Play Aware O/S
- § PCI Latency Timer
- § PCI VGA Palette Snoop
- § PCI IDE BusMaster
- § OffBoard PCI IDE Card
- § OffBoard PCI IDE Primary and Secondary IRQs
- § DMA Channels 0, 1, 3, 5, 6 and 7
- § IRQ5/IRQ9/IRQ10/IRQ11/IRQ15
- § Reserved Memory Size and Address

§ Select **Peripheral Setup** to make changes to the Peripheral Setup parameters. The Setup program is described in the *Peripheral Setup* section of this manual. The following options may be changed:

- § OnBoard FDC
- § OnBoard Serial Port 1
- § OnBoard Serial Port 2
- § OnBoard Parallel Port
  - § Parallel Port Mode
  - § EPP Version
  - § Parallel Port IRQ
  - § Parallel Port DMA Channel
- § OnBoard IDE

## **Chapter 2 - System BIOS**

---

- § Select **Auto-Detect Hard Disks** to have AMIBIOS automatically detect the type and parameters of each hard drive if you have IDE drive(s). This option is described later in this section.
- § Select **Change User Password** to establish or change the password for the user. This function is described later in this section.
- § Select **Change Supervisor Password** to establish or change the password for the supervisor. This function is described later in this section.
- § Select **Auto Configuration with Optimal Settings** to load the Optimal default settings. These settings are best-case values which should provide the best performance characteristics. This function is described later in this section.
- § Select **Auto Configuration with Fail Safe Settings** to load the Fail Safe default settings. These settings are more likely to configure a workable computer, but they may not provide optimal performance. This function is described later in this section.
- § Select **Save Settings and Exit** to store your changes in the CMOS. The CMOS checksum is calculated and written to the CMOS. Control is then passed back to AMIBIOS and the booting process continues, using the new CMOS values. This function is described later in this section.
- § Select **Exit Without Saving** to pass control back to the AMIBIOS without writing any changes to the CMOS. AMIBIOS continues with the booting process. This function is described later in this section.

### **AUTO-DETECT HARD DISKS**

The **Auto-Detect Hard Disks** option allows you to have AMIBIOS automatically detect the type of hard disk drive(s) in your system. The automatic detection functions only if you have IDE drives. The parameters are reported on the Standard CMOS Setup screen.

AMIBIOS searches first for the primary master and slave hard disk drives, then for the secondary master and slave drives. If it can access a drive, it reads the disk parameters. It then searches the AMIBIOS drive type table for matching parameters to determine the disk type and displays both the type and parameters on the screen. If no matching parameters are found in the table, AMIBIOS specifies the type as "User" and fills in the parameter values it found on the drive. If it cannot access the drive or if it is not an IDE drive, AMIBIOS times out and specifies that the disk drive is "Not Installed."

## **Chapter 2 - System BIOS**

---

NOTE: The auto detect feature displays disk parameter values as established by the drive manufacturer. If the drive has been formatted using any other values, accepting the auto detect values will cause erratic behavior. You must either reformat the drive to meet the manufacturer's specifications or use Standard CMOS Setup to enter parameters which match the current format of the drive.

---

If you do not want to accept the hard disk type and its associated parameters as reported by AMIBIOS or if the drive is "Not Installed," you may use Standard CMOS Setup to set up the correct parameters for the drive.

Once the parameters are correct for all of the drives, you may exit from the Standard CMOS Setup screen and save the settings in the CMOS.

### **CHANGE PASSWORD**

AMIBIOS Setup has an optional password feature which can be configured so that a password must be entered each time the system boots or just when a user attempts to enter AMIBIOS Setup. (See the *Advanced CMOS Setup* section of this manual for information on how to enable the Password Check option.)

The Change Supervisor Password and Change User Password options on the AMIBIOS Setup Main Menu allow you to establish passwords, change the current passwords or disable the password prompts by entering null passwords. The passwords are stored in CMOS RAM.

The Change User Password function is accessible only if the supervisor password has been established previously. If you have signed on under the user password, you cannot change the supervisor password.

---

NOTE: The null password is the system default and is in effect if a password has not been assigned or if the CMOS has been corrupted. In this case, the "Enter CURRENT Password" prompt is bypassed when you boot the system, and you must establish a new password.

---

## Chapter 2 - System BIOS

---

### Change supervisor Password

If you select the **Change Supervisor Password** option, the following window displays:

```
Enter new supervisor password: _
```

This is the message which displays before you have established a password, or if the last password entered was the null password. If a password has already been established, you are asked to enter the current password before being prompted to enter the new password.

Type the new password and press <Enter>. The password cannot exceed six (6) characters in length. The screen does not display the characters as you type them.

After you have entered the new password, the following window displays:

```
Retype new supervisor password: _
```

Re-key the new password as described above.

If the password confirmation is miskeyed, AMIBIOS Setup displays the following message:

```
Incorrect Password, press any key to continue
```

No retries are permitted; you must restart the procedure from the AMI-BIOS Setup Main Menu.



## Chapter 2 - System BIOS

---

If the password confirmation is entered correctly, the following message displays:

New supervisor password installed, press any key to continue

When you press any key, the screen returns to the AMIBIOS Setup Main Menu screen, which allows you to save the password change or exit from Setup without saving the new password. To save the new password in CMOS memory, be sure to select **Save Settings and Exit**.

If you save the changes when you exit AMIBIOS Setup, the password is stored in CMOS RAM. The next time the system boots, you are prompted for the password if the password function is present and is enabled. (See *Advanced CMOS Setup* later in this manual for an explanation of how to enable password checking.)

---

**NOTE:** Be sure to keep a record of the new password each time it is changed. If you forget it, use the Password Clear jumper to reset it to the default (null password). See the *Specifications* section of this manual for details.

---

### Change User Password

The Change User Password function is accessible only if the supervisor password has been established previously.

The Change User Password option is similar in functionality to the Change Supervisor Password and displays the same messages, except that "user" replaces "supervisor." If you have signed on under the user password, you cannot change the supervisor password.

## Chapter 2 - System BIOS

---

### Disabling the Password(s)

To disable password checking so that the password prompt does not appear under any circumstances, you may create null passwords using the Change Supervisor Password and Change User Password functions by pressing <Enter> without typing in a new password. You will be asked to confirm the password. Select <Enter> again and the following message displays:

```
Supervisor password disabled, press any key to continue
```

When you press any key, the screen returns to the AMIBIOS Setup Main Menu, which allows you to save the password change or exit from Setup without saving the null password. To save the null password(s) in CMOS memory, be sure to select Save Settings and Exit.

### AUTO CONFIGURATION OPTIONS

Each AMIBIOS Setup option has two default settings (Optimal and Fail Safe). These settings can be applied to all AMIBIOS Setup options when you select the appropriate auto configuration option from the AMIBIOS Setup Main Menu.

You can use these auto configuration options to quickly set the system configuration parameters which should provide the best performance characteristics, or you can select a group of settings which have a better chance of working when the system is having configuration-related problems.

#### Auto Configuration with Optimal Settings

This option allows you to load the Optimal default settings. These settings are best-case values which should provide the best performance characteristics. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

If you select the Auto Configuration with Optimal Settings option, the following window displays:

```
Load high performance settings (Y/N) ? N
```

## **Chapter 2 - System BIOS**


You have two options:

- S Press 'N' and <Enter> to leave the current values in effect.
- S Press 'Y' and <Enter> to load the Optimal default settings.

### **Auto Configuration with Fail Safe Settings**

This option allows you to load the Fail Safe default settings when you cannot boot your computer successfully. These settings are more likely to configure a workable computer. They may not provide optimal performance, but are the most stable settings. You may use this option as a diagnostic aid if your system is behaving erratically. Select the Fail Safe settings and then try to diagnose the problem after the computer boots.

If you select the **Auto Configuration with Fail Safe Settings** option, the following window displays:



```
Load failsafe settings (Y/N) ? N
```

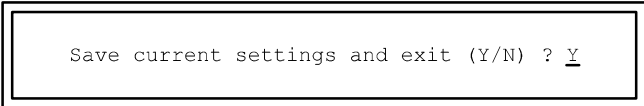
You have two options:

- S Press 'N' and <Enter> to leave the current values in effect.
- S Press 'Y' and <Enter> to load the Fail Safe default settings.

### **SAVE SETTINGS AND EXIT**

The features selected and configured in the Setup screens are stored in the CMOS when this option is selected. The CMOS checksum is calculated and written to the CMOS. Control is then passed back to the AMI-BIOS and the booting process continues, using the new CMOS values.

If you select the **SAVE SETTINGS AND EXIT** option, the following window displays:



```
Save current settings and exit (Y/N) ? Y
```

## ***Chapter 2 - System BIOS***

---

You have two options:

- S Press 'N' and <Enter> to return to the AMIBIOS Setup Main Menu.
- S Press 'Y' and <Enter> to save the system parameters and continue with the booting process.

### **EXIT WITHOUT SAVING**

This option passes control back to AMIBIOS *without* writing any changes to the CMOS.

If you select the EXIT WITHOUT SAVING option, the following window displays:

Quit without saving the current settings (Y/N) ? N

You have two options:

- S Press 'N' and <Enter> to return to the AMIBIOS Setup Main Menu.
- S Press 'Y' and <Enter> to continue with the booting process *without* saving any system parameters.

## ***Chapter 2 - System BIOS***

---

### **KEY CONVENTIONS**

Listed below is an explanation of the keys you may use for navigation and selection in the AMIBIOS Setup Utility:

<b>Key</b>	<b>Task</b>
<Esc>	Close the current operation and return to the previous level
<Tab>	Move to the next field
Arrow keys	Move to the next field in the desired direction
<Enter>	Select the current item
<F2>/<F3>	Change background and foreground colors
<F10>	Save all changes made to Setup and exit from the AMIBIOS Setup Utility
Plus key (+), <PgUp>	Increment a value
Minus key (-), <PgDn>	Decrement a value

## **Chapter 2 - System BIOS**

---

*This page was intentionally left blank*

## Chapter 3 - Standard CMOS Setup

### STANDARD CMOS SETUP

When you select Standard CMOS Setup from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - STANDARD CMOS SETUP	
(C)1998 American Megatrends, Inc. All Rights Reserved	
Date (mm/dd/yyyy): Mon Jan 01,1996	Base Memory: 640 KB
Time (hh/mm/ss): 12:30:00	Extd Memory: 14 MB
Floppy Drive A: 1.44 MB 3 1/2	
Floppy Drive B: Not Installed	
	LBA Blk PIO 32Bit
Type Size Cyln Head Wpcom Sec Mode Mode Mode Mode	
Pri Master : Auto	Off
Pri Slave : Auto	Off
Sec Master : Auto	Off
Sec Slave : Auto	Off
Boot Sector Virus Protection	Disabled
Month: Jan - Dec	ESC:Exit ↓↑:Sel
Day: 01 - 31	PgUp/PgDn:Modify
Year: 1901 - 2099	F2/F3:Color

### Sample Standard CMOS Setup Screen

When you display the Standard CMOS Setup screen, the format is similar to the sample shown above. If values display for all parameters, the Setup parameters have been defined previously. The available values for each option are displayed at the bottom of the screen when you tab or arrow into the field.

---

NOTE: The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

---

## **Chapter 3 - Standard CMOS Setup**

---

### **STANDARD CMOS OPTIONS**

The descriptions for the system options listed below show the values as they appear if you have not run the Standard CMOS Setup program yet. Once values have been defined, they display each time Standard CMOS Setup is run.

#### **Date**

The Setup screen displays the system option:

**Date (mm/dd/yyyy):** **Mon Jan 01, 1996**

The Help window displays allowable settings:

**Month** Jan -Dec  
**Day** 01-31  
**Year** 1901 - 2099

There are three fields for entering the date. Use the left and right arrow keys or the tab key to move from one field to another; use the plus and minus (or PgUp and PgDn) keys to scroll through the allowable values for the field. As you scroll through the month, day or year field, the day of the week changes automatically to reflect the new date.

#### **Time**

The Setup screen displays the system option:

**Time (hh/mm/ss):** **00:00:00**

The Help window displays:

Time is 24 hour format:-  
Hour:00-23 Minute:00-59 Second:00-59  
(1:30AM = 01:30:00, 1:30PM = 13:30:00)

There are three fields for entering the time. Use the left and right arrow keys or the tab key to move from one field to another; use the plus and minus (or PgUp and PgDn) keys to scroll through the allowable values for the field.



## **Chapter 3 - Standard CMOS Setup**

### **Floppy Drive A:/Floppy Drive B:**

The floppy drive type(s) in your system can be configured using these options.

The Setup screen displays the system options:

<b>Floppy Drive A:</b>	<b>1.44 MB 3-1/2</b>
<b>Floppy Drive B:</b>	<b>Not Installed</b>

Available options are:

- Not Installed
- 360 KB 5-1/4
- 1.2 MB 5-1/4
- 720 KB 3-1/2
- 1.44 MB 3-1/2
- 2.88 MB 3-1/2

The **Not Installed** option can be used for diskless work stations.

### **Primary and Secondary Hard Disk Drives**

The SBC supports up to four hard disk drives through a primary and secondary controller in a master/slave configuration. The primary controller uses I/O port addresses 1F0H through 1F7H, 3F6H and IRQ14. The secondary controller uses I/O port addresses 170H through 177H, 376H and IRQ15.

The AMIBIOS enhanced IDE (EIDE) interface can support IDE Type 4 disk drives. This EIDE interface allows disk drives greater than 528MB to be used.

The hard disk drives can be detected automatically by AMIBIOS (if they are IDE drives) or can be defined manually by the user, as described below.

The Setup screen displays the system options:

<b>Pri Master:</b>	<b>Auto</b>
<b>Pri Slave:</b>	<b>Auto</b>
<b>Sec Master:</b>	<b>Auto</b>
<b>Sec Slave:</b>	<b>Auto</b>

The Help window displays:

- 1-46: Predefined types
- USER: Enter parameters manually
- AUTO: Set parameters automatically on each boot
- CD-ROM: Use for ATAPI CD-ROM drives
- Or press ENTER to set all HDD parameters automatically

## ***Chapter 3 - Standard CMOS Setup***

---

To set up the hard disk drive parameter(s), use the plus (+) key or PgDn key to scroll through the drive types to locate the correct type of disk drive(s) in your computer.

