



MegaRUM II

Dual Pentium II[®]

PCI ISA Motherboard
User's Guide

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Revision History

5/1/98	Initial release of preliminary version.
5/12/98	Revised AMIBIOS Setup chapter.
8/5/98	Revised motherboard drawing for Rev C.
9/4/98	Released revised manual.
9/24/98	Revised motherboard drawing and printed addendum.
11/6/98	Added Chapter 5, about AMI ClientCare installation
12/11/98	Removed references to DMI Wizard 95. Replace SystemGuru with AMI_ClientCare.
1/15/99	Deleted Xeon and added Pentium II.

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Preface

To the OEM Thank you for purchasing the high performance American Megatrends MegaRUM II Dual Pentium II PCI ISA motherboard. This product is a state of the art motherboard that includes the famous AMIBIOS. It is assumed that you have also licensed the rights to use the American Megatrends documentation for the American Megatrends MegaRUM II motherboard.

This manual was written for the OEM to assist in the proper installation and operation of this motherboard. This manual describes the specifications and features of the MegaRUM II PCI motherboard. It explains how to assemble a system based on the MegaRUM II PCI motherboard and how to use the AMIBIOS that is specifically designed for this motherboard.

This manual is not meant to be read by the computer owner who purchases a computer with this motherboard. It is assumed that you, the computer manufacturer, will use this manual as a sourcebook of information, and that parts of this manual will be included in the computer owner's manual.

Disclaimer

AMI only certifies that this product will work correctly when this product is used with the same jumper settings, the same system configuration, the same memory module parts, and the same peripherals that were tested by AMI with this product. The complete list of tested jumper settings, system configurations, peripheral devices, and memory modules are documented in the AMI Compatibility Report for this product. Call your AMI sales representative for a copy of the Compatibility Report for this product.

Technical Support If an American Megatrends motherboard fails to operate as described or you are in doubt about a configuration option, please call technical support at 770-246-8600.

Web Site We invite you to access the American Megatrends world wide web site at:

<http://www.ami.com>

Packing List

You should have received the following:

- a MegaRUM II Dual Pentium II PCI ISA motherboard,
 - one SCSI driver diskette,
 - the *AMI Server Manager User's Guide*,
 - one CD containing the AMI Server Manager server management software for Windows NT,
 - one termination card,
 - two VRM modules,
 - two retention mechanisms for the Pentium II CPUs,
 - two plastic spacers for the Pentium II retention mechanisms,
 - a Warranty Card, and
 - the *American Megatrends MegaRUM II Dual Pentium II⁰ PCI ISA Motherboard User's Guide*.
-

1 Hardware Installation

Overview

The American Megatrends MegaRUM II PCI Dual Pentium II ISA motherboard features include:

- two Intel Pentium II CPUs operating at 120, 133, 150, 166, 180, 200, 210, 233, 240, 266, 300, 333, 400 MHz or higher speeds ,
 - up to 2 GB of system memory (512 MB has been tested) on the motherboard,
 - parity checking or ECC (Error Checking and Correction),
 - PCI local bus throughput of 132 megabytes per second,
 - two Ultra Wide SCSI channels operating at 80 MB/s,
 - specially designed for the American Megatrends RAID Upgrade controller cards,
 - the American Megatrends AMI_ClientCare server management software,
 - one ISA expansion slot,
 - four 32-bit PCI expansion slots, and
 - two 64-bit PCI expansion slots.
-

CPUs

The MegaRUM II motherboard will support all Intel Slot1 CPUs operating at 233 MHz, 266 MHz, 400 MHz or faster speeds.

PCI Bus Speed

AMIBIOS automatically configures the PCI slots. The PCI slots are synchronous with the CPU clock:

CPU External Clock Frequency	PCI Expansion Slot Frequency
100 MHz	33 MHz
66 MHz	33 MHz

Cont'd

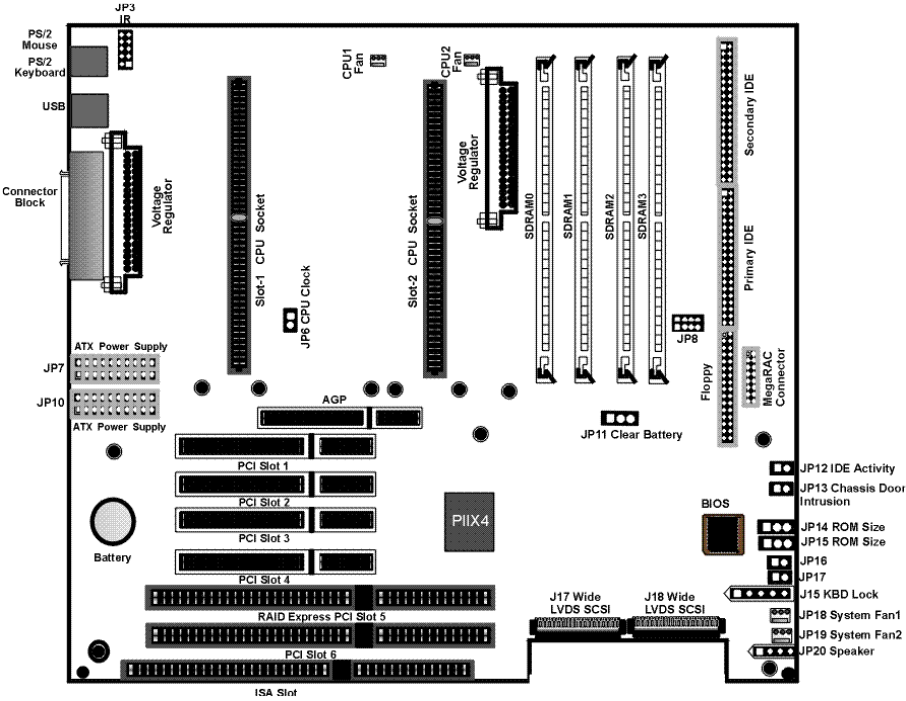
Onboard I/O The MegaRUM II motherboard includes:

- one onboard Symbios Logic 53C896 SCSI controller that provides two 80 MB/s ultra wide SCSI channels,
 - two 40-pin IDE connectors for 1 – 4 IDE drives,
 - a 34-pin floppy drive connector,
 - two serial port connectors,
 - a 25-pin parallel port connector,
 - a keyboard DIN connector,
 - two 4-pin USB ports, and
 - a 9-pin berg keyboard/mouse connector.
-

Server Management Software The American Megatrends

AMI_ClientCare server management software is included with the MegaRUM II motherboard. AMI_ClientCare uses the I²C interface to constantly monitor and report the CPU temperature, fan speed, ECC memory errors, ambient temperature, CPU voltage, system voltage and other user-specified system status information to any remote client computer. See the American Megatrends AMI_ClientCare User's Guide for additional information.

MegaRUM II PCI Motherboard Layout



Step 1 Unpack the Motherboard

Step	Action
1	Inspect the cardboard carton for obvious damage. If damaged, call 770-246-8600. Leave the motherboard in its original packing.
2	Perform all unpacking and installation procedures on a ground-connected anti-static mat. Wear an anti-static wristband grounded at the same point as the anti-static mat. Or use a sheet of conductive aluminum foil grounded through a 1 megohm resistor instead of the anti-static mat. Similarly, a strip of conductive aluminum foil wrapped around the wrist and grounded through a 1 megohm resistor serves the same purpose as the wristband.
3	Inside the carton, the motherboard is packed in an anti-static bag, and sandwiched between sheets of sponge. Remove the sponge and the anti-static bag. Place the motherboard on a grounded anti-static surface component side up. Save the original packing material.
4	Inspect the motherboard for damage. Press down on all ICs mounted in sockets to verify proper seating. Do not apply power to the motherboard if it has been damaged.
5	If the motherboard is undamaged, it is ready to be installed.