As you scroll through the disk types, the drive Type displays, along with values for size, cylinders, heads, write precompensation and sectors. Available predefined hard disk drive types are listed at the end of this section. If the parameters supplied by the manufacturer of your disk drive do not match any of these preprogrammed drive types, you may have AMIBIOS detect the drive type automatically (if it is an IDE drive), or you may select the User drive type to enter the parameters manually as described below.

Set the drive type to **CD-ROM** to boot from a CD-ROM drive.

**Not Installed** is available for use as an option. This option can be used for diskless work stations.

### **Automatic Detection of Drive Type**

If any of the hard disks are IDE drives, AMIBIOS can automatically configure the drive type by detecting the IDE drive parameters and reporting them on the Standard CMOS Setup screen.

You may invoke automatic detection of IDE drives in one of three ways:

- S Press Enter when the cursor is in the Type field. AMIBIOS detects the drive type and parameters as requested. If the drive type is not defined in the drive type table, this option displays User as the drive type and displays the parameters which were detected by AMIBIOS. The detected drive type values may then be saved in the CMOS.
- S Set the drive type to **Auto** to have AMIBIOS detect the drive type and parameters automatically *each time* the system is booted up. This option does not display the drive type on the Standard CMOS Setup screen, but does display it on the System Configuration screen shown after a successful bootup.
- S Select the **Auto-Detect Hard Disks** option on the AMIBIOS Setup Main Menu to have AMIBIOS automatically detect the type and parameters of each hard drive and place the information into the Standard CMOS Setup screen. The detected drive type values may then be saved in the CMOS. This option is described in the *Running AMIBIOS Setup* section of the *System BIOS* chapter of this manual.

## ***Chapter 3 - Standard CMOS Setup***

---

NOTE: The auto detect feature displays disk parameter values as established by the drive manufacturer. If the drive has been formatted using any other values, accepting the auto detect values will cause erratic behavior. You must either reformat the drive to meet the manufacturer's specifications or use the User type to enter parameters which match the current format of the drive.

---

### **User-Defined Drive Types**

If the parameters supplied by the manufacturer of your disk drive do not match any of the preprogrammed drive types provided by AMIBIOS, you may enter the parameters manually.

The user-defined parameters for each of the four drives may be different, which effectively allows four different user-definable hard disk types.

Scroll to the end of the drive type list to the User type. You can manually enter the CylIn, Head, WPcom and Sec parameters. The Size parameter is automatically calculated and displayed by the system based on the other parameters entered.

Use the arrow keys or tab key to move between fields. Once you have placed the cursor in a field, type in the correct value.

The following explains the drive parameters which you must enter for a drive type which is not in the list:

**Type** is the numeric designation for a drive with certain identification parameters.

**Cylinders (CylIn)** is the number of disk cylinders found in the specified drive type.

**Heads (Head)** is the number of disk heads found in the specified drive type.

**Write Precompensation (WPcom)** is the read delay circuitry which takes into account the timing differences between the inner and outer edges of the surface of the disk. The size of the sector gets progressively smaller as the track diameter diminishes. Yet each sector must still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter designates the track (cylinder) number where write precompensation begins.

## **Chapter 3 - Standard CMOS Setup**

---

Sectors (Sec) designates the number of disk sectors per track.

Size is the formatted capacity of the drive (in megabytes) based on the following formula:

# of heads x # of cylinders x # of sects/cylIn x 512 bytes/sect

### **IDE Drive Type Setup Options**

For each of the four hard disk drives which is an IDE drive, the following options are also available for the drive:

#### **Logical Block Addressing (LBA) Mode**

This option allows you to enable IDE LBA (Logical Block Addressing) Mode for the specified primary or secondary IDE drive. Data is accessed by block addresses rather than by the traditional cylinder head-sector format. This allows you to use drives larger than, 528MB. In LBA mode, the maximum drive capacity supported is 8.4GB (gigabytes).

If **LBA Mode** is set to **On** and is supported by the hard disk drive, and if the drive is formatted, AMIBIOS enables LBA mode and translates the physical parameters of the drive to logical parameters. If a hard disk drive which supports LBA mode and has a capacity greater than 528MB was formatted with LBA mode *disabled*, AMIBIOS does not enable LBA mode even if the **LBA Mode** parameter is set to On in Standard CMOS Setup.

If LBA Mode is set to **Off**, AMIBIOS uses the physical parameters of the hard disk and does not translate parameters. The operating system which uses the parameter table then sees only 528MB of hard disk space even if the drive contains more than 528MB.

Available options are:

Off  
On

#### **Block (Blk) Mode**

This option supports transfer of multiple sectors to and from the specified primary or secondary IDE drive.

Block mode boosts IDE drive performance by increasing the amount of data transferred during an interrupt. Block mode allows transfers of up to 64KB per interrupt, whereas only 512 bytes of data can be transferred per interrupt if block mode is not used.

## **Chapter 3 - Standard CMOS Setup**

---

If **Block Mode** is set to **On** and is supported by the IDE drive, AMIBIOS enables multi-sector transfers. AMIBIOS sets the number of sectors to be transferred per interrupt to the value returned by the "identify drive" command.

Available options are:

Off  
On

### **Programmed I/O (PIO) Mode**

IDE PIO mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

Set the **PIO Mode** option to **Auto** to have AMIBIOS select the PIO mode used by the IDE drive being configured. If you select a specific value for the PIO mode, you must make *absolutely* certain that you are selecting the PIO mode supported by the IDE drive being configured.

Available options are:

Auto	
0	3
1	4
2	5

### **32Bit Mode**

Hard disk drives connected to the SBC via the ISA Bus transfer data 16 bits at a time. An IDE drive on the PCI Local Bus can use a 32bit data path.

If the **32Bit Mode** parameter is set to **On**, AMIBIOS enables 32-bit data transfers. If the host controller does not support 32-bit transfer, this feature must be disabled.

Available options are:

Off  
On

### **Boot Sector Virus Protection**

This option allows you to request *AMIBIOS* to issue a warning when any program or virus issues a Disk Format command or attempts to write to the boot sector of the hard disk drive.

## ***Chapter 3 - Standard CMOS Setup***

---

The Setup screen displays the system option:

Boot Sector Virus Protection    Disabled

Available options are:

Disabled  
Enabled

If the **Boot Sector Virus Protection** option is set to Enabled, the following message displays when a write is attempted to the boot sector.

### **Boot Sector Write!!! Possible VIRUS: Continue (Y/N)?**

Select Y or N as appropriate. You may have to select N several times to prevent the boot sector write.

The following message displays if any attempt is made to format any cylinder, head or sector of any hard disk drive via the *BIOS INT 13* Hard Disk Drive Service:

### **Format!!! Possible VIRUS: Continue (Y/N)?**

Select Y or N as appropriate. If you select Y to continue, formatting proceeds normally. If you do not want to continue formatting, you may have to select N several times, depending on how many retries are performed by the upper-level software. For example, DOS does at least five retries before the Format utility is actually terminated.

---

NOTE: You should **not** enable boot sector virus protection when formatting a hard drive.

---

The DOS hard disk Format utility does not use INT 13H function AH=05H to format the hard disk. It only verifies the hard disk using the INT 13H Verify function (AH=04H). The virus warning message is *not* displayed during DOS hard disk drive formatting.

### **Saving and Exiting**

When you have made all desired changes to **Standard CMOS Setup**, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMIBIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.

## Chapter 4 - Advanced Setup

### ADVANCED CMOS SETUP

When you select Advanced CMOS Setup from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - ADVANCED CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved		
Quick Boot	Disabled	Available Options:
Pri Master ARMD Emulated as	Auto	Disabled
Pri Slave ARMD Emulated as	Auto	Enabled
Sec Master ARMD Emulated as	Auto	
Sec Slave ARMD Emulated as	Auto	
1st Boot Device	1st IDE-HDD	
2nd Boot Device	Floppy	
3rd Boot Device	ATAPI CDROM	
Try Other Boot Devices	Yes	
Initialize 120 Devices	Yes	
Display Mode at Add-On ROM Init	Force BIOS	
Floppy Access Control	Read-Write	
Hard Disk Access Control	Read-Write	
S.M.A.R.T. for Hard Disks	Disabled	
BootUp Num-Lock	On	
PS/2 Mouse Support	Enabled	
System Keyboard	Present	
Primary Display	VGA/EGA	
Password Check	Setup	
Parity Check	Enabled	
Boot To OS/2	NO	
Internal Cache	WriteBack	
External Cache	WriteBack	
System BIOS Cacheable	Enabled	
C000,16k, Shadow	cached	
C400,16k, Shadow	cached	
C800,16k, Shadow	Disabled	
CC00,16k, Shadow	Disabled	
D000,16k, Shadow	Disabled	
D400, 16k, Shadow	Disabled	ESC:EXit ↓↑:Sel
D800,16k, Shadow	Disabled	PgUp/PgDn:Modify
DC00, 16k, Shadow	Disabled	F2/F3:Color

### Sample Advanced CMOS Setup Screen

When you display the Advanced CMOS Setup screen, the format is similar to the sample shown above, except the screen displays only twenty options at a time. If you need to change other options, use the down arrow key to locate the appropriate option. The available values for each option are displayed on the right side of the screen when you tab or arrow into the field. If values display for all parameters, the Setup parameters have been defined previously.

## ***Chapter 4 - Advanced Setup***

---

NOTE: The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

---

### **ADVANCED CMOS SETUP OPTIONS**

The descriptions for the system options listed below show the values as they appear if you have not run the Advanced CMOS Setup program yet. Once values have been defined, they display each time Advanced CMOS Setup is run.

#### **Quick Boot**

This option allows you to have the AMIBIOS boot quickly when the computer is powered on or go through more complete testing.

When this option is set to **Disabled**, AMIBIOS tests all system memory. It waits up to 40 seconds for a READY signal from the IDE hard disk drive. It waits for .5 seconds after sending a RESET signal to the IDE drive to allow the drive time to get ready again. It also checks whether the user has pressed the <Del> key and runs the AMIBIOS Setup program if the key has been pressed.

If the option is set to **Enabled**, **AMIBIOS** checks only the first 1 MB of system memory. It does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately, AMIBIOS does not configure the drive. It does not wait for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again.

If you have set your system up for a quick boot, you cannot run AMIBIOS Setup at system boot, because there is no delay for the "Hit DEL if you want to run SETUP" message.

The Setup screen displays the system option:

**Quick Boot**

**Disabled**

Available options are:

Disabled

Enabled



## Chapter 4 - Advanced Setup

---

### Primary/Secondary Master/Slave ARMD Emulation

These options specify the type of ARMD (ATAPI Removable Media Device) emulation used for a non-disk device attached to the specified IDE device.

If the option is set to **Auto**, **AMIBIOS** automatically determines the proper emulation type and will support particular storage devices with ATAPI interface. The default emulation types are Floppy for LS120, Hard Disk for MO and Hard Disk for IOMEGA Zip.

The Setup screen displays the system options:

<b>Pri Master ARMD Emulated as</b>	<b>Auto</b>
<b>Pri Slave ARMD Emulated as</b>	<b>Auto</b>
<b>Sec Master ARMD Emulated as</b>	<b>Auto</b>
<b>Sec Slave ARMD Emulated as</b>	<b>Auto</b>

Available options are:

- Auto
- Floppy
- Hard Disk

### 1st Boot Device

This option specifies the device type of the first boot drive from which AMIBIOS attempts to boot after AMIBIOS post routines complete.

The Setup screen displays the system option:

<b>1st Boot Device</b>	<b>1st IDE-HDD</b>
------------------------	--------------------

Available options are:

Disabled	Floppy	SCSI
1st IDE-HDD	ARMD-FDD	NETWORK
2nd IDE-HDD	ARMD-HDD	120
3rd IDE-HDD	ATAPI CDROM	
4th IDE-HDD		

### 2nd Boot Device/ 3rd Boot Device

These options specify the device types of the second and third boot drives from which AMIBIOS attempts to boot if it cannot boot from the device specified in the **1st Boot Device** option.

## **Chapter 4 - Advanced Setup**

---

The Setup screen displays the system options:

<b>2nd Boot Device</b>	<b>Floppy</b>
<b>3rd Boot Device</b>	<b>ATAPI CDROM</b>

Available options are:

Disabled	Floppy
1st IDE-HDD	ARMD-FDD
2nd IDE-HDD	ARMD-HDD
3rd IDE-HDD	ATAPICDROM
4th IDE-HDD	

### **Try Other Boot Devices**

If AMIBIOS cannot find a boot drive among any of the drives specified in the **1st Boot Device**, **2nd Boot Device** and **3rd Boot Device** options, this option allows you to have AMIBIOS attempt to boot from any other drive in the system. If set to **No**, AMIBIOS will try to boot only from the boot devices specified in the previous three options.

The Setup screen displays the system option:

<b>Try Other Boot Devices</b>	<b>Yes</b>
-------------------------------	------------

Available options are:

No  
Yes

### **Initialize I20 Devices**

If **this** option is set to Yes, AMIBIOS initializes any attached 120 devices (processors or storage devices).

The Setup screen displays the system option:

<b>Initialize 120 Devices</b>	<b>Yes</b>
-------------------------------	------------

Available options are:

No  
Yes

### **Display Mode At Add-On ROM Init**

This option specifies the system display mode which is set at the time the AMIBIOS post routines initialize an optional option ROM.

## **Chapter 4 - Advanced Setup**

The Setup screen displays the system option:

**Display Mode at Add-On ROM Init      Force BIOS**

Two options are available:

- S Select **Force BIOS** to use the display mode currently being used by AMIBIOS.
- S Select **Keep Current** to use the current display mode.

### **Floppy Access Control**

This option specifies the read/write access which is set when booting from a floppy drive. This option is effective only if the device is accessed through the BIOS.