Set Jumpers Set all jumpers and install the CPU before placing the motherboard in the chassis.

Avoid Static Electricity

Static electricity can damage the motherboard and other computer components. Keep the motherboard in the anti-static bag until it is to be installed. Wear an anti-static wrist grounding strap before handling the motherboard. Make sure you stand on an anti-static mat when handling the motherboard.

Avoid contact with any component or connector on any adapter card, printed circuit board, or memory module. Handle these components by the mounting bracket.

Step 2 Configure CPU Speed

If using two CPUs with different speed ratings, set the motherboard jumpers to the lower CPU speed. When JP6 is open, the system bus frequency is determined by the processors. When JP6 is shorted, the system bus frequency is forced to be 66 MHz.

Important

Please contact American Megatrends technical support at 770-246-8600 to support a CPU running at other speeds.

CPU Internal Frequency if Bus Frequency is 100 MHz	CPU Internal Frequency if Bus Frequency is 66 MHz	JP8
350 MHz	233 MHz	Short Pins 1-2 Open Pins 3-4 Open Pins 5-6 Short Pins 7-8
400 MHz	266 MHz	Open Pins 1-2 Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
450 MHz	300 MHz	Open Pins 1-2 Short Pins 3-4 Open Pins 5-6 Short Pins 7-8
500 MHz	330 MHz	Open Pins 1-2 Open Pins 3-4 Short Pins 5-6 Short Pins 7-8

Cont'd

Step 3 Install Additional Voltage Regulator

One Voltage Regulator Module (VRM) is shipped with every MegaRUM II motherboard. You need another VRM if you install two CPUs. You can order VRMs for Intel Pentium II CPUs from:

Manufacturer	Part Number	AMI Part Number
VXI	073-20740-20	MDL-PII-V5A190

Step 4 Connect CPU Fans

JP1 and JP2 (shown below) are 3-pin bergs that connect the fan on the CPU heat sink to the motherboard power. JP1 is the CPU fan connector for the CPU in CPU Slot1. JP2 is the CPU fan connector for the CPU in CPU Slot2.



All Pentium II CPUs are shipped with *a heat sink and a CPU fan*.

JP1 and JP2 are keyed in such a way that the CPU fan connector can only be attached in the correct manner.

The connector from the CPU fan usually has three leads (red, yellow, and black leads).

JP19, JP18 System Fan JP19 and JP18 are 3-pin bergs. The pinout is the same for JP19 and JP18 as it is for JP1 and JP2. JP19 and JP18 provide +12V power to the main chassis fan. The chassis fan should provide a tachometer output on Pin 3 so it can be monitored by the onboard server management hardware.

Step 5 Install CPU

The Pentium II CPUs are on Intel Slot1 adapter cards. Insert the Slot1 cards into the CPU card sockets on the motherboard. See the motherboard drawing on page 3 for the location.

The CPU Slot1 sockets are below the SDRAM sockets, as shown on page 3.

Warning

Improper CPU installation can damage the CPU and the motherboard. You must follow the procedures in this section exactly as documented. Make sure you wear an antistatic wristband while installing the CPU. Follow all antistatic procedures described on page 4.

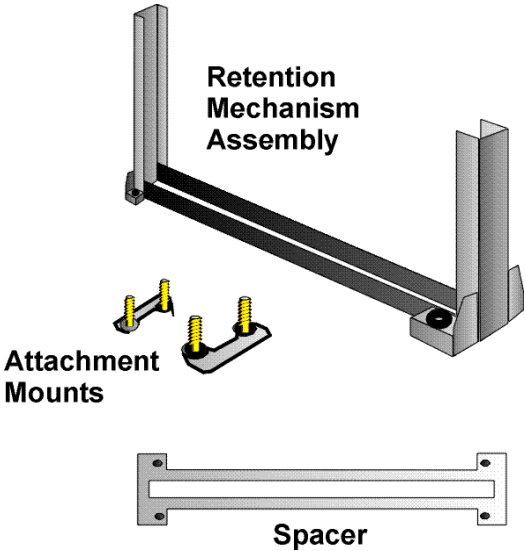
Termination Card The MegaRUM II motherboard is shipped with a termination card that should be installed in the empty CPU slot if only one CPU is installed.

You must install the termination card in the empty CPU slot if installing only one Pentium II CPU. The motherboard will not power up unless both CPU slots are occupied. The CPU slot where the termination card is installed does not require a VRM.

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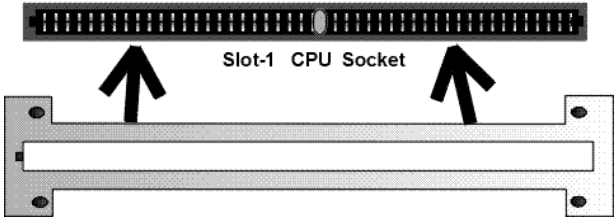
Step 5 Install CPU, Continued

Retention Mechanism Kit You must mount the Intel Retention Mechanism Kit before installing all Pentium II CPU modules. This kit includes: the retention mechanism assembly, attachment mounts, and spacer, as shown below:



Install Spacer Place the spacer around the CPU socket on the motherboard, as shown below:

1. Place the spacer over the CPU slot.

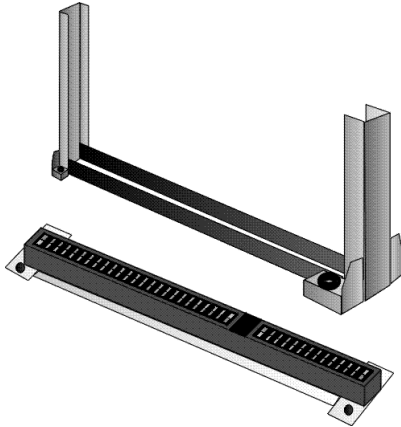


Cont'd

Step 5 Install CPU, Continued

Install Retention Mechanism Place the retention mechanism on top of the CPU socket, as shown below:

2. Install CPU Retention Module Assembly on top of spacer, fitting it completely over the CPU socket.

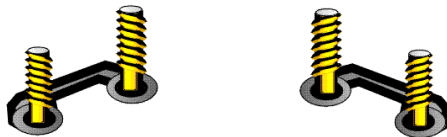


Install Attachment Mounts Place the two attachment mounts on the bottom of the motherboard, directly under the ends of the CPU socket.

3. Install the two attachment mounts on solder side of motherboard through mounting holes around the CPU Slot-1 connector. Make sure the attachment mounts face toward the outside of the CPU Slot-1 connector.

Tighten the mounting screws from the top of the motherboard.

Do not over-tighten the screws.

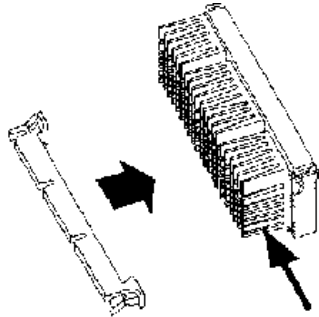


screw assembly

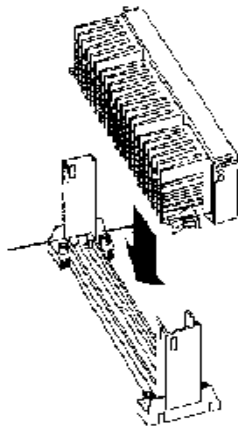
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Step 5 Install CPU, Continued

Install the Heat Sink If the heat sink is not already installed on the CPU module, slide the heat sink top support into the lowest gap on the CPU module, as shown below:



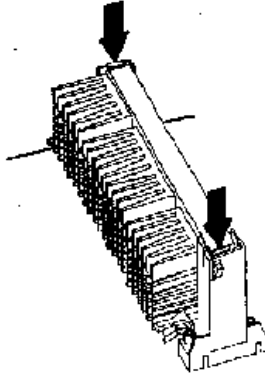
Then slide the CPU module into the Retention Mechanism Assembly, as shown below:



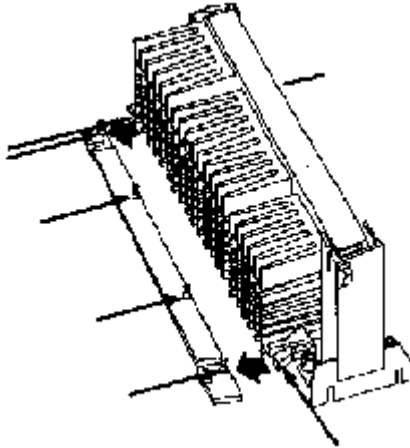
Cont'd

Step 5 Install CPU, Continued

Install the Heat Sink, cont'd Press the buttons on either side of the CPU module, as shown below:



Hook the top support of the heat sink to the support base of the heat sink to complete the CPU module installation:



Step 6 Install Memory

System Memory There are four 72-bit SDRAM DIMM (Dual Inline Memory Module) sockets. System memory must be populated one bank at a time. Each bank has one socket.

The minimum amount of system memory supported by the MegaRUM II PCI is 8 MB. Each socket can hold one DIMM. You can use:

- 1 MB x 64 (or 72),
- 2 MB x 64 (or 72),
- 4 MB x 64 (or 72),
- 8 MB x 64 (or 72),
- 16 MB x 64 (or 72),
- 32 MB x 64 (or 72), or
- 64 MB x 64 (or 72).

Fast Page Mode and EDO SIMMs cannot be mixed in the same memory bank.

The MegaRUM II motherboard will support 128 MB SIMMs when they become available, permitting up to 2 GB of system memory to be installed on the motherboard. The motherboard supports SDRAM DIMM operating at 10 or 12 ns (RAS access time).

Memory Display System memory is reported by AMIBIOS as it boots and again when the AMIBIOS System Configuration Screen is displayed just before the operating system boots. The memory displayed by AMIBIOS on the System Configuration Screen is 384 KB less than the total memory installed.

PC 100 Compatible Specifications

Parameter	Specification
100 MHz	Unbuffered SDRAM DIMM

Cont'd

Step 6 Install Memory, Continued

Installing DIMMs The eight SDRAM DIMM sockets on the motherboard can be filled with either 1 MB x 64 (or 72), 2 MB x 64 (or 72), 4 MB x 64 (or 72), 8 MB x 64 (or 72), or 16 MB x 64 (or 72) DIMMs.

Place the motherboard on an anti-static mat. With the component side of the DIMM facing you, firmly push the DIMM into the socket at an angle, then push it up. When properly inserted, the DIMM clicks into place as the latching pins engage. The DIMM installation process is shown below:

Title: INSSIMM.EPS from CoreIDRAW!
Creator: CoreIDRAW!
CreationDate: Mon Jul 10 10:35:32 1995

Step 7 Install the Motherboard

Step	Action
1	Place the chassis on an anti-static mat. Connect the chassis to ground to avoid static damage during installation. Connect an alligator clip with a wire lead to any unpainted part of the chassis. Ground the other end of the lead at the same point as the mat and the wristband.
2	Rotate the chassis so the front is to the right, and the rear is to the left. The side facing you is where the motherboard is mounted. The power supply is mounted at the far end of the chassis.
3	Hold the motherboard, component-side up, with the edge with the SIMM sockets toward you and the edge with the power supply connector away from you. The keyboard, mouse, and video connectors should be to the left.
4	Carefully slide the motherboard into the chassis. Make certain the edge connectors fit the ports in the rear of the chassis. The motherboard should rest level with the chassis.
5	Place the mounting screws in the holes provided and tighten them. If necessary, shift the motherboard slightly to align the mounting holes on the motherboard with the holes on the chassis.

Warning

If using metallic screws, make sure you use them only in the plated mounting holes.

If using metallic screws, make sure the head of the screw fits completely inside the plated mounting holes.

Step 8 Attach Cables

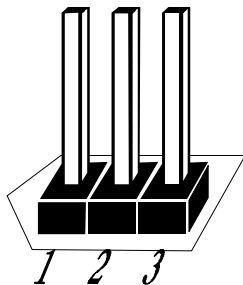
Connectors The MegaRUM II PCI motherboard includes many connectors. Connection instructions, illustrations of connectors, and pinouts are supplied in the following pages. A list of all connectors described in this section follows:

Connector	turn to
Power supply connectors JP7, JP10	page 17
Drain CMOS RAM power – JP11	page 18
Infrared connector – JP3	page 18
Keyboard connector J2	page 19
PS/2 mouse connector J1	page 19
Chassis intrusion LED – JP13	page 19
Hardware reset switch JP17	page 20
Speaker JP20	page 20
BIOS chip voltage select JP15	page 20
Keyboard lock connector J15	page 21
USB connector J3	page 22
BIOS size select jumper JP14	page 22
Power Button JP16	page 22
Serial port 1 connector J6	page 23
Serial port 2 connector J7	page 23
Parallel port connector J5	page 24
Floppy connector JP9	page 25
IDE primary connector JP5	page 28
IDE secondary connector JP4	page 29
RAC – Port J9	page 31
SCSI channel 1 (Wide) – J18	page 32
SCSI channel 2 (Wide) – J17	page 32

Cont'd

Step 8 Attach Cables, Continued

Cable Connector Ends When connecting chassis connectors to the motherboard, make sure to connect the correct connector end. Most connector wires are color-coded. Match the color of the wires leaving the switch or LED to the same pin on the connector end. There may be more than one connector with the same color-coded wires. If so, follow the wire to the switch or LED. All motherboard components are outlined by a white rectangular box with a broad arrow at one end. Pin 1 is always at the arrow end of the white outlined box, as shown below:



Cont'd

Step 8 Attach Cables, Continued

Connect Power Supply The power supply should match the physical configuration of the chassis. Make sure the power switch is Off before assembly.

Before attaching all components, make sure the proper voltage has been selected. Power supplies often can run on a wide range of voltages and must be set (usually via a switch) to the proper range. Use at least a 300 watt power supply, which should have built-in filters to suppress radiated emissions.

Attach the power supply cables to the power connector on the motherboard. ATX-compatible power supplies have two 20-pin connectors, JP7 and JP10. The power connector pinout is:

Pin	Description	Pin	Description
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	Ground	3	Ground
14	-PWR_ON	4	+5V
15	Ground	5	Ground
16	Ground	6	+5V
17	Ground	7	Ground
18	-5V	8	PWR+GOOD
19	+5V	9	5V_VR
20	+5V	10	+12V

Cont'd

Step 8 Attach Cables, Continued

JP11 Drain CMOS RAM Power JP11 is a 3-pin berg that can be used to erase the contents of CMOS RAM, where all system configuration information is stored.

If you forget the AMIBIOS password, you can place a shorting bridge on JP11 for a few seconds to erase the old password (and all system configuration information as well). You must then reboot the computer, run AMIBIOS Setup, and restore all system configuration information. The JP11 settings are:

CMOS Drain	JP Setting
Normal operation (factory setting).	1-2
The contents of CMOS RAM are destroyed.	2-3

JP3 Infrared Connector The JP3 is a 10-pin dual-inline berg.

Pin	Assignments
1	VCC5V
2, 6, 7, 8, 9, 10	N/C
3	IRRX
4	GND
5	IRTX

Cont'd

Step 8 Attach Cables, Continued

J2 Keyboard Connector The keyboard connector is a 9-pin MINIDIN socket. The pinout is shown below.