The Setup screen displays the system option:

**Floppy Access Control      Read-Write**

Available options are:

Read-Write  
Read-Only

### **Hard Disk Access Control**

This option specifies the read/write access which is set when booting from a hard disk drive. This option is effective only if the device is accessed through the BIOS.

The Setup screen displays the system option:

**Hard Disk Access Control      Read-Write**

Available options are:

Read-Write  
Read-Only

### **S.M.A.R.T. For Hard Disks**

This option allows AMIBIOS to use the SMART (System Management and Reporting Technologies) protocol for reporting server system information over a network.

The Setup screen displays the system option:

**S.M.A.R.T. for Hard Disks      Disabled**

## ***Chapter 4 - Advanced Setup***

---

Available options are:

Disabled  
Enabled

### **BootUp Num-Lock**

This option enables you to turn off the Num-Lock option on the enhanced keyboard when the system is powered on. If Num-Lock is turned off, the arrow keys on the numeric keypad can be used, as well as the other set of arrow keys on the enhanced keyboard.

The Setup screen displays the system option:

**BootUp Num-Lock                      On**

Available options are:

Off  
On

### **PS/2 Mouse Support**

This option indicates whether or not a mouse is supported. If it is set to **Enabled**, AMIBIOS supports a PS/2-type mouse.

The Setup screen displays the system option:

**PS/2 Mouse Support                      Enabled**

Available options are:

Disabled  
Enabled

### **System Keyboard**

This option indicates whether or not a keyboard is attached to the computer.

The Setup screen displays the system option:

**System Keyboard                      Present**

Available options are:

Absent  
Present

---

## Chapter 4 - Advanced Setup

---

### Primary Display

This option specifies the type of display monitor in the system. The Absent option can be used for network file servers.

The Setup screen displays the system option:

Primary Display	VGA/EGA
-----------------	---------

Available options are:

- Absent
- VGA/EGA
- CGA 40 x 25
- CGA 80 x 25
- Mono (monochrome)

### Password Check

This option determines when a password is required for access to the system.

The Setup screen displays the system option:

Password Check	Setup
----------------	-------

Two options are available:

- S Select **Setup** to have the password prompt appear only when an attempt is made to enter the AMIBIOS Setup program.
- S Select **Always** to have the password prompt appear each time the system is powered on.

---

NOTE: To *disable* password checking, a null password should be entered in the **Change Supervisor Password** or **Change User Password** function in the AMIBIOS Setup Main Menu. (See the *Running AMIBIOS Setup* section of this manual.) The null password is the system default and is in effect if a password has not been assigned or if the CMOS has been corrupted.

---

### Parity Check

This option allows you to enable parity checking of all system memory.

## ***Chapter 4 - Advanced Setup***

---

The Setup screen displays the system option:

**Parity Check**                      **Enabled**

Available options are:

Disabled  
Enabled

### **Boot To OS/2**

This option should be set to Yes if you are running the IBM OS/2 operating system and using more than 64MB of system memory on the SBC.

The Setup screen displays the system option:

**Boot To OS/2**                      **No**

Available options are:

No  
Yes

### **Internal Cache**

This option specifies the caching algorithm used for L1 internal cache memory.

The Setup screen displays the system option:

**Internal Cache**                      **WriteBack**

Three options are available:

- S Select **Disabled** to disable both L1 internal cache memory. on the SBC and L2 secondary cache memory.
- S Select **WriteThru** to use the write-through caching algorithm.
- S Select **WriteBack** to use the write-back caching algorithm.

### **External Cache**

This option specifies the caching algorithm used for L2 cache memory. If the **Internal Cache** option described above is set to **Disabled**, this option is not available for modification.

The Setup screen displays the system option:

**External Cache**                      **WriteBack**

## Chapter 4 - Advanced Setup

---

Three options are available:

- S Select **Disabled** to disable L2 cache memory.
- S Select **WriteThru** to use the write-through caching algorithm.
- S Select **WriteBack** to use the write-back caching algorithm.

### System BIOS Cacheable

The System BIOS, which is in the F000H memory segment, is automatically shadowed to RAM for faster execution. This option indicates that this memory segment can be read from or written to cache memory.

The Setup screen displays the system option:

System BIOS Cacheable	Enabled
-----------------------	---------

Available options are:

Disabled  
Enabled

### Video or Adapter ROM Shadow

ROM shadow is a technique in which BIOS code is copied from slower ROM to faster RAM. The BIOS is then executed from the RAM.

Each option allows for a segment of 16KB to be shadowed from ROM to RAM. If one of these options is enabled and there is BIOS code present in that particular segment, the BIOS is shadowed. Video BIOS shadowing may be done in two 16KB segments at C000H and C400H. Enabling shadowing can speed up the operation of a machine because RAM can be accessed more rapidly than ROM and the data bus is wider to RAM. The default setting for the video BIOS segments is **Cached**.

Other 16KB ROM segments may be shadowed in the memory area from C800H to E000H, depending upon preferences and system requirements. The ROM area that is not used by ISA adapter cards is allocated to PCI adapter cards.

The Setup screen displays the system option:

<b>XXXX,16K Shadow</b>	<b>Cached</b>
------------------------	---------------

where XXXX is the base address of the segment of memory to be shadowed.

## ***Chapter 4 - Advanced Setup***

---

Three options are available:

- S Select Enabled to write the contents of the specified ROM area to the same address in system memory (RAM) for faster execution.
- S Select Cached to write the contents of the specified ROM area to the same address in system memory (RAM), if an adapter ROM is using the ROM area. This also indicates that the contents of the RAM area can be read from and written to cache memory.
- S Select Disabled if you do not want to copy the specified ROM area to RAM. The contents of the video ROM cannot be read from or written to cache memory.

### **Saving and Exiting**

When you have made all desired changes to **Advanced CMOS Setup**, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMI-BIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.



## Chapter 4 - Advanced Setup

### ADVANCED CHIPSET SETUP

When you select **Advanced Chipset Setup** from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - ADVANCED CHIPSET SETUP (C)1998 American Megatrends, Inc. All Rights Reserved		
USB Function	Enabled	Available Options:
USB KB/Mouse Legacy Support	Auto	Disabled
Port 64/60 Emulation	Disabled	Enabled
SERR#	Disabled	
PERR#	Disabled	
USWC Write Post	Enabled	
BX Master Latency Timer (clks)	64	
Multi-Trans Timer (clks)	32	
PCI1 to PCI0 Access	Enabled	
DRAM Integrity Mods	None	
DRAM Refresh Rate	15.6 us	
Memory Hole	Disabled	
Graphics Aperture Size	64MB	
AGP Mlti-Trans Timer (AGP clks)	32	
AGP Low-Priority Timer (AGP Clks)	16	
AGP SERR	Enabled	
AGP Parity Error Response	Enabled	
8bit I/O Recovery Time	Disabled	
16bit I/O Recovery Time	Disabled	
PIIX4 SERR#	Disabled	
USB Passive Release	Enabled	
PIIX4 Passive Release	Enabled	
PIIX4 Delayed Transaction	Enabled	
TypeF DMA Buffer Control1	Disabled	
TypeF DMA Buffer Control2	Disabled	
DMA-0 Type	Normal ISA	
DMA-1 Type	Normal ISA	
DMA-2 Type	Normal ISA	
DMA-3 Type	Normal ISA	
DMA-5 Type	Normal ISA	ESC:Exit: ↓↑:Sel
DMA-6 Type	Normal ISA	PgUp/PgDn:Modify
DMA-7 Type	Normal ISA	F2/F3:Color

### Sample Advanced Chipset Setup Screen

When you display the Advanced Chipset Setup screen, the format is similar to the sample shown above, except the screen displays only twenty options at a time. If you need to change other options, use the down arrow key to locate the appropriate option. The available values for each option are displayed on the right side of the screen when you tab or arrow into the field. If values display for all parameters, the Setup parameters have been defined previously.

## Chapter 4 - Advanced Setup

---

NOTE: The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

---

### ADVANCED CHIPSET SETUP OPTIONS

The descriptions for the system options listed below show the values as they appear if you have not run the Advanced Chipset Setup program yet. Once values have been defined, they display each time Advanced Chipset Setup is run.

---

NOTE: Do *not* change the values for the options on this screen unless you understand the impact on system operation. Depending on your system configuration, selection of other values may cause unreliable system operation.

---

#### USB Function

This option allows you to enable the Universal Serial Bus (USB).

If this option is set to **Disabled**, the **USB KB/Mouse Legacy Support** and **Port 64/60 Emulation** options are *not* available for modification.

The Setup screen displays the system option:

<b>USB Function</b>	<b>Enabled</b>
---------------------	----------------

Available options are:

Disabled  
Enabled

#### USB Keyboard/Mouse Legacy Support

This option allows you to enable support for older keyboards and mouse devices.

If the **USB Function** option is set to **Disabled**, this option is *not* available for modification.

The Setup screen displays the system option:

<b>USB KB/Mouse Legacy Support</b>	<b>Auto</b>
------------------------------------	-------------

## **Chapter 4 - Advanced Setup**

Available options are:

- Disabled
- Keyboard
- Auto
- Keyb+Mouse

### **Port 64/60 Emulation**

If the **USB Function** option is set to **Disabled**, this option is *not* available for modification.

The Setup screen displays the system option:

**Port 64/60 Emulation                      Disabled**

Available options are:

- Disabled
- Enabled

### **SERR#**

This option enables the System Error (SERR#) signal on the bus.

The Setup screen displays the system option:

**SERR#    Disabled**

Available options are:

- Disabled
- Enabled

### **PERR#**

This option enables the Parity Error (PERR#) signal on the bus.

The Setup screen displays the system option:

**PERR#    Disabled**

Available options are:

- Disabled
- Enabled

### **USWC Write Post**

This option sets the status of Uncacheable, Speculatable, WriteCombined (USWC) posted writes to I/O.

## **Chapter 4 - Advanced Setup**

---

The Setup screen displays the system option:

**USWC Write Post** **Enabled**

Available options are:

Disabled  
Enabled

### **BX Master Latency Timer (Clks)**

This option specifies the master latency timings (in PCI clocks) for devices on the SBC.

The Setup screen displays the system option:

**BX Master Latency Timer (Clks)** **64**

Available options are:

Disabled	128
32	160
64	192
96	224

### **Multi-Transaction Timer (Clks)**

This option specifies the multi-transaction latency timings (in PCI clocks) for devices on the SBC.

The Setup screen displays the system option:

**Multi-Trans Timer (Clks)** **32**

Available options are:

Disabled	128
32	160
64	192
96	224

### **PCI1 to PCI0 Access**

This option enables access between two different PCI buses (PCI 1 and PCI0).

The Setup screen displays the system option:

**PCI1 to PCI0 Access** **Enabled**

## Chapter 4 - Advanced Setup

---

Available options are:

Disabled  
Enabled

### DRAM Integrity Mode

This option allows you to set the type of system memory checking used in your system.

The Setup screen displays the system option:

**DRAM Integrity Mode** **None**

Three options are available:

- S None - No error checking or error reporting is done.
- S EC - Multibit errors are detected and reported as parity errors. Single-bit errors are corrected by the chipset. Corrected bits of data from memory are not written back to DRAM system memory.
- S ECC Hardware - Multibit errors are detected and reported as parity errors. Single-bit errors are corrected by the chipset and are written back to DRAM system memory.

If a soft (correctable) memory error occurs, writing the fixed data back to DRAM system memory will resolve the problem. Most DRAM errors are soft errors. If a hard (uncorrectable) error occurs, writing the fixed data back to DRAM system memory does not solve the problem. In this case, the second time the error occurs in the same location, a Parity Error is reported, indicating an uncorrectable error.

### DRAM Refresh Rate

This option specifies the interval between refresh signals to DRAM system memory. Settings are in microseconds ("µs").

The Setup screen displays the system option:

**DRAM Refresh Rate** **15.6 µs**

## **Chapter 4 - Advanced Setup**

---

Available options are:

15.6  $\mu$ S  
31.2  $\mu$ S  
64.4  $\mu$ S  
124.8  $\mu$ S  
249.6  $\mu$ S

### **Memory Hole**

This option may be used to specify an area in memory which cannot be addressed on the ISA Bus.

The Setup screen displays the system option:

**Memory Hole** **Disabled**

Available options are:

Disabled  
512KB-640KB  
15MB-16MB

### **Graphics Aperture Size**

This option specifies the amount of system memory which can be used by the Accelerated Graphics Port (AGP).

The Setup screen displays the system option:

**Graphics Aperture Size** **64MB**

Available options are:

4 MB            64MB  
8 MB            128 MB  
16MB           256 MB  
32MB

### **AGP Multi-Transaction Timer (AGP Clks)**

This option sets the AGP multi-transaction timer. The settings are in units of AGP clocks.

The Setup screen displays the system option:

**AGP Mlti-Trans Timer (AGP Clks)** **32**

## **Chapter 4 - Advanced Setup**

Available options are:

Disabled	128
32	160
64	192
96	224

### **AGP Low-Priority Timer (AGP Clks)**

The Setup screen displays the system option:

**AGP Low-Priority Timer (AGP Clks) 16**

Available options are:

Disabled	80	176
16	96	192
32	112	208
48	128	224
64	144	240

### **AGP SERR**

This option allows you to use a System Error (SERR#) signal for the AGP Bus.

The Setup screen displays the system option:

**AGP SERR Enabled**

Available options are:

Disabled  
Enabled

### **AGP Parity Error Response**

This option enables the Accelerated Graphics Port (AGP) to respond to parity errors

The Setup Screen displays the system option:

**AGP Parity Error Response Enabled**

Available options are:

Disabled  
Enabled

## ***Chapter 4 - Advanced Setup***

---

### **8 Bit I/O Recovery Time**

This option specifies the length of the delay inserted between consecutive 8-bit I/O operations

The Setup screen displays the system option:

**8 bit I/O Recovery Time**                      **Disabled**

Available options are:

Disabled  
8 Sysclk              4 Sysclk  
1 Sysclk              5 Sysclk  
2 Sysclk              6 Sysclk  
3 Sysclk              7 Sysclk

### **16 Bit I/O Recovery Time**

This option specifies the length of the delay inserted between consecutive 16-bit I/O operations.