Pin	Assignments
1	Keyboard data
2, 6, 9	Not used
3	KBGGND
4	VCC
5	Keyboard clock
7 – 8	Ground

Connect Mouse Cable The mouse connector is a 9-pin MINIDIN. The pinout is:

Pin	Description	Pin	Description
1	Mouse data	2, 6, 9	N/C
3	Keyboard ground	4	VCC
5	Mouse clock	7, 8	Ground

JP13 Chassis Door Intrusion JP13 is a 2-pin berg that can be used to attach a wire to the chassis door intrusion connector, if the chassis has this feature. The logic must be set so that Pin 1 and Pin 2 are shorted when the chassis door is closed and open when the chassis door is opened.

Cont'd

Step 8 Attach Cables, Continued

JP17 Reset Switch Connector JP17 is a two-pin berg that is attached via a cable to an externally-mounted reset switch. When the reset switch is pressed, the system performs a hard reset. Pin 2 is ground and Pin 1 is Hard Reset.

JP20 Speaker Connector JP20 is a four-pin single-inline berg that is optionally attached via a cable to a standard speaker. AMIBIOS signals hardware problems through the speaker.

Pin	Description
1	VCC
2	N/C
3	N/C
4	Data out

JP15 BIOS Chip Voltage Select JP15 is a 3-pin single-inline berg which lets you choose the BIOS chip VPP voltage.

Pin	Description
Short pin 1-2	VPP = 12V (default)
Short pin 2-3	VPP = 5V

Cont'd

Step 8 Attach Cables, Continued

J15 Keyboard Lock J15 is a 5-pin single-inline berg that is attached via a cable to the keyboard lock connector (or separate keyboard lock and Power LED connectors). The computer chassis may not include the keyboard lock and Power LED on a single connector. The keyboard lock allows the user to lock the keyboard, protecting the system from unauthorized use. Pin 1 on the motherboard is identified by the broad arrow.

Pin	Description
1	VCC
2	Ground
3	Ground
4	Keyboard Lock (KBDINH)
5	Ground

Cont'd

Step 8 Attach Cables, Continued

Optional USB Cable You can only use a custom USB cable with this motherboard. You can order this USB cable (AMI part number CBLKIT-USB-1) from American Megatrends at 800-828-9264.

Warning

The pinout for the optional USB Cable Box is:

Pin 1 Red VCC
Pin 2 Green Data +
Pin 3 White Data -
Pin 4 Black Ground

Please make sure that the USB cable is correctly installed. Incorrect installation will damage the motherboard.

J3 USB Connectors J3 is 4-pin USB (Universal Serial Bus) stacked connector. The pinouts are:

Pin	Signal Description
1	VCC
2	Data+
3	Data-
4	Ground

JP14 BIOS Size Select JP14 is a 3-pin berg that enables you to choose the BIOS size.

Pin	Description
Short pin 1-2	BIOS size = 256KB (default)
Short pin 2-3	BIOS size = 128KB

JP16 Power Button JP16 is a two-pin single-inline berg.

Cont'd

Step 9 Connect I/O

Onboard Adapters The MegaRUM II PCI motherboard has:

- two serial ports (J6 and J7),
- a parallel port (J5),
- two Ultra Wide SCSI connectors,
- an IDE controller on the PCI bus (the primary IDE connector is JP5 and the secondary IDE connector is JP4), and
- a floppy controller (JP9).

The serial and parallel port connectors are described below.

Conflicts

AMIBIOS minimizes conflicts between onboard and offboard I/O devices.

AMIBIOS automatically checks the adapter cards installed in the expansion slots on the MegaRUM II PCI motherboard for a hard disk or floppy controller and serial or parallel ports.

J6 SER1 J7 SER2 J6 and J7 are 9-pin connectors that provide an AT-compatible serial port interface. Connect the cables supplied with the motherboard to J6 and J7. The serial port base I/O port address and other serial port settings can be selected in Peripheral Setup in AMIBIOS® Setup.

The J6 and J7 pinout is shown below.

Pin	Signal Description	Pin	Signal Description
1	Carrier Detect	6	Data Set Ready
2	Receive Data	7	Request to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Ground	10	CUT PIN

Cont'd

Step 9 Connect I/O, Continued

J5 Parallel Port J5 is a 25-pin connector for a parallel port. The J5 pinout is shown below. Connect the 16-pin to DB25 cable provided with the motherboard to J5. The parallel port interface supports:

- the standard Centronics-compatible parallel port,
- the ECP (Extended Capabilities Port), and
- the EPP (Enhanced Parallel Port) port.

All parallel port settings must be correctly configured through Peripheral Setup in AMIBIOS Setup.

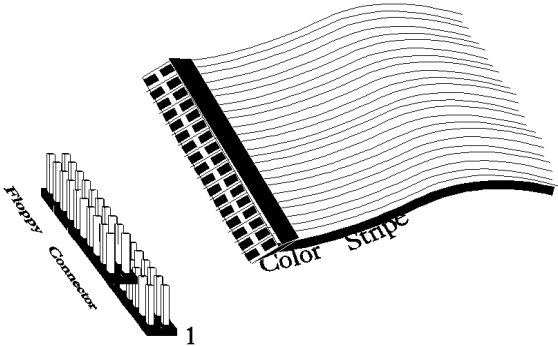
Pin	Signal Description	Pin	Signal Description
1	STROBE#	2	PD0
3	PD1	4	PD2
5	PD3	6	PD4
7	PD5	8	PD6
9	PD7	10	ACK#
11	BUSY	12	PE
13	SLCT	14	AUTOFD#
15	ERROR#	16	INIT#
17	SLCTIN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground	26	Ground

Cont'd

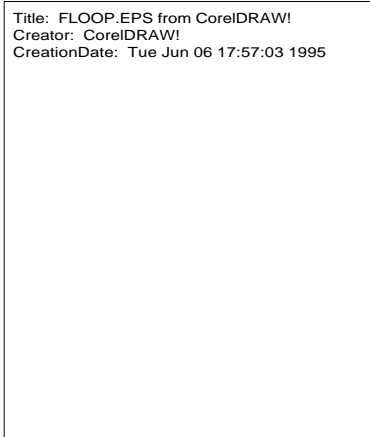
Step 9 Connect I/O, Continued

JP9 Floppy

JP9 is a 34-pin dual-inline berg. Connect the cable from the floppy drive to JP9, as shown below. The onboard floppy controller cannot be used if a hard disk card with a floppy controller is installed. Choose Standard Setup and Peripheral Setup to configure the floppy controller.



The motherboard supports up to two 720 KB, 1.44 MB, or 2.88 MB 3½" drives and 360 KB and 1.2 MB 5¼" drives. The connecting cable is a 34-pin ribbon connector with two 34-pin edge connectors for attaching the floppy disk drives. There is a small twist in the cable between the floppy connectors. The last (end) connector should be connected to floppy drive A: as shown below.