The Setup screen displays the system option:

**16bit I/O Recovery Time**                      **Disabled**

Available options are:

Disabled  
3 Sysclk  
1 Sysclk  
2 Sysclk  
4 Sysclk

### **PIIX4 SERR#**

This option enables the System Error (SERR#) signal for the Intel PIIX4 chip.

The Setup screen displays the system option:

**PIIX4 SERR#**                                      **Disabled**

Available options are:

Disabled  
Enabled



## **Chapter 4 - Advanced Setup**

### **USB Passive Release**

This option enables passive release for the Universal Serial Bus (USB).

The Setup screen displays the system option:

<b>USB Passive Release</b>	<b>Enabled</b>
----------------------------	----------------

Available options are:

Disabled  
Enabled

### **PIIX4 Passive Release**

This option enables passive release for the Intel PIIX4 chip.

The Setup screen displays the system option:

<b>PIIX4 Passive Release</b>	<b>Enabled</b>
------------------------------	----------------

Available options are:

Disabled  
Enabled

### **PIIX Delayed Transaction**

This option enables delayed transactions for the Intel PIIX4 chip.

The Setup screen displays the system option:

<b>PIIX4 Delayed Transaction</b>	<b>Enabled</b>
----------------------------------	----------------

Available options are:

Disabled  
Enabled

### **Type F DMA Buffer Control 1/Type FDMA Buffer Control 2**

These options specify the DMA channels where Type F buffer control is implemented.

The Setup screen displays the system options:

<b>Type F DMA Buffer Control 1</b>	<b>Disabled</b>
<b>Type F DMA Buffer Control 2</b>	<b>Disabled</b>

## ***Chapter 4 - Advanced Setup***

---

Available options are:

Channel-0	Disabled
Channel-1	Channel-5
Channel-2	Channel-6
Channel-3	Channel-7

### **DMA-0 through DMA-7 Type**

The DMA# Type options specify the bus on which the specified DMA channel can be used.

The Setup screen displays the system option:

<b>DMA# Type</b>	<b>Normal ISA</b>
------------------	-------------------

where # is the DMA Channel number.

Available options are:

- Normal ISA
- PC/PCI
- Distributed

### **Saving and Exiting**

When you have made all desired changes to Advanced Chipset Setup, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMI-BIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.

## Chapter 5 - Power Management Setup

### POWER MANAGEMENT SETUP

When you select Power Management Setup from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - POWER MANAGEMENT SETUP (C)1998 American Megatrends, Inc. All Rights Reserved		
ACPI Aware O/S	NO	Available options:
Power Management/APM	Disabled	No
Power Button Function	On/Off	Yes
Green PC Monitor Power State	Stand By	
Video Power Down Mode	Disabled	
Hard Disk Power Down Mode	Disabled	
Hard Disk Time Out (Minute)	Disabled	
Power Saving Type	POS	
Standby/Suspend Timer Unit	4 Min	
Standby Time Out	Disabled	
Suspend Time Out	Disabled	
Slow Clock Ratio	50%-62.5%	
Display Activity	Ignore	
Device 6 (Serial port 1)	Ignore	
Device 7 (Serial port 2)	ignore	
Device 8 (Parallel port)	Ignore	
Device 5 (Floppy disk)	Ignore	
Device 0 (Primary master IDE)	Ignore	
Device 1 (Primary slave IDE)	Ignore	ESC:EXit ↓↑:Sel
Device 2 (Secondary master IDE)	Ignore	PgUp/PgDn:Modify
Device 3 (Secondary slave IDE)	Ignore	F2/F3:Color

### Sample Power Management Setup Screen

When you display the Power Management Setup screen, the format is similar to the sample shown above, except the screen displays only twenty options at a time. If you need to change other options, use the down arrow key to locate the appropriate option. The available values for each option are displayed on the right side of the screen when you tab or arrow into the field. If values display for all parameters, the Setup parameters have been defined previously.

NOTE: The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

## **Chapter 5 - Power Management Setup**

---

### **POWER MANAGEMENT SETUP OPTIONS**

The descriptions for the system options listed below show the values as they appear if you have not run the Power Management Setup program yet. Once values have been defined, they display each time Power Management Setup is run.

#### **ACPI Aware O/S**

This option indicates whether or not the operating system under which you are running complies with Intel's Advanced Configuration and Power Interface (ACPI) specification.

The Setup screen displays the system option:

**ACPI Aware O/S** **No**

Available options are:

No  
Yes

#### **Power Management/APM**

This option allows you to enable Advanced Power Management (APM) on your system. If this option is disabled, you cannot change any other options on the Power Management Setup screen, except **the ACPI Aware O/S**.

The Setup screen displays the system option:

**Power Management/APM** **Disabled**

Available options are:

Disabled  
Enabled

#### **Power Button Function**

This option specifies how the power button mounted externally on the computer chassis is used.

The Setup screen displays the system option:

**Power Button Function** **On/Off**

## **Chapter 5 - Power Management Setup**

Two options are available:

- S Select Suspend to use the power button to place the computer into Suspend mode or Full On power mode.
- S Select **On/Off** to use the power button to turn the computer on or off.

### **Green PC Monitor Power State**

This option specifies the power management state, if any, which the Green PC-compliant video monitor enters after a specified period of display inactivity has expired. The period of inactivity before a monitor enters **Standby** mode is specified in the **Standby Time Out** option; the period of inactivity for **Suspend** mode is specified in the **Suspend Time Out** option.

The Setup screen displays the system option:

**Green PC Monitor Power State**                      **Stand By**

Available options are:

Stand By  
Suspend  
Off

### **Video Power Down Mode**

If the video subsystem remains inactive for a specified period of time, AMIBIOS conserves power by placing the subsystem into the power management state specified in this option. The period of inactivity before the subsystem enters **Standby** mode is specified in the **Standby Time Out** option; the period of inactivity for **Suspend** mode is specified in the **Suspend Time Out** option.

The Setup screen displays the system option:

**Video Power Down Mode**                      **Disabled**

Available options are:

Disabled  
Stand By  
Suspend

## **Chapter 5 - Power Management Setup**

### **Hard Disk Power Down Mode**

If the hard disk drive remains inactive for a specified period of time, AMI-BIOS conserves power by placing the drive into the power management state specified in this option. The period of inactivity before the drive is powered down is specified in the **Hard Disk Time Out** option.

The Setup screen displays the system option:

**Hard Disk Power Down Mode**                      **Disabled**

Available options are:

Disabled  
Stand By  
Suspend

### **Hard Disk Time Out (Minute)**

This option specifies the length of time the AMIBIOS waits before turning off power to the hard disk drive if the drive remains inactive. When this period expires, the hard disk drive enters the powerconserving mode specified in the **Hard Disk Power Down Mode option described** above.

The Setup screen displays the system option:

**Hard Disk Time Out (Minute)**                      **Disabled**

Available options are:

Disabled  
1 through 15, in increments of 1 minute

### **Power Saving Type**

The Setup screen displays the system option:

**Power Saving Type**                                      **POS**

Available options are:

POS (Power On Suspend)  
Sleep  
Stop Clock  
Deep Sleep

## **Chapter 5 - Power Management Setup**

### **Standby/Suspend Timer Unit**

This option specifies the unit of time used for the Standby and Suspend timeout periods.

The Setup screen displays the system option:

**Standby/Suspend Timer Unit**                      **4 Min**

Available options are:

32 secs  
4 msec  
4 min  
4 sec

### **Standby Time Out**

This option specifies the length of the period of system inactivity when the computer is in full power-on mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed.

The default for this option depends on the value selected in the **Standby/Suspend Timer Unit** option.

The Setup screen displays the system option:

**Standby Time Out**                                      **Disabled**

Available options are:

Disabled  
32 through 4064, in increments of 32 (if the **Standby/Suspend Timer Unit** option is set to 32 secs)  
4 through 508, in increments of 4 (if the **Standby/Suspend Timer Unit** option is set to 4 msec, 4 min or 4 sec)

### **Suspend Time Out**

This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power use is curtailed.

The default for this option depends on the value selected in the **Standby/Suspend Timer Unit** option.

## **Chapter 5 - Power Management Setup**

The Setup screen displays the system option:

**Suspend Time Out** **Disabled**

Available options are:

Disabled  
32 through 4064, in increments of 32 (if the **Standby/Suspend**  
Timer Unit option is set to 32 secs)  
4 through 508, in increments of 4 (if the **Standby/Suspend**  
Timer Unit option is set to 4 msec, 4 min or 4 sec)

### **Slow Clock Ratio**

This option specifies the speed at which the system clock runs when the system is in Standby power saving mode. The settings are expressed as a percentage between the normal CPU clock speed and the CPU clock speed when the system is in the power-conserving state.

The Setup screen displays the system option:

**Slow Clock Ratio** **50%-62.5%**

Available options are:

0-12.5%  
12.5%-25%  
25%-37.5%  
37.5%-50%  
50%-62.5%  
62.5%-75%  
75%-87.5%

### **Display Activity**

This option enables event monitoring on the video display. If the option is set to **Monitor** and the computer is in a power-saving mode, AMIBIOS watches for display activity. If any activity occurs, the computer enters the full power-on mode and AMIBIOS restarts the Standby and Suspend timeout timers.

The Setup screen displays the system option:

**Display Activity** **Ignore**



## **Chapter 5 - Power Management Setup**

Available options are:

Ignore  
Monitor

### **Device 0 through Device 8 Monitoring**

These options allow you to enable event monitoring for your peripherals and hard disk drives. If an option is set to **Monitor** and the computer is in a power-saving mode, AMIBIOS watches for activity on the hardware interrupt request line (IRQ) for the specified device. If any activity occurs, the computer enters full power-on mode. AMIBIOS then restarts the Standby and Suspend timeout timers.

The Setup screen displays the system options:

<b>Device 6 (Serial port 1)</b>	<b>Ignore</b>
<b>Device 7 (Serial port 2)</b>	<b>Ignore</b>
<b>Device 8 (Parallel port)</b>	<b>Ignore</b>
<b>Device 5 (Floppy disk)</b>	<b>Ignore</b>
<b>Device 0 (Primary master IDE)</b>	<b>Ignore</b>
<b>Device 1 (Primary slave IDE)</b>	<b>Ignore</b>
<b>Device 2 (Secondary master IDE)</b>	<b>Ignore</b>
<b>Device 3 (Secondary slave IDE)</b>	<b>Ignore</b>

Available options are:

Ignore  
Monitor

### **Saving and Exiting**

When you have made all desired changes to **Power Management Setup**, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMIBIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.

## **Chapter 5 - Power Management Setup**

*This page was intentionally left blank*

## Chapter 6 - PCI/Plug and Play Setup

### PCI/PLUG AND PLAY SETUP

When you select PCI/Plug and Play Setup from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP		
(C)1998 American Megatrends, Inc. All Rights Reserved		
On Board LAN	Enabled	Available Options:
On Board Video	Enabled	Disabled
On Board SCSI	Enabled	Enabled
Plug and Play Aware O/S	No	
PCI Latency Timer (PCI Clocks)	64	
PCI VGA Palette Snoop	Disabled	
PCI IDE BusMaster	Disabled	
OffBoard PCI IDE Card	Auto	
OffBoard PCI IDE Primary IRQ	Disabled	
OffBoard PCI IDE Secondary IRQ	Disabled	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	
DNA Channel 7	PnP	
IRQ5	PCI/PnP	
IRQ9	PCI/PnP	
IRQ10	PCI/PnP	
IRQ11	PCI/PnP	
IRQ15	PCI/PnP	ESC:Exit ↓↑:Sel
Reserved Memory Size	Disabled	PgUp/PgDn:Modify
Reserved Memory Address	C8000	F2/F3:Color

### Sample PCI / Plug and Play Setup Screen

When you display the PCI / Plug and Play Setup screen, the format is similar to the sample shown above, except the screen displays only twenty options at a time. If you need to change other options, use the down arrow key to locate the appropriate option. The available values for each option are displayed on the right side of the screen when you tab or arrow into the field. If values display for all parameters, the Setup parameters have been defined previously.

NOTE: The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

## **Chapter 6 - PCI/Plug and Play Setup**

---

### **PCI/PLUG AND PLAY SETUP OPTIONS**

The descriptions for the system options listed below show the values as they appear if you have not run the PCI/Plug and Play Setup program yet. Once values have been defined, they display each time PCI/Plug and Play Setup is run.

#### **On Board LAN**

The Setup screen displays the system option:

<b>On Board LAN</b>	<b>Enabled</b>
---------------------	----------------

Available options are:

- Disabled
- Enabled

#### **On Board Video**

The Setup screen displays the system option:

<b>On Board Video</b>	<b>Enabled</b>
-----------------------	----------------

Available options are:

- Disabled
- Enabled

#### **On Board SCSI**

The Setup screen displays the system option:

<b>On Board SCSI</b>	<b>Enabled</b>
----------------------	----------------

Available options are:

- Disabled
- Enabled

#### **Plug and Play Aware O/S**

This option indicates whether the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards which are required for system boot. The Windows 95 operating system is PnP-aware and detects and enables all other PnP-aware adapter cards. Set this option to No if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP.

## **Chapter 6 - PCI/Plug and Play Setup**

NOTE: You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.

The Setup screen displays the system option:

**Plug and Play Aware O/S**                      No

Available options are:

No  
Yes

### **PCI Latency Timer (PCI Clocks)**

This option specifies the latency of all PCI devices on the PCI Local Bus. The settings are in units equal to PCI clocks.

The Setup screen displays the system option:

**PCI Latency Timer (PCI Clocks)**                      **64**

Available options are:

32	160
64	192
96	224
128	248

### **PCI VGA Palette Snoop**

Palette snooping allows multiple VGA devices operating on different buses to handle data from the CPU on each set of palette registers on every video device, e.g. if there are two VGA devices in your system (one PCI and one ISA). Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled).

This option must be set to Enabled if any ISA adapter card installed in the system requires VGA palette snooping.

The Setup screen displays the system option:

**PCI VGA Palette Snoop**                      **Disabled**

## **Chapter 6 - PCI/Plug and Play Setup**

Two options are available:

- S **Disabled** - Data read and written by the CPU is only directed to the PCI VGA device's palette registers.
- S **Enabled** - Data read and written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both devices to be identical.

### **PCI IDE BusMaster**

This option specifies whether the IDE controller on the PCI Local Bus has bus mastering capability. AMIBIOS can perform bus master transfers using scatter/gather DMA on the PCI IDE interface. No special drivers are needed, but the IDE drive must support PCI bus mastering.

The Setup screen displays the system option:

<b>PCI IDE BusMaster</b>	<b>Disabled</b>
--------------------------	-----------------

Available options are:

Disabled  
Enabled

### **OffBoard PCI IDE Card**

This option specifies the PCI expansion slot on the SBC where the off-board PCI IDE controller is installed, if any. If an off-board PCI IDE controller is used, the on-board IDE controller on the SBC is automatically disabled.

If **Auto** is selected, AMIBIOS automatically determines the correct setting for this option.

This option forces IRQ14 and IRQ15 to PCI slots on the PCI Local Bus. This is necessary to support non-compliant PCI IDE adapter cards.

If this option is set to **Auto**, the **OffBoard PCI IDE Primary IRQ** and **Off-Board PCI IDE Secondary IRQ** options may *not* be modified.

The Setup screen displays the system option:

<b>OffBoard PCI IDE Card</b>	<b>Auto</b>
------------------------------	-------------

## **Chapter 6 - PCI/Plug and Play Setup**

Available options are:

- Auto
- Slot1
- Slot2
- Slot3
- Slot4
- Slot5
- Slot6

### **OffBoard PCI IDE Primary IRQ/Secondary IRQ**

These options specify the PCI interrupts used by the primary and secondary IDE channels on the off-board PCI IDE controller.

If the **OffBoard PCI IDE Card** option described above is set to **Auto**, these options are *not* available.

The Setup screen displays the system options:

<b>OffBoard PCI IDE Primary IRQ</b>	<b>Disabled</b>
<b>OffBoard PCI IDE Secondary IRQ</b>	<b>Disabled</b>

Available options are:

- Disabled
- INTA
- INTB
- INTC
- INTD
- Hardwired

### **DMA Channels 0, 1, 3, 5, 6 and 7**

These options allow you to specify the bus type used by each DMA channel.

The Setup screen displays the system option:

<b>DMA Channel #</b>	<b>PnP</b>
----------------------	------------

where # is the DMA Channel number.

Available options are:

- PnP
- ISA/EISA

## ***Chapter 6 - PCI/Plug and Play Setup***

---

### **IRQ5/IRQ9/IRQ10/IRQ11/IRQ15**

These options indicate whether or not the specified interrupt request (IRQ) is available for use by the system for PCI/Plug and Play features or is reserved for use by option cards on the ISA Bus. This allows you to specify IRQs for use by legacy ISA adapter cards.

The IRQ setup options indicate whether AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, you can set the IRQ option to ISA/EISA. On-board I/O is configurable by AMIBIOS; the IRQs used by on-board I/O are configured as **PCI/PnP**.

The Setup screen displays the system option:

<b>IRQ#</b>	<b>PCI/PnP</b>
-------------	----------------

where # is the number of the interrupt request (IRQ) available to the option specified (PCI or ISA).

Available options:

PCI/PnP
ISA/EISA

---

**NOTE:** If the **OnBoard IDE** option on the Peripheral Setup screen is set to **Secondary** or **Both**, IRQ 15 is assigned by the system and is not available to the user.

---

### **Reserved Memory Size**

This option specifies the size of the memory area reserved for legacy ISA adapter cards.

If this option is set to **Disabled**, the **Reserved Memory Address** option is not available for modification.

The Setup screen displays the system option:

<b>Reserved Memory Size</b>	Disabled
-----------------------------	----------



## **Chapter 6 - PCI/Plug and Play Setup**

Available options are:

Disabled  
16K  
32K  
64K

### **Reserved Memory Address**

This option specifies the beginning address (in hexadecimal) of the ROM memory area reserved for use by legacy ISA adapter cards.

If the Reserved Memory Size option is set to Disabled, this option is not available for modification.

The Setup screen displays the system option:

<b>Reserved Memory Address</b>	<b>C8000</b>
--------------------------------	--------------

Available options are:

C0000	D0000
C4000	D4000
C9000	D8000
CC000	DC000

### **Saving and Exiting**

When you have made all desired changes to PCI/Plug and Play Setup, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMI-BIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.

## **Chapter 6 - PCI/Plug and Play Setup**

*This page was intentionally left blank*

## Chapter 7 - Peripheral Setup

### PERIPHERAL SETUP

When you select the Peripheral Setup from the AMIBIOS Setup Main Menu, the following Setup screen displays:

AMIBIOS SETUP - PERIPHERAL SETUP		
(C)1998 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Auto	Available Options:
OnBoard Serial Port1	Auto	Auto
OnBoard Serial Port2	Auto	Disabled
OnBoard Parallel Port	Auto	Enabled
Parallel Port Mode	ECP	
EPP Version	N/A	
Parallel Port IRQ	Auto	
Parallel Port DMA Channel	Auto	
OnBoard IDE	Both	

ESC:EXit ↓↑:Sel  
PgUp/PgDn:Modify  
F2/F3:Color

### Sample Peripheral Setup Screen

When you display the Peripheral Setup screen, the format is similar to the sample shown above. The available values for each option are displayed on the right side of the screen when you tab or arrow into the field. If values display for all parameters, the Setup parameters have been defined previously.

**NOTE:** The values on this screen do not necessarily reflect the values appropriate for your SBC. Refer to the explanations below for specific instructions about entering correct information.

## ***Chapter 7 - Peripheral Setup***

---

### **PERIPHERAL SETUP OPTIONS**

The descriptions for the system options listed below show the values as they appear if you have not run the Peripheral Setup program yet. Once values have been defined, they display each time Peripheral Setup is run.

The AMIBIOS allows automatic or manual setup of peripheral devices. The floppy drive controller, serial port, parallel port and IDE controller options on the Peripheral Management screen can each be set to Auto, which causes AMIBIOS to configure the peripherals automatically as described under each heading below.

When you set these options to values other than Auto, the values you set up manually are used by AMIBIOS when booting the system. AMIBIOS reports any I/O conflicts after displaying the BIOS Configuration Summary screen.

#### **OnBoard FDC**

The on-board floppy drive controller may be enabled or disabled using this option.

When this option is set to Auto, AMIBIOS attempts to enable any floppy drive controller on the ISA Bus. If no floppy controller is found on the ISA Bus, the on-board floppy controller is enabled.

The Setup screen displays the system option:

<b>OnBoard FDC</b>	<b>Auto</b>
--------------------	-------------

Available options are:

- Auto
- Disabled
- Enabled

#### **OnBoard Serial Port 1 / OnBoard Serial Port 2**

Each of these options enables the specified serial port on the SBC and establishes the base I/O address for the port.

The Setup screen displays the system options:

<b>OnBoard Serial Port 1</b>	<b>Auto</b>
<b>OnBoard Serial Port 2</b>	<b>Auto</b>

## **Chapter 7 - Peripheral Setup**

Available options are:

- Auto
- Disabled
- 3F8H
- 2F8H
- 3E8H
- 2E8H

When this option is set to Auto, AMIBIOS also attempts to avoid address conflicts. If the off-board serial ports are configured to specific starting I/O ports via jumper settings, AMIBIOS configures the on-board serial ports to avoid conflicts.

AMIBIOS checks the ISA Bus for serial ports. Any off-board serial ports found on the ISA Bus are left at their assigned addresses. Serial Port 1, the first on-board serial port, is configured with the first available address and Serial Port 2, the second on-board serial port, is configured with the next available address. The default address assignment order is 3F8H, 2F8H, 3E8H, 2E8H. Note that this same assignment order is used by AMIBIOS to place the active serial port addresses in lower memory (BIOS data area) for configuration as logical COM devices.

After all addresses have been assigned, any remaining on-board serial ports are disabled.

For example, if there is one off-board serial port on the ISA Bus and its address is set to 2F8H Serial Port 1 is assigned address 3F8H and Serial Port 2 is assigned address 3E8H. Configuration is then as follows:

- COM1 - Serial Port 1 (at 3F8H)
- COM2 - off-board serial port (at 2F8H)
- COM3 - Serial Port 2 (at 3E8H)

### **OnBoard Parallel Port**

This option enables the parallel port on the SBC and establishes the base I/O address for the port.

The Setup screen displays the system option:

<b>OnBoard Parallel Port</b>	<b>Auto</b>
------------------------------	-------------

## Chapter 7 - Peripheral Setup

---

Available options are:

- Auto
- Disabled
- 378
- 278
- 3BC

When this option is set to Auto, AMIBIOS checks the ISA Bus for off-board parallel ports. Any parallel ports found on the ISA Bus are left at their assigned addresses. The on-board Parallel Port is automatically configured with the first available address not used by an off-board parallel port. The default address assignment order is 3BCH, 378H, 278H. Note that this same assignment order is used by AMIBIOS to place the active parallel port addresses in lower memory (BIOS data area) for configuration as logical LPT devices.

### Parallel Port Mode

This option specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes which adhere to the IEEE P1284 specifications.

The Setup screen displays the system option:

Parallel Port Mode	ECP
--------------------	-----

Three options are available:

- § Normal uses normal parallel port mode.
- § EPP allows the parallel port to be used with devices which adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.
- § ECP allows the parallel port to be used with devices which adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve transfer rates of approximately 2.5MB/second. ECP provides symmetric bidirectional communication.

### EPP Version

This option specifies the Enhanced Parallel Port (EPP) specification number which is used in the system. It is available only if the **Parallel Port Mode** option is set to EPP.

## **Chapter 7 - Peripheral Setup**

The Setup screen displays the system option:

**EPP Version** **N/A**

Available options are:

N/A  
1.7  
1.9

### **Parallel Port IRQ**

This option specifies the interrupt request (IRQ) which is used by the parallel port.

The Setup screen displays the system option:

**Parallel Port IRQ** **Auto**

Available options are:

Auto  
5  
7

### **Parallel Port DMA Channel**

This option sets the DMA channel used by the parallel port. It is only available if the **Parallel Port Mode** option is set to ECP.

The Setup screen displays the system option:

**Parallel Port Channel** **Auto**

Available options are:

Auto  
0  
1  
3

### **OnBoard IDE**

This option specifies the on-board integrated drive electronics (IDE) controller channel(s) to be used.

The Setup screen displays the system option:

**OnBoard IDE** **Both**

## ***Chapter 7 - Peripheral Setup***

---

Available options are:

- Both
- Disabled
- Primary
- Secondary

NOTE: If this option is set to **Secondary** or **Both**, the system assigns interrupt request 15 (IRQ 15).

### **Saving and Exiting**

When you have made all desired changes to **Peripheral Setup**, press <Esc> to return to the AMIBIOS Setup Main Menu screen.

You may make changes to other Setup options before exiting from AMI-BIOS Setup. You may save the changes you have just made or you may exit from Setup without saving your changes.



## Appendix 1 - BIOS Messages

### BIOS BEEP CODES

Errors may occur during the POST (Power-On Self Test) routines which are performed each time the system is powered on.

Non-fatal errors are those which, in most cases, allow the system to continue the bootup process. The error message normally appears on the screen. See *BIOS Error Messages* later in this section for descriptions of these messages.

Fatal errors are those which will not allow the system to continue the bootup procedure.

These fatal errors are usually communicated through a series of audible beeps. Each error message has its own specific beep code, defined by the number of beeps following the error detection. The following table lists the errors which are communicated audibly.

All errors listed, *with the exception of #8*, are fatal errors.

Beep Count	Message	Description
1	Refresh Failure	The memory refresh circuitry of the processor board is faulty.
2	Parity Error	A parity error was detected in the base memory (the first block of 64 KB ) of the system.
3	Base 64 KB Memory Failure	A memory failure occurred within the first 64 KB of memory
4	Timer not operational	A memory failure occurred within the first 64 KB of memory, or Timer #1 on the processor board has failed to function properly.
5	Processor Error	The CPU (Central Processing Unit) on the processor board has generated an error
6	8042 - Gate A20 Failure	The keyboard controller (8042) contains the Gate A20 switch which allows the CPU to operate in protected mode. This error message means that the BIOS is not able to switch the CPU into protected mode.
7	Processor Exception Interrupt Error	The CPU on the processor board has generated an exception interrupt
8	Display Memory Read/Write Error	A system video adapter is either missing or its memory is faulty. ( <b>NOTE:</b> This is not a fatal error.)

## ***Appendix 1 - BIOS Messages***

---

### **BIOS BEEP CODES (continued)**

Beep Count	Message	Description
9	ROM Checksum Error	The ROM checksum value does not match the value encoded in the BIOS.
10	CMOS Shutdown Register Read/Write Error	The shutdown register for the CMOS RAM has failed.
11	Cache Memory Bad; Do Not Enable Cache	The cache memory test failed. Cache memory is disabled. <i>Do <u>not</u> press &lt;Ctrl&gt;&lt;Alt&gt;&lt;Shift&gt;&lt;+&gt; to enable cache memory.</i>

### **BIOS ERROR MESSAGES**

If a non-fatal error occurs during the POST routines performed each time the system is powered on, the error message will appear on the screen in the following format

ERROR Message Line 1  
ERROR Message Line 2  
Press F1 to Resume

Note the error message and press the <F1> key to continue with the bootup procedure.

---

NOTE: If the "Wait for 'F1' If Any Error" option in the Advanced Setup portion of the BIOS Setup Program has been set to Disabled, the "Press F1 to Resume" prompt will not appear on the third line.

---

For most of the error messages, there is no ERROR Message Line 2. Generally, for those messages containing an ERROR Message Line 2, the text will be "RUN SETUP UTILITY." Pressing the <F1> key will invoke the BIOS Setup Utility.