Cont'd

Step 9 Connect I/O, Continued

JP9 Floppy Connector Pinout

Pin	Use	Pin	Use
1	GND	2	DENSE1
3	GND	4	N/C
5	GND	6	DRATE0
7	GND	8	-INDEX
9	GND	10	-MOTOR0
11	GND	12	-FDSEL1
13	GND	14	-FDSEL0
15	GND	16	-MOTOR1
17	GND	18	DIR
19	GND	20	-
21	GND	22	-WDATA
23	GND	24	-WGATE
25	GND	26	-TRK0
27	GND	28	-WRPROT
29	GND	30	-RDATA
31	GND	32	HDSEL
33	GND	34	DSKCHNG

Twist in Floppy Cable

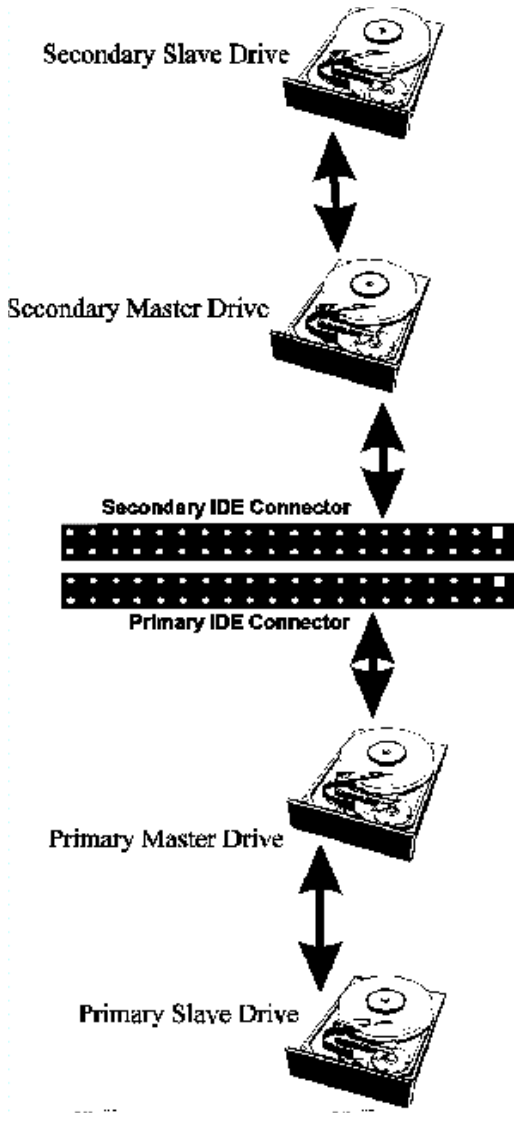
Floppy B to A	Floppy B to A	Floppy B to A	Floppy B to A
10 to 16	12 to 14	14 to 12	16 to 10
11 to 15	13 to 13	15 to 11	

Cont'd

Step 9 Connect I/O, Continued

IDE Drives

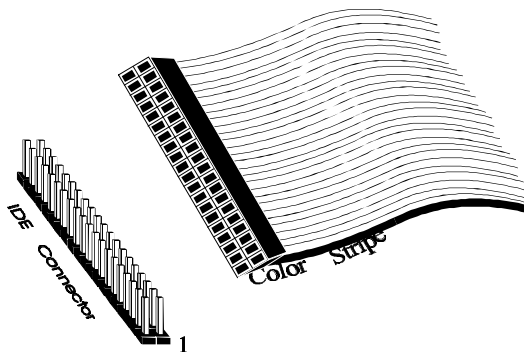
Attach the IDE drives in the following manner. Choose Peripheral Setup in AMIBIOS Setup to enable the onboard IDE controller.



Cont'd

Step 9 Connect I/O, Continued

Attach IDE Cable to JP5 JP5 is the primary IDE (Integrated Drive Electronics) hard disk drive connector. Both the primary master and the primary slave IDE drives must be connected by cable to JP5, as shown below.



JP5 is a 40-pin dual-inline berg that connects an IDE drive to the primary onboard IDE connector. This motherboard supports IDE Modes 0, 1, 2, 3, and 4, IDE prefetch, LBA (Logical Block Address) mode, high capacity drives (over 528 MB), 32-bit data transfer, and fast IDE transfer. These IDE features are configured in Peripheral Setup in the AMIBIOS Setup utility.

Disable the onboard IDE interface in Peripheral Setup to use an ISA ESDI, RLL, MFM, or SCSI hard disk drive controller.

Cont'd

Step 9 Connect I/O, Continued

JP5 Pinout JP5 is the primary IDE connector. The JP5 pinout is:

Pin	Use	Pin	Use
1	-RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	KEY (N/C)
21	-REQ	22	GND
23	-IOW	24	GND
25	-IOR	26	GND
27	IDERDY	28	Pulldown
29	-ACK	30	GND
31	INT14	32	N/C
33	HA1	34	N/C
35	HA0	36	HA2
37	-CS0	38	-CS1
39	-IDEACT	40	GND

JP4 Secondary IDE Controller JP4, the secondary IDE connector, is a 40-pin dual-inline berg that connects the secondary primary and slave IDE drives to the secondary onboard IDE controller.

Attach the secondary master and slave IDE drives to JP4 via a standard 40-pin IDE cable as shown on page 28.

Cont'd

Step 9 Connect I/O, Continued

JP4 Pinout JP4 is the secondary IDE connector. The JP4 pinout is:

Pin	Use	Pin	Use
1	-RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	KEY (N/C)
21	-REQ	22	GND
23	-IOW	24	GND
25	-IOR	26	GND
27	IDERDY	28	Pulldown
29	-ACK	30	GND
31	INT15	32	N/C
33	HA1	34	N/C
35	HA0	36	HA2
37	-CS2	38	-CS3
39	N/C	40	GND

Cont'd

Step 9 Connect I/O, Continued

J9 Pinout

J9 is the 16-pin connector specifically for AMI's new MegaRAC PCI adapter, which is a PCI remote assistant card.

Pin	Description
1	SMI#
2	I2C CLK
3	Reserved
4	GND
5	Power Off
6	I2C Data
7	Reserved
8	Keylock
9	Reserved
10	Reserved
11	HSTRST#
12	GND
13	GND
14	IRQ#
15	GPI01
16	GPI02

Step 10 Connect SCSI I/O

SCSI Connectors J18 (SCSI channel 1) and J17 (SCSI channel 2) are 68-pin high density (Wide) SCSI connectors.

High Density SCSI Connectors The 68-pin high density connectors are 0.050" pitch unshielded connectors. The high-density connector pinouts are shown below:

These connectors provide all signals needed to connect to wide SCSI devices. The connector pinouts are for a single-ended primary bus (P-CABLE) as specified in SCSI-3 Parallel Interface X3T9.2, Project 885-D, revision 1.2b, date July 2, 1993.

The cable assemblies that interface with this 68-pin connector are:

- flat ribbon or twisted pair cable for connecting internal wide SCSI devices,
 - flat ribbon or twisted pair cable for connecting internal and external wide SCSI devices,
 - cable assembly for converting from internal wide SCSI connectors to internal non-wide (Type 2) connectors,
 - cable assembly for converting from internal wide to internal non-wide SCSI connectors (Type 30), and
 - cable assembly for converting from internal wide to internal non-wide SCSI connectors.
-

Cont'd

Step 10 Connect SCSI I/O, Continued

High-Density 68-Pin SCSI Connector Pinout

Signal	Connector Pin	Cable Pin	Cable Pin	Connector Pin	Signal
Ground Data 12	1	1	2	35	-DB(12)
Ground Data 13	2	3	4	36	-DB(13)
Data 14	3	5	6	37	-DB(14)
Data 15	4	7	8	38	-DB(15)
SCOP1	5	9	10	39	-DB(P1)
Data 0	6	11	12	40	-DB(0)
Data 1	7	13	14	41	-DB(1)
Data 2	8	15	16	42	-DB(2)
Data 3	9	17	18	43	-DB(3)
Data 4	10	19	20	44	-DB(4)
Data 5	11	21	22	45	-DB(5)
Data 6	12	23	24	46	-DB(6)
Data 7	13	25	26	47	-DB(7)
Data (P)	14	27	28	48	-DB(P)
Ground	15	29	30	49	Ground
Ground DIFFSENS	16	31	32	50	Ground
TERMPWR	17	33	34	51	TERMPWR
TERMPWR	18	35	36	52	TERMPWR
Reserved	19	37	38	53	Reserved
Ground	20	39	40	54	Ground
ATN	21	41	42	55	-ATN
Ground	22	43	44	56	Ground
BSY	23	45	46	57	-BSY
ACK	24	47	48	58	-ACK
RST	25	49	50	59	-RST
MSG	26	51	52	60	-MSG
SEL	27	53	54	61	-SEL
C/D	28	55	56	62	-C/D
REQ	29	57	58	63	-REQ
I/O	30	59	60	64	-I/O
Data 8	31	61	62	65	-DB(8)
Data 9	32	63	64	66	-DB(9)
Data 10	33	65	66	67	-DB(10)
Data 11	34	67	68	68	-DB(11)

Cont'd

Step 10 Connect SCSI I/O, Continued

Single-Ended Ultra SCSI Understanding the cable requirements, termination and stub lengths is key to the successful implementation of a Ultra-SCSI subsystem.