## Appendix 1 - BIOS Messages

### BIOS ERROR MESSAGES (continued)

A description of each error message appears below. The errors are listed in alphabetical order, not in the order in which they may occur.

Message	Description
8042 Gate-A20 Error	The gate-A20 portion of the keyboard controller (8042) has failed to operate correctly. Replace the 8042 chip.
Address Line Short!	An error has occurred in the address decoding circuitry of the processor board.
C: Drive Error	The BIOS is not receiving any response from hard disk drive C:. Check Standard Setup using the BIOS Setup Utility to see if the correct hard disk drive has been selected.
C: Drive Failure	The BIOS cannot get any response from hard disk drive C:. It may be necessary to replace the hard disk.
Cache Memory Bad, Do Not Enable Cache	Cache memory is defective.
CH-2 Timer Error	Most AT standard system boards include two timers. An error with Timer #1 is a fatal error, explained in <i>BIOS Beep Codes</i> earlier in this section. If an error occurs with Timer #2, this error message appears.
CMOS Battery State Low	There is a battery in the system which is used for storing the CMOS values. This battery appears to be low in power and needs to be replaced.
CMOS Checksum Failure	After the CMOS values are saved, a checksum value is generated to provide for error checking. If the previous value is different from the value currently read, this error message appears. To correct the error, run the BIOS Setup Utility.
CMOS Display Type Mismatch	The type of video stored in CMOS does not match the type detected by the BIOS. Run the BIOS Setup Utility to correct the error.
CMOS Memory Size Mismatch	If the BIOS finds the amount of memory on the system board to be different from the amount stored in CMOS, this error message is generated. Run the BIOS Setup Utility to correct the error.
CMOS System Options Not Set	The values stored in the CMOS are either corrupt or nonexistent. Run the BIOS Setup Utility to correct the error.
CMOS Time & Date Not Set	Use Standard Setup in the BIOS Setup Utility to set the date and time of the CMOS.
D: Drive Error	The BIOS is not receiving any response from hard disk drive D:. Check Standard Setup using the BIOS Setup Utility to see if the correct hard disk drive has been selected.

## Appendix 1 - BIOS Messages

---

### BIOS ERROR MESSAGES (continued)

Message	Description
D: Drive Failure	The BIOS cannot get any response from hard disk drive D:. It may be necessary to replace the hard disk.
Diskette Boot Failure	The disk used to boot up in floppy drive A: is corrupt, which means it cannot be used to boot up the system. Use another boot disk and follow the instructions on the screen.
Display Switch Not Proper	Some systems require that a video switch on the processor be set to either color or monochrome, depending upon the type of video being used. To correct this situation, set the switch properly after the system is powered off.
DMA Error	An error has occurred in the DMA controller on the processor board.
DMA #1 Error	An error has occurred in the first DMA channel on the processor board.
DMA #2 Error	An error has occurred in the second DMA channel on the processor board.
FDD Controller Failure	The BIOS is not able to communicate with the floppy disk drive controller. Check all appropriate connections after the system is powered off.
HDD Controller Failure	The BIOS is not able to communicate with the hard disk drive controller. Check all appropriate connections after the system is powered off.
INTR #1 Error	Interrupt channel #1 has failed the POST routine.
INTR #2 Error	Interrupt channel #2 has failed the POST routine.
Invalid Boot Diskette	The BIOS can read the disk in floppy drive A:, but it cannot boot up the system with it. Use another boot disk and follow the instructions on the screen.
KB/Interface Error	The BIOS has found an error with the keyboard connector on the processor board.
Keyboard Error	The BIOS has encountered a timing problem with the keyboard. The Keyboard option in the Standard Setup portion of the BIOS Setup Utility may be set to <b>Not Installed</b> , which will cause the BIOS to skip the keyboard POST routines.
Keyboard is Locked... Unlock it	The keyboard lock on the system is engaged. It must be unlocked to continue the bootup procedure.
No ROM BASIC	This error occurs when a proper bootable sector cannot be found on either floppy disk drive A: or hard disk drive C:. The BIOS will try at this point to run ROM Basic, and the error message is generated when the BIOS does not find it.

## ***Appendix 1 - BIOS Messages***

### **BIOS ERROR MESSAGES (continued)**

Message	Description
Off Board Parity Error	<p>The BIOS has encountered a parity error in memory installed on an adapter card in an I/O (Bus) expansion slot. The message appears as follows:</p> <p style="text-align: center;">OFF BOARD PARITY ERROR ADDR (HEX) = (XXXX)</p> <p>where XXXX is the address (in hexadecimal) at which the error has occurred. "Off Board" means that it is part of the memory installed via an expansion card in an I/O (Bus) slot, as opposed to memory attached directly to the processor board.</p>
On Board Parity Error	<p>The BIOS has encountered a parity error in memory installed on the processor board. The message appears as follows:</p> <p style="text-align: center;">ON BOARD PARITY ERROR ADDR (HEX) = (XXXX)</p> <p>where XXXX is the address (in hexadecimal) at which the error has occurred. "On Board" means that it is part of the memory attached directly to the processor board, as opposed to memory installed via an expansion card in an I/O (Bus) slot.</p>
Parity Error ????	<p>The BIOS has encountered a parity error with some memory in the system, but it is not able to determine the address of the error.</p>

## ***Appendix 1 - BIOS Messages***

---

### **ISA BIOS NMI HANDLER MESSAGES**

The ISA NMI (non-maskable interrupt) messages are described below.

Message	Description
Memory Parity Error	Memory failed. The message appears as follows:  MEMORY PARITY ERROR AT XXXXX  where XXXXX is the address (in hexadecimal) at which the error has occurred. If the memory location cannot be determined, the message is "Memory Parity Error???"
I/O Card Parity Error	An expansion card failed. The message appears as follows:  I/O PARITY ERROR AT XXXXX  where XXXXX is the address (in hexadecimal) at which the error has occurred. If the address cannot be determined, the message is "I/O Card Parity Error???"
DMA Bus Time-Out	A device has driven the bus signal for more than 7.8 microseconds.

## ***Appendix 1 - BIOS Messages***

### **PORT 80 CODES**

The following codes are presented on Port 80H as the BIOS performs its reset procedure.

Code	Description
Uncompressed Initialization Code Checkpoints:	
D0	NMI is disabled. Power-on delay starting. Initialization code checksum to be verified next.
D1	Initializing DMA controller, performing keyboard controller BAT test, starting memory refresh and entering 4GB flat mode next.
D3	Starting memory sizing next.
D4	Returning to real mode. Executing any OEM patches and setting stack next.
D5	Passing control to uncompressed code in shadow RAM at E000:0000H. Initialization code copied to segment 0 and control to be transferred to segment 0.
D6	Control in segment 0. Checking if <Ctrl>+<Home> was pressed and verifying system BIOS checksum, If <Ctrl>+<Home> was pressed or system BIOS checksum is bad, going to checkpoint code E0H next. Otherwise, going to checkpoint code D7H.
D7	Main BIOS runtime code to be decompressed and control to be passed to main BIOS in shadow RAM.
Boot Block Recovery Code Checkpoints:	
E0	Onboard floppy controller initialized, if any. Beginning base 512KB memory test next.
E1	Initializing interrupt vector table next.
E2	Initializing DMA and interrupt controllers next.
E6	Enabling floppy drive controller and timer IRQ's. Enabling internal cache memory.
ED	Initializing floppy drive.
EE	Looking for floppy diskette in drive A:. Reading first sector of diskette.
EF	Read error occurred while reading floppy drive in drive A:.
F0	Searching for AMIBOOT.ROM file in root directory.

## ***Appendix 1 - BIOS Messages***

---

### **PORT 80 CODES (continued)**

Code	Description
F1	AMIBOOT.ROM file not in root directory
F2	Reading and analyzing floppy diskette FAT to find clusters occupied by AMIBOOT.ROM file.
F3	Reading AMIBOOT.ROM file next, cluster by cluster.
F4	AMIBOOT.ROM file not correct size.
F5	Disabling internal cache memory next.
FB	FB Detecting type of flash ROM next.
FC	Erasing flash ROM next.
FD	Programming flash ROM next.
FF	Flash ROM programming successful. Restarting system BIOS next.
Runtime code is uncompressed in F000 shadow RAM.	
03	NMI is disabled. Checking for soft reset/power-on next.
05	BIOS stack has been built. Disabling cache memory next.
06	Uncompressing POST code next.
07	Initializing CPU and CPU data area next.
08	CMOS checksum calculation to be done next.
0A	CMOS checksum calculation done. Initializing CMOS status register for date and time next.
0B	CMOS status register initialized. Next, performing any required initialization before keyboard BAT command issued.
0C	Keyboard controller input buffer free. Issuing BAT command to keyboard controller next.
0E	Keyboard controller BAT command result verified. Performing any necessary initialization after keyboard controller BAT test next.
0F	Initialization after keyboard controller BAT command test done. Keyboard command byte to be written next.
10	Keyboard controller command byte is written. Issuing Pin 23,24 blocking/unblocking command next.
11	Checking if <End> or <Ins> keys were pressed during power-on next. Initializing CMOS RAM if the 'Initialize CMOS RAM in every boot' AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12	Disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2 next.



## ***Appendix 1 - BIOS Messages***

### **PORT 80 CODES (continued)**

Code	Description
13	Video display disabled and port B initialized. Initializing chipset next.
14	8254 timer test to begin next.
19	8254 timer test over. Starting memory refresh test next.
1A	Memory refresh line is toggling. Checking 15 microsecond on/off time next.
23	Reading 8042 input port and disabling MEGAKEY Green PC feature next. Making BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24	Configuration required before interrupt vector initialization complete. Interrupt vector initialization about to begin.
25	Interrupt vector initialization done. Clearing password if POST diagnostic switch is on.
27	Any initialization before setting video mode to be done next.
28	Initialization before setting video mode is complete. Configuring monochrome mode and color mode settings next.
2A	Bus initialization (system, static, output devices) to be done next, if present. (See end of Port 80H Codes for details of different buses.)
2B	Passing control to video ROM to perform any required configuration before video ROM test.
2C	All necessary processing before passing control to video ROM is done. Looking for video ROM next and passing control to it.
2D	Video ROM has returned control to BIOS POST. Performing any required processing after video ROM had control.
2E	Completed post-video ROM test processing. If EGA/VGA controller not found, performing display memory read/write test next.
2F	EGA/VGA controller not found. Display memory read/write test about to begin.
30	Display memory read/write test passed. Looking for retrace checking next.
31	Display memory read/write test or retrace checking failed. Performing alternate display memory read/write test next.
32	Alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34	Video display checking over. Setting display mode next.
37	Display mode set. Displaying power-on message next.

## ***Appendix 1 - BIOS Messages***

---

### **PORT 80 CODES (continued)**

Code	Description
38	Initializing bus (input, IPL, general devices) next, if present. (See end of Port 80H Codes for details of different buses.)
39	Displaying bus initialization error messages. (See end of Port 80H Codes for details of different buses.)
3A	New cursor position read and saved. Displaying "Hit <DEL>" message next.
3B	"Hit <DEL>" message displayed. Protected mode memory test about to start.
40	Preparing descriptor tables next.
42	Descriptor tables prepared. Entering protected mode for memory test next.
43	Entered protected mode. Enabling interrupts for diagnostics mode next.
44	Interrupts enabled (if diagnostics switch is on). Initializing data to check memory wraparound at 0:0 next.
45	Data initialized. Checking for memory wraparound at 0:0 and finding total system memory size next.
46	Memory wraparound test done. Memory size calculation done. Writing patterns to test memory next.
47	Memory pattern written to extended memory. Writing patterns to base 640KB memory next.
48	Patterns written in base memory. Determining amount of memory below 1 MB memory next.
49	Amount of memory below 1 MB found and verified. Determining amount of memory above 1 MB memory next.
4B	Amount of memory above 1 MB found and verified. Checking for soft reset and clearing memory below 1 MB for soft reset next. (if power-on situation, going to checkpoint 4EH next.)
4C	Memory below 1 MB has been cleared via soft reset. Clearing memory above 1MB next.
4D	Memory above 1 MB has been cleared via soft reset. Saving memory size next. (Going to checkpoint 52H next.)
4E	Memory test started, but not as result of soft reset. Displaying first 64KB memory size next.
4F	Memory size display started. Display is updated during memory test. Performing sequential and random memory tests next.

## ***Appendix 1 - BIOS Messages***

### **PORT 80 CODES (continued)**

Code	Description
50	Memory below 1 MB has been tested and initialized. Adjusting displayed memory size for relocation and shadowing next.
51	Memory size display adjusted for relocation and shadowing. Testing memory above 1 MB next.
52	Memory above 1 MB has been tested and initialized. Saving memory size information next.
53	Memory size information and CPU registers are saved. Entering real mode next.
54	Shutdown was successful. CPU in real mode. Disabling Gate A20 line, parity and NMI next.
57	A20 address line, parity and NMI are disabled. Adjusting memory size depending on relocation and shadowing next.
58	Memory size adjusted for relocation and shadowing. Clearing "Hit <DEL>" message next.
59	"Hit <DEL>" message cleared. "Wait. . ." message displayed. Starting DMA and interrupt controller tests next.
60	DMA page register test passed. Performing DMA controller 1 base register test next.
62	DMA controller 1 base register test passed. Performing DMA controller 2 base register test next.
65	DMA controller_2 base register test passed. Programming DMA controllers 1 and 2 next.
66	Completed programming DMA controllers 1 and 2. Initializing 8259 interrupt controller next.
67	Completed 8259 interrupt controller initialization.
7F	Extended NMI sources enabling in progress.
80	Keyboard test started. Clearing output buffer, checking for stuck keys, issuing keyboard reset command next.
81	Keyboard reset error or stuck key found. Issuing keyboard controller interface test command next.
82	Keyboard controller interface test completed. Writing command byte and initializing circular buffer next.
83	Command byte written, global data initialization completed. Checking for looked key next.

## ***Appendix 1 - BIOS Messages***

---

### **PORT 80 CODES (continued)**

Code	Description
84	Locked key checking over. Checking for memory size mismatch with CMOS RAM data next.
85	Memory size check done. Displaying soft error and checking for password or bypassing Setup next.
86	Password checked. Performing any required programming before Setup next.
87	Programming before Setup complete. Uncompressing Setup code and executing Setup utility next.
88	Returned from Setup program and screen is cleared. Performing any necessary programming after Setup next.
89	Programming after Setup complete. Displaying power-on screen message next.
8B	First screen message displayed. "Wait . . ." message displayed. Performing PS/2 mouse check and extended BIOS data area allocation check next.
8C	Programming Setup options next.
8D	Setup options are programmed. Resetting hard disk controller next.
8F	Hard disk controller reset done. Configuring floppy drive controller next.
91	Floppy drive controller configured. Configuring hard disk drive controller next.
95	Initializing bus option ROM's from C800 next. (See end of Port 80H Codes for details of different buses.)
96	Initializing before passing control to adapter ROM at C800.
97	Initialization before C800 adapter ROM gains control completed, Adapter ROM check next.
98	Adapter ROM had control and has returned control to BIOS POST. Performing any required processing after option ROM returned control.
99	Any initialization required after option ROM test has completed. Configuring timer data area and printer base address next.
9A	Set timer and printer base addresses. Setting RS-232 base address next.
9B	Returned after setting RS-232 base address. Performing any required initialization before coprocessor test next.

## ***Appendix 1 - BIOS Messages***

### **PORT 80 CODES (continued)**

Code	Description
9C	Required initialization before coprocessor test is over. Initializing coprocessor next.
9D	Coprocessor initialized. Performing any required initialization after coprocessor test next.
9E	Initialization after coprocessor test is complete. Checking extended key board, keyboard ID and Num Lock key next. Issuing keyboard ID command next.
A2	Displaying any soft errors next.
A3	Soft error display complete. Setting keyboard typematic rate next.
A4	Keyboard typematic rate set. Programming memory wait states next.
A5	Memory wait state programming over. Clearing screen and enabling parity and NMI next.
A7	NMI and parity enabled. Performing any initialization required before passing control to adapter ROM at E000H next.
A8	Initialization before passing control to adapter ROM at E000H completed. Passing control to adapter ROM at E000H next.
A9	Returned from E000 ROM control. Going to do any initialization required after E000 option ROM control.
AA	Initialization after E000H option ROM control completed. Displaying system configuration next.
AB	Uncompressing DMI data and executing DMI POST initialization next.
B0	System configuration is displayed.
B1	Copying any code to specific areas.
00	Copying of code to specific areas done. Passing control to INT 19H boot loader next.

The System BIOS passes control to the different buses at the following checkpoints to do various tasks:

Code	Description
2A	Initializing different bus system, static and output devices, if present.
38	Initializing bus input, IPL and general devices, if present.
39	Displaying bus initialization error messages, if any.
95	Initializing bus adapter ROM's from C8000H through D8000H.

## ***Appendix 1 - BIOS Messages***

---

### **ADDITIONAL BUS CHECKPOINTS**

While control is in the different bus routines, additional checkpoints are output to Port 80H as WORD to identify the routines being executed. These are WORD checkpoints. The LOW BYTE of checkpoint is the system BIOS checkpoint where control is passed to the different bus routines, and the HIGH BYTE of checkpoint indicates that the routine is being executed in different buses.

The information included in the high and low bytes of these checkpoints is detailed below.

### **HIGH BYTE**

The additional bus checkpoints listed above include the following information:

Bits	Description
Bits 7-4	0001 Function 1. Initialize static devices on the bus. 0010 Function 2. Initialize output devices on the bus. 0011 Function 3. Initialize input devices on the bus. 0100 Function 4. Initialize IPL devices on the bus. 0101 Function 5. initiate general devices on the bus. 0110 Function 6. Initialize error reporting on the bus. 0111 Function 7. Initialize add-on ROM's for all buses.
Bits 3-0	Specify the bus 0 Generic DIM Device Initialization Manager 1 Onboard system devices 2 ISA devices 3 EISA devices 4 ISA PnP devices 5 PCI devices

## **Appendix 2 - Adaptec Software License**

**ADAPTEC, INC.**

### **SOFTWARE LICENSE**

**CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS. BY USING ANY FILES FROM ADAPTEC, YOU AGREE TO BE BOUND BY THESE TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THESE TERMS AND CONDITIONS, PROMPTLY RETURN THE SOFTWARE AND ALL ACCOMPANYING ITEMS.**

This License grants you a non-exclusive license to use the Adaptec Software and related documentation ("Software") on the following terms and conditions:

- 1. LICENSE:** You may: (a) use and (b) copy the Software in machine readable form solely for back-up purposes or use within a single working location; provided you reproduce Adaptec's copyright notice and proprietary legends.
- 2. RESTRICTIONS:** You may not distribute copies of the Software. The Software contains trade secrets and in order to protect them you may not decompile, reverse engineer, disassemble, or otherwise reduce the Software to a human perceivable form. YOU MAY NOT MODIFY, ADAPT, TRANSLATE, RENT, LEASE, LOAN, RESELL FOR PROFIT, DISTRIBUTE OR CREATE DERIVATIVE WORKS BASED UPON THE SOFTWARE OR ANY PART THEREOF.
- 3. OWNERSHIP:** The Software is copyrighted by, proprietary to and a trade secret of Adaptec. Adaptec retains the title, ownership and intellectual property rights in and to the Software and all subsequent copies regardless of the form or media. The Software is protected by the copyright laws of the United States and international copyright treaties. This License is not a sale of the Software.
- 4. TERMINATION:** This License is effective until terminated. This License will terminate automatically without notice if you fail to comply with any of the provisions. Upon termination you shall destroy all copies of the Software including any partial copies.
- 5. DISCLAIMER OF WARRANTY:** YOU ACCEPT ALL RISKS WHICH MAY ARISE FROM THE USE OF THE SOFTWARE, INCLUDING BUT NOT LIMITED TO CORRUPTION OF EXISTING DATA OR SOFTWARE. ADAPTEC MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF NONINFRINGEMENT OF THIRD PARTIES' RIGHTS, WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow the exclusion of implied warranties or limitations of how long an implied warranty may last, so the above exclusion may not apply to you. You may also have other rights which vary from state to state.

## **Appendix 2 - Adaptec Software License**

---

**6. LIMIT OF LIABILITY:** UNDER NO CIRCUMSTANCES AND UNDER NO LEGAL THEORY, TORT, CONTRACT, OR OTHERWISE, SHALL ADAPTEC OR ITS SUPPLIERS OR RESELLERS BE LIABLE TO YOU OR ANY OTHER PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, DATA, GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, OR ANY AND ALL OTHER COMMERCIAL DAMAGES OR LOSSES, EVEN IF ADAPTEC SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

**7. EXPORT:** By using this Software, you acknowledge that the laws and regulations of the United States restrict the export and re-export of the Software. Further, you agree that you will not export or re-export the Software or media in any form without the appropriate United States and foreign government approval.

**8. U.S. GOVERNMENT RESTRICTED RIGHTS:** If the Software is acquired under the terms of a GSA contract, use, reproduction or disclosure is subject to the restrictions set forth in the applicable ADP Schedule contract. If the Software is acquired under the terms of a DoD or civilian agency contract, use, duplication or disclosure by the Government is subject to the restrictions of this License in accordance with 48 C.F.R. 12.212 of the Federal Acquisition Regulations and its successors and 48 C.F.R. 227.7202-1 of the DoD FAR Supplement and its successors.

**9. GENERAL:** You agree this is the complete agreement concerning this License. In order to amend this License, a writing executed by both parties is required. You assume full responsibility for the legal and responsible use of the Software. This License shall be governed by California law as such law applies to agreements between California residents entered into and to be performed within California, except as governed by Federal law. Should any provision of this License be declared unenforceable in any jurisdiction, then such provision shall be deemed to be severable from this License and shall not affect the remainder hereof. All rights in the Software not specifically granted in this License are reserved by Adaptec.

If you have any questions concerning this License, contact:

*Adaptec, Inc.  
Legal Department  
691 South Milpitas Boulevard  
Milpitas, California 95035*



## **Appendix 3 - Rear I/O Transition Module**

### **INTRODUCTION**

The Rear I/O Transition Module (RIO) for use with Compact PCI single board computers (SBCs) features connections for the following peripherals: mouse, keyboard, two serial ports, printer, VGA, dual Ethernet interfaces, USB, dual IDE, floppy and SCSI. This board interfaces to the Compact PCI SBC through rJ3, rJ4 and rJ5 of the CompactPCI Bus. The rear I/O transition module is a 6U rear panel I/O board that, as of this printing, is compatible with the IBC 2600 single board computer.

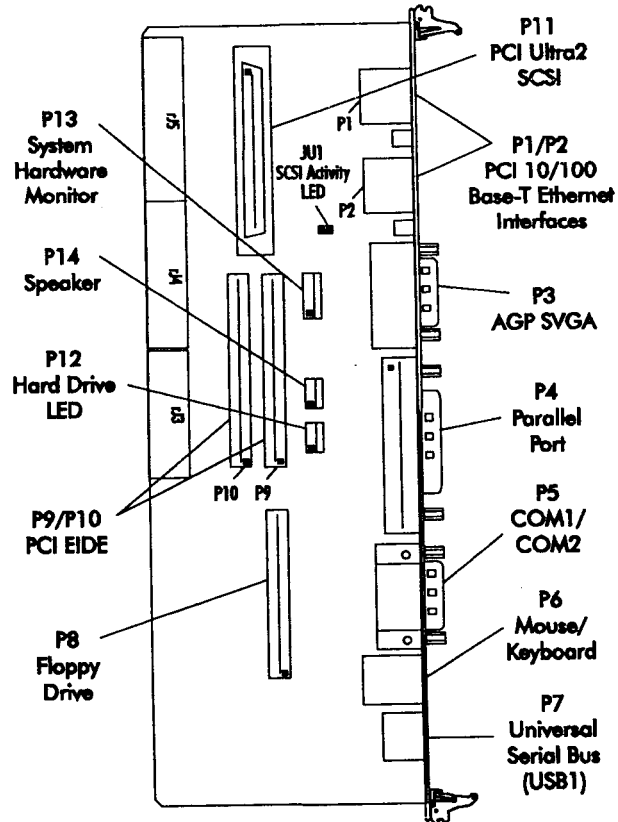
### **MODEL**

<u>Model #</u>	<u>Description</u>
RIO	Rear I/O Transition Module

### **FEATURES**

- S Connectivity on rear panel for the following: mouse, keyboard, two serial ports, printer, video, dual Ethernet interfaces and USB
- S Headers on the rear I/O transition module for connection to dual IDE drives, one floppy drive and one SCSI drive
- S 6U CompactPCI rear panel I/O board
- S Compatible with PCI Industrial Computer Manufacturers Group (PCIMG) CompactPCI Specification

## Appendix 3 - Rear I/O Transition Module



Rear I/O Transition Module Board Layout

## **Appendix 3 - Rear I/O Transition Module**

### **MECHANICAL DIMENSIONS**

- S 6U CompactPCI board - 233.35 mm x 80 mm
- S Dual-slot - 8HP - 40.64 mm

### **TEMPERATURE/ENVIRONMENT**

- S Operating Temperature: 0°C. to 50°C.
- S Storage Temperature: - 40°C. to 70°C.
- S Humidity: 5% to 90% non-condensing

### **CONFIGURATION JUMPERS**

The setup of the configuration jumpers on the SBC is described below. \* indicates the default value of each jumper.

---

NOTE: For two-position jumpers (3-post), "RIGHT" is toward the rear panel end of the board.

---

<u>Jumper</u>	<u>Description</u>
JU1	SCSI Activity LED Enable  Install to light the hard drive LED for SCSI drive activity. *  Remove if you do not have a SCSI drive (i.e., the SCSI controller is not being used).

## ***Appendix 3 - Rear I/O Transition Module***

---

### **CONNECTORS**

---

NOTE: Pin 1 on the connectors is indicated by the square pad on the PCB.