SCSI Cables - Up to Four Devices The total external SCSI cable length for single-ended when using up to 4 Ultra-SCSI devices (maximum. capacitance of device = 25pf) should be less than or equal to:

$$\begin{aligned} & (3 \text{ meter} - (\text{SCSI signal length on AMI RAID}) - (\text{SCSI length in storage box})) \\ & = (3 \text{ meter} - 0.305 \text{ meter} - \text{SCSI length in storage box}) \\ & = 2.695 - \text{SCSI length in storage box} \end{aligned}$$

SCSI Cables - More than Four Devices The total external SCSI cable length for single-ended when using from five to eight Ultra-SCSI devices (max. cap of device = 25pf) should be less than or equal to:

$$\begin{aligned} & (1.5 \text{ meter} - (\text{SCSI signal length on AMI RAID}) - (\text{SCSI length in storage box})) \\ & = (1.5 \text{ meter} - 0.305 \text{ meter} - \text{SCSI length in storage box}) \\ & = 1.195 - \text{SCSI length in storage box} \end{aligned}$$

Spacing Devices The SCSI devices should be uniformly spaced between terminators with the end devices located as close as possible to the terminators.

SCSI Signal Path The SCSI signal path is a controlled impedance environment with the following characteristic impedance:

$$\begin{aligned} & 90 \text{ ohms } +/- 6 \text{ ohms for the REQ and ACK signals} \\ & 90 \text{ ohms } +/- 10 \text{ ohms for all other signals} \end{aligned}$$

Cont'd

Step 10 Connect SCSI I/O, Continued

SCSI Termination The SCSI channels on the MegaRUM II motherboard use active termination for each SCSI channel. You must terminate the SCSI bus properly. The SCSI bus on each SCSI channel is an electrical transmission line and it must be terminated properly at both ends to minimize reflections and losses. You complete the SCSI bus by setting termination at both ends.

Do not add terminators in the middle of the SCSI bus. The end devices must be located as close as possible to the terminators. A simple rule is to place SCSI terminator after the last SCSI device on each of the SCSI connectors. MegaRUM II automatically terminates the onboard SCSI connectors.

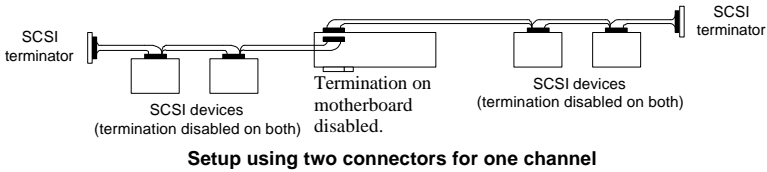
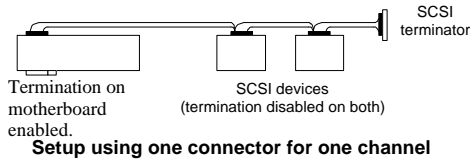
Stub length The stub length shall not exceed 0.1 meter. The spacing of devices on the SCSI bus should be at least three times the stub length to avoid stub clustering.

SCSI Cables Teflon flat ribbon cables give the best performance in the Ultra-SCSI environment. These cables should be used for all internal cabling. To minimize discontinuities and signal reflections, the use of cables with different impedance's on the same bus should be minimized.

Cont'd

Step 10 Connect SCSI I/O, Continued

SCSI Termination Possibilities



If the MegaRUM II is at one end of a cable, it sets termination automatically at that end. Otherwise, MegaRUM II disables its own termination and you must set termination at the cable ends. If another connector on MegaRUM II is also used for the same channel, the termination on MegaRUM II is disabled automatically and termination should be set on the device at the farthest end of the cable.

For a disk array, set SCSI bus termination so that removing or adding a SCSI device does not disturb termination. An easy way to do this is to connect MegaRUM II at one end of the SCSI cable for each channel and to connect an external terminator module at the other end of each cable. The connectors between the two ends can connect SCSI devices. Disable termination on the SCSI devices. See the manual for each SCSI device to disable termination.

Selecting a SCSI Terminator Use ALT-2 type external SCSI terminators on SCSI channels operating at 10 MB/s or higher synchronous data transfer.

Cont'd

Step 11 Install Drivers

The following drivers are provided with the MegaRUM II motherboard:

- one CD containing the American Megatrends AMI Server Manager server management software, and
 - one diskette with SCSI drivers for Windows NT v3.51 and v4.0, and SCSI drivers for Windows 95.
-

Installing AMI Server Manager The *American Megatrends AMI Server Manager User's Guide* is provided with the MegaRUM II motherboard. Follow the installation instruction in the *American Megatrends AMI Server Manager User's Guide*.

Installing SCSI Drivers The SCSI driver installation process is operating system-dependent. See the user documentation for the operating system that is installed in this computer for information about the SCSI driver installation procedure.

Step 12 Test and Configure

Review the following points before powering up:

- make sure that all adapter cards are seated properly,
 - make sure all connectors are properly installed,
 - make sure the CPU is seated properly,
 - make sure there are no screws or other foreign material on the motherboard,
 - plug the system into a surge-protected power strip, and
 - make sure blank back panels are installed on the back of the chassis to minimize RF emissions.
-

Start the Test Plug everything in and turn on the switch. If there are any signs of a problem, turn off the unit immediately. Reinstall the connectors. Call Technical Support if there are problems.

BIOS Errors If the system operates normally, a display should appear on the monitor. The BIOS Power On Self Test (POST) should execute.

If POST does not run successfully, it will beep or display error messages. Beeps indicate a serious problem with the system configuration or hardware. The Beep Code indicates the problem. AMIBIOS Beep Codes are defined in the *AMIBIOS Technical Reference*. Make sure the affected part is properly seated and connected. An error message is displayed if the error is less serious. Recheck the system configuration or the connections.

Configure the System Run AMIBIOS Setup. You must enter the requested information and save the configuration data in NVRAM. The system will then reset, run POST, and boot the operating system. See the following chapter for information on configuring the computer.

2 AMIBIOS Setup

In ISA and EISA computers, the system parameters (such as amount of memory, type of disk drives and video displays, and many other elements) are stored in CMOS RAM. Unlike the DRAM (dynamic random access memory) that is used for standard system memory, CMOS RAM requires very little power. When the computer is turned off, a back-up battery provides power to CMOS RAM, which retains the system parameters. Every time the computer is powered-on, the computer is configured with the values stored in CMOS RAM by the system BIOS, which gains control when the computer is powered on.

The system parameters are configured by a system BIOS Setup utility. Historically, BIOS Setup utilities have been character-based, required keyboard input, and have had user interfaces that were not very intuitive.

Starting AMIBIOS Setup As POST executes, the following appears:

Hit DEL if you want to run SETUP

Press Delete to run AMIBIOS Setup.

AMIBIOS Setup Menu

The AMIBIOS Setup main menu appears as follows. Each menu item is described in this chapter.

```
AMIBIOS HIFLEX SETUP UTILITY VERSION 1.18
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STANDARD CMOS SETUP
ADVANCED CMOS SETUP
ADVANCED CHIPSET SETUP
POWER MANAGEMENT SETUP
PCI / PLUG AND PLAY SETUP
PERIPHERAL SETUP
AUTO-DETECT HARD DISK
CHANGE USER PASSWORD
CHANGE SUPERVISOR PASSWORD
CHANGE LANGUAGE SETTING
AUTO CONFIGURATION WITH OPTIMAL SETTINGS
AUTO CONFIGURATION WITH FAIL-SAFE SETTINGS
SAVE SETTINGS AND EXIT
EXIT WITHOUT SAVING

Standard CMOS setup for changing time, date, hard disk type, etc.

Esc:Exit ↑↓:Sel F2/F3:Color F10:Save & Exit
```

Section 1 Standard Setup

Choose Standard CMOS Setup from the AMIBIOS Setup main menu. All Standard Setup options are described in this section. The Standard CMOS Setup screen is shown below.

AMIBIOS SETUP-STANDARD CMOS SETUP									
(C)1998 American Megatrends, Inc. All Rights Reserved									
Date (mm/dd/yyyy): Tue Sep 1, 1998					Base Memory: 640 KB				
Time (hh/mm/ss) : 16:05:13					Ext'd Memory: 255 KB				
Floppy Drive A: 1.44MB 3½									
Floppy Drive B: Not Installed									
						LBA	Blk	PIO	32Bit
	Type	Size	Cyln	Head	Wpcom	Sec	Mode	Mode	Mode
Pri	Master:	Auto	42	40	981	5	981	17	Off Off Auto On
Pri	Slave:	Not Installed							
Sec	Master:	Not Installed							
Sec	Slave:	Not Installed							
Boot Sector Virus Protection Disabled									
Month:	Jan - Dec					ESC:Exit ↑↓:Sel			
Day:	01 - 31					PgUp/PgDn:Modify			
Year:	1901 - 2099					F2/F3:Color			

Date/Time

Select Standard CMOS Setup from the AMIBIOS Setup main menu. Highlight Date or Time using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format. The time is in 24-hour format, also. For example, 5:30 a.m. appears as 05:30:00, and 5:30 p.m. as 17:30:00.

Press <PgUp> or <PgDn> after you have selected an option to display the complete list of valid setting in the bottom section of the screen. For example, when the cursor is in the Date field, the options for month, day, and year display, as seen in the screen above.

Cont'd

Standard Setup, Continued

Floppy Drive A: and B: Move the cursor to these fields via ↑ and ↓ and select the floppy type. The settings are *360 KB 5¼ inch*, *1.2 MB 5¼ inch*, *720 KB 3½ inch*, or *1.44 MB 3½ inch*.

Boot Sector Virus Protection This option is near the bottom of the Standard Setup screen. The settings are *Enabled* or *Disabled*. Choose *Enabled* to enable boot sector protection. AMIBIOS displays 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. If enabled, the following appears when a write is attempted to the boot sector. You may have to type *N* several times to prevent the boot sector write.

```
Boot Sector Write!!!  
Possible VIRUS: Continue (Y/N)? _
```