---

**P1**                    **PCI 10/100Base-T Ethernet Connector**  
8 pin shielded RJ-45 connector, Molex #43202-8110

<u>PIN</u>	<u>SIGNAL</u>
1	TD+
2	TD
3	RX+
4	NC
5	NC
6	RX
7	NC
8	NC

**P2**                    **PCI 10/100Base-T Ethernet Connector**  
8 pin shielded RJ-45 connector, Molex #43202-8110

<u>PIN</u>	<u>SIGNAL</u>
1	TD+
2	TD
3	RX+
4	NC
5	NC
6	RX
7	NC
8	NC

## Appendix 3 - Rear I/O Transition Module

- P3** PCI SVGA Interface Connector  
15 pin VGA connector, Amp #748390-5

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Red	6	Gnd	11	NC
2	Green	7	Gnd	12	EEDI
3	Blue	8	Gnd	13	HSYNC
4	NC	9	NC	14	VSYNC
5	Gnd	10	Gnd	15	EECS

- P4** **Parallel Port Connector**  
25 pin right angle D, Amp #747846-4

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Strobe	14	Auto Feed XT
2	Data Bit 0	15	Error
3	Data Bit 1	16	Init
4	Data Bit 2	17	Slct In
5	Data Bit 3	19	Gnd
6	Data Bit 4	19	Gnd
7	Data Bit 5	20	Gnd
8	Data Bit 6	21	Gnd
9	Data Bit 7	22	Gnd
10	ACK	23	Gnd
11	Busy	24	Gnd
12	Paper End	25	Gnd
13	Slct		

- P5** **COM1/COM2 Connectors**  
Dual 9 pin D, Amp #750593-4

Pin-out for each 9 pin D is as follows:

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Carrier Detect	2	Data Set Ready-I
3	Receive Data-I	4	Request to Send-O
5	Transmit Data-O	6	Clear to Send-I
7	Data Terminal Ready-O	8	Ring Indicator-I
9	Signal Gnd		

## **Appendix 3 - Rear I/O Transition Module**

---

**P6 Mouse Connector/Keyboard Connector**  
Stacked dual 6 pin right angle mini DIN, Amp #440173-3

**PS/2 Mouse Connector:**

PIN    SIGNAL

1	Ms Data
2	Reserved
3	Gnd
4	Kbd Power (+5V fused) with self-resetting fuse
5	Ms Clock
6	Reserved

**Keyboard Connector:**

PIN    SIGNAL

1	Kbd Data
2	Reserved
3	Gnd
4	Kbd Power (+5V fused) with self-resetting fuse
5	Kbd Clock
6	Reserved

**P7 Universal Serial Bus (USB1) Connector**  
Right angle single port, Amp #787616-1  
(+5V fused with self-resetting fuses)

PIN    SIGNAL

1	+5V-USB1
2	USBI
3	USB1+
4	Gnd-USB1

### Appendix 3 - Rear I/O Transition Module

**P8** Floppy Drive Connector  
34 pin dual row header, Robinson Nugent #IDH-34LP-S3-TR

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Gnd	2	N-RPM
3	Gnd	4	NC
5	Gnd	6	D-Rate0
7	Gnd	8	P-Index
9	Gnd	10	N-Motoron 1
11	Gnd	12	N-Drive Se12
13	Gnd	14	N-Drive Sell
15	Gnd	16	N-Motoron 2
17	Gnd	18	N-Dir
19	Gnd	20	N-Stop Step
21	Gnd	22	N-Write Data
23	Gnd	24	N-Write Gate
25	Gnd	26	P-Track 0
27	Gnd	28	P-Write Protect
29	Gnd	30	N-Read Data
31	Gnd	32	N-Side Select
33	Gnd	34	Disk Chng

## **Appendix 3 - Rear I/O Transition Module**

### **P9 Primary IDE Hard Drive Connector**

40 pin dual row header, Robinson Nugent #IDH-40LP-S3-TR

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Reset	2	Gnd
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Gnd	20	NC
21	DRQ 0	22	Gnd
23	IOW	24	Gnd
25	IOR	26	Gnd
27	IRDY	28	+5V
29	DACK 0	30	Gnd
31	IRQ 14	32	IOCS16
33	Add 1	34	Gnd
35	Add 0	36	Add 2
37	CS 1P	38	CS 3P
39	IDEACTP	40	Gnd



## Appendix 3 - Rear I/O Transition Module

### **P10 Secondary IDE Hard Drive Connector**

40 pin dual row header, Robinson Nugent #IDH-40LP-S3-TR

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Reset	2	Gnd
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Gnd	20	NC
21	DRQ 1	22	Gnd
23	IOW	24	Gnd
25	IOR	26	Gnd
27	IRDY	28	+5V
29	DACK 1	30	Gnd
31	MIRQ 0	32	IOCS16
33	Add 1	34	Gnd
35	Add 0	36	Add 2
37	CS 1S	38	CS 3S
39	IDEACTS	40	Gnd

## **Appendix 3 - Rear I/O Transition Module**

**P11 PCI Ultra2 SCSI Controller Connector**  
50/68 high density SCSI connector, Amp #749069-7

<u>PIN</u>	<u>SIGNAL</u>	<u>PIN</u>	<u>SIGNAL</u>
1	Gnd	35	SCZDB12
2	Gnd	36	SCZDB13
3	Gnd	37	SCZDB14
4	Gnd	38	SCZDB15
5	Gnd	39	SCZDBPH
6	Gnd	40	SCZDBO
7	Gnd	41	SCZDB1
8	Gnd	42	SCZDB2
9	Gnd	43	SCZDB3
10	Gnd	44	SCZDB4
11	Gnd	45	SCZDB5
12	Gnd	46	SCZDB6
13	Gnd	47	SCZDB7
14	Gnd	48	SCZDBP
15	Gnd	49	Gnd
16	Gnd	50	Gnd
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	NC	53	NC
20	Gnd	54	Gnd
21	Gnd	55	SCZATN
22	Gnd	56	Gnd
23	Gnd	57	SCZBSY
24	Gnd	58	SCZACK
25	Gnd	59	SCZRST
26	Gnd	60	SCZMSG
27	Gnd	61	SCZSEL
28	Gnd	62	SCZCD
29	Gnd	63	SCZREQ
30	Gnd	64	SCZIO
31	Gnd	65	SCZDB8
32	Gnd	66	SCZDB9
33	Gnd	67	SCZDB10
34	WIDEPS	68	SCZDB11

## **Appendix 3 - Rear I/O Transition Module**

### **P12 Hard Drive LED Connector**

4 pin single row header, Amp #640456-4

(This connector is used for both IDE and SCSI drives.  
See JU1 in the *Configuration Jumpers* section.)

<u>PIN</u>	<u>SIGNAL</u>
------------	---------------

1	+5V Pullup
2	Light
3	Light
4	+5V Pullup

### **P13 System Hardware Monitor Connector**

6 pin single row header, Amp #640456-6

<u>PIN</u>	<u>SIGNAL</u>
------------	---------------

1	Gnd
2	GPO (General Purpose Output)
3	CI (Chassis Intrusion Input)
4	FAN1 (Fan 1 Tachometer Input)
5	FAN2 (Fan 2 Tachometer Input)
6	OS# (Temperature Sense Output)

### **P14 Speaker Port Connector**

4 pin single row header, Amp #640456-4

<u>PIN</u>	<u>SIGNAL</u>
------------	---------------

1	Speaker Data
2	Key
3	Gnd
4	+5V

## **Appendix 3 - Rear I/O Transition Module**

### **CompactPCI PIN ASSIGNMENTS**

rJ3 rJ4 and rJ5 are used for connection to the processor board. The pin assignments for these connectors are defined in the tables which follow.

#### **rJ3**

<b>Pin</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>
19	GND		SIRQ	SIORDY		SRESET
18	GND	SDACK#			CS1P#	CS3P#
17	GND	SDREQ	SDD12	SDD13	SDD14	SDD15
16	GND		SDD8	SDD9	SDD10	SDD11
15	GND		SDA2	VCC	SDA1	SDA0
14	GND	SDIOW#	SDD4	SDD5	SDD6	SDD7
13	GND	SDIOR#	SDD0	SDD1	SDD2	SDD3
12	GND	WDATA#	INDEX#	MTR0#	DRV DEN1	DRV0#
11	GND	RDATA#	DRV DEN0	MTR1#	DSKCHG	DRV1
10	GND	STEP#	TRKD#	DIR#	HDSEL#	WP#
9	GND	USB+	BUSY	AFD#	ERR#	WGATE#
8	GND	USB-	STB#	VCC	SLIN#	PE
7	GND	INIT#	PPD4	PPD5	PPD6	PPD7
6	GND	ACK#	PPD0	PPD1	PPD2	PPD3
5	GND	SLCT	KBDATA	SPKR	MSDATA	
4	GND	RXD1	KBCLK	VCC	MSCLK	PBRST#
3	GND	TXD1	DCD1	DSR1	RTS1	CTS1
2	GND	RXD2	DTR1	RI1	DTR2	RI2
1	GND	TXD2	DCD2	DSR2	RTS2	CTS2

## Appendix 3 - Rear I/O Transition Module

### CompactPCI PIN ASSIGNMENTS (continued)

rJ4

Pin	F	E	D	C	B	A
25	GND					
24	GND					
23	GND					
22	GND					
21	GND					
20	GND					
19	GND					
18	GND					
17	GND					
16	GND					
15	GND					
14	KEY					
13	KEY					
12	KEY					
11	GND	MON_FAN2	MON_C1			MON_RST#
10	GND	MON_FAN1	MON_GPO			
9	GND					
8	GND					
7	GND		PIRQ	PIORDY		PRESET
6	GND	PDACK#				
5	GND	PDREQ	PDD12	PDD13	PDD14	PDD15
4	GND		PDD8	PDD9	PDD10	PDD11
3	GND		PDA2		PDA1	PDA0
2	GND	PDIOW#	PDD4	PDD5	PDD6	PDD7
1	GND	PDIOR#	PDD0	PDD1	PDD2	PDD3

## **Appendix 3 - Rear I/O Transition Module**

### **CompactPCI PIN ASSIGNMENTS (continued)**

rJ5

<b>Pin</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>
21	GND	ACTLED1	GND	LAN1RX+	GND	LAN1TX-
20	GND	LNKLED1	GND	GND	GND	GND
19	GND	SPDLED2	GND	LAN2RX-	GND	LAN2TX+
18	GND	ACTLED2	GND	LAN2RX+	GND	LAN2TX-
17	GND	LNKLED2	GND	GND	GND	GND
16	GND	TRMPWR	SCD#15	SCD#14	SCD#13	SCD#12
15	GND	TRMPWR	SCD15	SCD14	SCD13	SCD12
14	GND	TRMPWR	SCD#2	SCD#1	SCD#0	SCDPH#
13	GND	TRMPWR	SCD2	SCD1	SCD0	SCDPH
12	GND	TRMPWR	SCD#6	SCD#5	SCD#4	SCD#3
11	GND	TRMPWR	SCD6	SCD5	SCD4	SCD3
10	GND	SCLED#	GND	SCATN#	SCDPL#	SCD#7
9	GND	DIFSENSE	GND	SCATN	SCDPL	SCD7
8	GND	VGASCK	GND	SCRST#	SCACK#	SCBSY#
7	GND	VGASDA	GND	SCRST	SCACK	SCBSY
6	GND	HSYNC	GND	SCCD#	SCSEL#	SCMSG#
5	GND	VSYNC	GND	SCCD	SCSEL	SCMSG
4	GND	GND	GND	SCD#8	SCIO#	SCREQ#
3	GND	RED	GND	SCD8	SCIO	SCREQ
2	GND	GREEN	GND	SCD#11	SCD#10	SCD#9
1	GND	BLUE	GND	SCD11	SCD10	SCD9

## **Appendix 4 - Installing Microsoft Windows NT 4.0**

This appendix is intended for experienced NT users.

NT Setup does not recognize the Adaptec AIC-7890 SCSI controller on the IBC 2600 SBC. Attempting to perform a normal installation of NT will result in a BSD ("Blue Screen of Death"). To install NT on a system using the IBC 2600 SBC, perform the following steps:

1. Power up the system and load the NT Setup CD into the CD-ROM drive.
2. When the message "SCSI BIOS Installed Successfully!" appears on the screen, immediately begin pressing the F6 key rapidly and repeatedly until the first Windows NT Setup blue screen appears.
3. At the mass storage devices screen, press S to specify additional devices. Then, with "Other" highlighted, press Enter. Insert the diskette labeled "Adaptec EZ-SCSI for Win 95,98,NT" and press Enter again.
4. Select "Adaptec AHA-294xU2/295xU2/AIC-789x PCI SCSI Controller (NT4.0)" and press Enter.
5. At the mass storage devices support screen, press Enter to continue and proceed with normal NT installation. Note: At the first reboot, be sure to remove both the diskette and the CD. If the NT Setup CD is left in the drive, the system will boot from the CD again and restart NT Setup from scratch.

## **Appendix 4 - Installing Microsoft Windows NT 4.0**

*This page was intentionally left blank*



---

## ***Appendix 5 - Limited Warranty***

### **LIMITED WARRANTY**

I-Bus warrants this product to be free of defects in material and workmanship for an initial period of one (1) year from date of delivery to the original purchaser from I-Bus.

During this period, I-Bus will, at its option, repair or replace this product at no additional charge to the purchaser, except as set forth in this warranty agreement.

I-Bus will, at its option, repair or replace this product at no additional charge to the purchaser, if the defect is related to the I-Bus manufactured product, such as power supply, backplanes, other chassis components, or CPUs. I-Bus is not liable for any defects in material or workmanship of any peripherals, products or parts which I-Bus does not design or manufacture. However, I-Bus will honor the original manufacturer's warranty for these products.

I-Bus will analyze the defective component and the customer will be charged.

Receipt of damaged goods voids the I-Bus warranty.

Repair parts and replacement products will be furnished on an exchange basis and will be either new or reconditioned. All replacement parts and products shall become the property of I-Bus, if such parts or products are provided under this warranty agreement. In the event a defect is not related to the I-Bus manufactured product, I-Bus shall repair or replace the defective parts at purchaser's cost and deliver the defective parts to the purchaser.

This Limited Warranty shall not apply if the product has been misused, carelessly handled, defaced, modified or altered, or if unauthorized repairs have been attempted by others.

The above warranty is the only warranty authorized by I-Bus and is in lieu of any implied warranties, including implied warranty of merchantability and fitness for a particular purpose.

In no event will I-Bus be liable for any such damage as lost business, lost profits, lost savings, downtime or delay, labor, repair or material cost, injury to person or property or any similar or dissimilar consequential loss or damage incurred by purchaser, even if I-Bus has been advised of the possibility of such losses or damages.

In order to obtain warranty service, the product must be delivered to the I-Bus facility, or to an authorized I-Bus service representative, with all included parts and accessories as originally shipped, along with proof of purchase and a Returned Merchandise Authorization (RMA) number.

The RMA number is obtained, in advance, from I-Bus Customer Service Department and is valid for 30 days. The RMA number must be clearly marked on the exterior of the original shipping container or equivalent. Purchaser will be responsible and liable for any missing or damaged parts. Purchaser agrees to pay shipping charges one way, and to either insure the product or assume the liability for loss or damage during transit. Ship to:

I-Bus (see page 2 for I-Bus address)  
ATTENTION: RMA REPAIR DEPT.  
RMA #####

---

## ***Appendix 5 - Limited Warranty***

---

*This page was intentionally left blank*

## **Appendix 6 - FCC Information**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

**WARNING:** This equipment has been tested and found to comply with the limits for a Class "A" digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This product was FCC verified under test conditions that included the use of shielded I/O cables and connectors between system components. To be in compliance with FCC regulations, the user must use shielded cables and connectors and install them properly.

## ***Appendix 6 - FCC Information***

---

*This page was intentionally left blank*