The following appears after any attempt 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)? _
```

Cont'd

Standard Setup, Continued

Primary Master, Primary Slave, Secondary Master, Secondary Slave

Select one of these hard disk drives to configure the hard disk drive named in the option. Press <Enter> to autodetect. The settings for each of these drives are:

Setting	How to Configure
1 – 46 Predefined types	If you are configuring an old MFM drive and you know the drive type, select the correct drive type between 1 – 46.
USER: Enter parameters manually	If you are installing an old MFM drive and you do not know the drive type or the drive parameters do not match the drive parameters for types 1 – 46, enter the correct hard disk drive parameters.
AUTO: Set parameters automatically on each boot	Select <i>Auto</i> to let AMIBIOS determine the parameters. Click on OK when AMIBIOS displays the drive parameters. You can also change these parameters if you do not think AMIBIOS detected the drive parameters correctly or if you want to enable an enhanced IDE feature. You can modify these parameters as follows: Select <i>LBA/Large Mode</i> . Select <i>On</i> if the drive has a capacity greater than 540 MB. Select <i>Block Mode</i> . Select <i>On</i> to allow block mode data transfers. Select <i>32-Bit Mode</i> . Select <i>On</i> to allow 32-bit data transfers. Select the <i>PIO Mode</i> . It is best to select <i>Auto</i> to allow AMIBIOS to determine the PIO mode. If you select a PIO mode that is not supported by the IDE drive, the drive will not work properly. If you are absolutely certain that you know the drive's PIO mode, select PIO mode 0 - 5, as appropriate.
CDROM: Use for ATAPI CDROM drives	Select <i>CDROM</i> if configuring an ATAPI drive. AMIBIOS displays the drive parameters.
ARMD: Use for LS120, MO, Iomega Zip drives	Select this setting if you are configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive.

Cont'd

Standard Setup, Continued

Entering Drive Parameters You can also enter the hard disk drive parameters. The drive parameters are:

Parameter	Description
Type	The number for a drive with certain identification parameters.
Size	The formatted size of the drive is the number of heads times the number of cylinders times the number of sectors per track times 512 (bytes per sector).
Cylinders	The number of cylinders in the disk drive.
Heads	The number of heads.
Write Precompensation	The actual physical size of a 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 is the track number on the disk surface where write precompensation begins.
Landing Zone	This number is the cylinder location where the heads normally park when the system is shut down.
Sectors	The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drives have even more sectors per track.
LBA Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 8.4GB.
Blk Mode	Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
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.
32Bit Mode	Hard disk drives connected to the computer via the ISA bus transfer data 16 bits at a time. An IDE drive on the PCI bus or VL-Bus can use a 32-bit data path.

Cont'd

Standard Setup, Continued

Hard Disk Drive Types

Type	Cylinders	Heads	Write Precompensation	Landing Zone	Sectors	Size
1	306	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	31 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	256	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
16	612	4	0	663	17	20 MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77 MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	820	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	918	17	114 MB
46	1224	15	65535	1223	17	152 MB
AMIBIOS automatically sets IDE drive parameters. Select USER to enter MFM, ESDI, or RLL drive parameters. Select Not Installed for SCSI drives. Select CDROM for CD-ROM drives.						

Section 2 Advanced CMOS Setup

Choose Advanced CMOS Setup from the AMIBIOS Setup main menu. Advanced CMOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced CMOS Setup options are described in this section.

Primary Display This option configures the type of monitor attached to the computer. The settings are *Absent*, *VGA/EGA*, *CGA40x25*, *CGA80x25*, or *Mono*. The Optimal and Fail-Safe default settings are *VGA/EGA*.

PS/2Mouse Support Set this option to *Enabled* to enable AMIBIOS support for a PS/2-type mouse. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Display BIOS P.O.S.T. Messages Set this option to display BIOS messages during the Power On Self Test. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Pause-On Configuration Screen Set this option to pause at the configuration screen during setup. The settings are *Disabled*, *1 sec*, *2 sec*, *3 sec*, *4 sec*, *5 sec*, *6 sec*, *7 sec*, *8 sec*, *9 sec*, or *10 sec*. The Optimal and Fail-Safe default settings are *10 sec*.

BootUp Num Lock Set this option to *On* to turn the Num Lock key On at system boot. The settings are *On* or *Off*. The Optimal and Fail-Safe default settings are *On*.

Password Check This option enables the password check option every time the system boots or the end user runs Setup. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if AMIBIOS is executed. See page 66 for instructions on changing a password. The Optimal and Power-On defaults are *Setup*.

Advanced CMOS Setup, Continued

Boot To OS/2 Set this option to *Yes* if running OS/2 operating system and using more than 64 MB of system memory on the motherboard. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

S.M.A.R.T. for Hard Disks Set this option to *Enabled* to permit AMIBIOS to use the SMART (Self Monitoring Analysis and Reporting Technology) protocol for reporting server system information over a network. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Quick Boot Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

1st Boot Device This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *SCSI*, *NETWORK*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *I2O*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Floppy*. The Optimal and Fail-Safe default settings are *Floppy*.

2nd Boot Device This option sets the type of device for the second boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *SCSI*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Disabled*. The Optimal and Fail-Safe default settings are *1st IDE*.

Cont'd

Advanced CMOS Setup, Continued

3rd Boot Device This option sets the type of device for the third boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Disabled*. The Optimal and Fail-Safe default settings are *SCSI*.

4th Boot Device This option sets the type of device for the fourth boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Try Other Boot Devices Set this option to *Yes* to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the **1st Boot Device**, **2nd Boot Device**, **3rd Boot Device**, and **4th Boot Device** options. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

C000,16K Shadow

C400,16K Shadow This option controls the location of the contents of video ROM. The settings are:

Setting	Description
<i>Enabled</i>	The contents of the video ROM area (C0000h - C7FFFh) are written to the corresponding address in RAM.
<i>Cached</i>	The contents of the video ROM area (C0000h - C7FFFh) are written to the corresponding RAM address and can be read from or written to cache memory.
<i>Disabled</i>	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

The Optimal and Fail-Safe default settings are *Cached*.

Cont'd

Advanced Setup, Continued

C800,16K Shadow

CC00,16K Shadow

D000,16K Shadow

D400,16K Shadow

D800,16K Shadow

DC00,16K Shadow These options enable shadowing of the contents of the ROM area in the option title.

Setting	Description
<i>Enabled</i>	The contents of the ROM area are written to the corresponding address in RAM for faster execution.
<i>Cached</i>	The contents of the ROM area are written to the corresponding RAM address and can be read from or written to cache memory.
<i>Disabled</i>	The ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

The Optimal and Fail-Safe default settings are *Cached*.

Section 3 Advanced Chipset Setup

Choose Advanced Chipset Setup from the AMIBIOS Setup main menu. All Chipset Setup options are described below.

USB Function Set this option to *Enabled* to enable the system BIOS USB (Universal Serial Bus) functions. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Onboard SCSI-1 The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Onboard SCSI-2 The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

BX Master Latency Timer (Clks) This option specifies the master latency timings (in PCI clocks) for devices in the computer. The settings are *Disabled*, *32*, *64*, *96*, *128*, *160*, *192*, or *224*. The Optimal and Fail-Safe default settings are *64*.

Multi-Trans Timer (Clks) This option specifies the multi-trans latency timings (in PCI clocks) for devices in the computer. The settings are *Disabled*, *32*, *64*, *96*, *128*, *160*, *192*, or *224*. The Optimal and Fail-Safe default settings are *32*.

Cont'd

Advanced Chipset Setup, Continued

Mlti-Trans Timer (Clocks) This option sets the multi-trans timer. The settings are in units of Clocks. The settings are 32, 64, 96, 128, 160, 192, 224, or *Disabled*. The Optimal default setting is 32. The Fail-Safe default setting is *Disabled*.

Graphics Aperture Size This option specifies the amount of system memory that can be used by the Accelerated Graphics Port (AGP). The settings are 4 MB, 8 MB, 16 MB, 32 MB, 64 MB, 128 MB, or 256 MB. The Optimal and Fail-Safe default settings are 64 MB.

AGP Mlti-Trans Timer (AGP Clocks) This option sets the AGP multi-trans timer. The settings are in units of AGP Clocks. The settings are 32, 64, 96, 128, 160, 192, 224, or *Disabled*. The Optimal default setting is 32. The Fail-Safe default setting is *Disabled*.

AGP Low-Priority Timer (AGP Clks) This option sets the AGP low-priority timer. The settings are in units of AGP Clocks. The settings are 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176, 192, 208, 224, or *Disabled*. The Optimal default setting is 16. The Fail-Safe default setting is *Disabled*.

Section 4 Power Management Setup

Choose Power Management Setup from the AMIBIOS Setup main menu. All Power Management Setup options are described in this section.

ACPI Aware O/S Set this option to *Yes* if the operating system you are running under complies with the Intel ACPI (Advanced Configuration and Power Interface) specification. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

Power Management/APM Set this option to *Enabled* to enable the chipset power management and APM (Advanced Power Management) features. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Power Button Function This option specifies how the power button mounted externally on the computer chassis is used. The settings are:

Setting	Description
On/Off	Pushing the power button turns the computer on or off.
Suspend	Pushing the Power button places the computer in Suspend mode or Full On power mode.

The Optimal and Fail-Safe default settings are *On/Off*.

Green PC Monitor Power State This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are *Stand By*, *Suspend*, or *Off*. The Optimal default setting is *Suspend*. The Fail-Safe default setting is *Stand By*.

Cont'd

Power Management Setup, Continued

Video Power Down Mode This option specifies the power state that the video subsystem enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are *Standby*, *Suspend* or *Disabled*. The Optimal default setting is *Stand By*. The Fail-Safe default setting is *Disabled*.

Hard Disk Power Down Mode This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are *Disabled*, *Stand By*, or *Suspend*. The Optimal default setting is *Suspend*. The Fail-Safe default setting is *Disabled*.

Hard Disk Time Out (Minute) This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the **Hard Disk Power Down Mode** option. The settings are *Disabled*, *1 min. (minute)*, *2 min.*, *3 min.*, *4 min.*, *5 min.*, *6 min.*, *7 min.*, *8 min.*, *9 min.*, *10 min.*, *11 min.*, *12 min.*, *13 min.*, or *14 min.* The Optimal and Fail-Safe default settings are *Disabled*.

Power Saving Type The settings are *POS*, *Sleep*, *Stop Clock*, and *Deep Sleep*. The Optimal and Fail-Safe default settings are *POS*.

Standby/Suspend Timer Unit This option specifies the unit of time used for the Standby and Suspend timeout periods. The settings are *4 msec*, *4 sec*, *32 sec*, or *4 min*. The Optimal and Fail-Safe default settings are *4 min*.

Cont'd

Power Management Setup, Continued

Standby Time Out This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are *Disabled, 4 min, 8 min, up to and including 508 minutes, in increments of 4 minutes*. The Optimal and Fail-Safe default settings are *Disabled*.

Suspend Time Out This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are *Disabled, 4 min, 8 min, up to and including 508 minutes, in increments of 4 minutes*. The Optimal and Fail-Safe default settings are *Disabled*.

Slow Clock Ratio This option specifies the speed at which the system clock runs in the Standby Mode power saving state. The settings are expressed as a percentage between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are *0 - 12.5%, 12.5% - 25%, 25% - 37.5%, 37.5% - 50%, 50% - 62.5%, 62.5% - 75%, or 75% - 87.5%*. The Optimal and Fail-Safe default settings are *50% - 62.5%*.

Display Activity When set to *Monitor*, this option enables event monitoring on the video display. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for display activity. The computer enters the Full On state if any activity occurs. AMIBIOS reloads the Standby and Suspend timeout timers if display activity occurs. The settings are *Monitor* or *Ignore*. The Optimal and Fail-Safe default settings are *Ignore*.

Cont'd

Power Management Setup, Continued

Device 6 (Serial Port 1)

Device 7 (Serial Port 2)

Device 8 (Parallel Port)

Device 5 (Floppy Disk)

Device 0 (Primary Master IDE)

Device 1 (Primary Slave IDE)

Device 2 (Secondary Master IDE)

Device 3 (Secondary Slave IDE) When set to *Monitor*, these options

enable event monitoring on the specified hardware interrupt request line. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for activity on the specified IRQ line. The computer enters the Full On state if any activity occurs. AMIBIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are *Monitor* or *Ignore*. The Optimal default setting is *Ignore*, except for Device 0 (Primary Master IDE), which has an Optimal default setting of *Monitor*. The Fail-Safe default setting is *Monitor*.

Section 5 PCI/PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP Setup options are described in this section.

AMI RAID Express Installed Set this option to *Yes* if the AMI RAID Express is installed. The settings are *Yes* or *No*. The Optimal and Fail-Safe settings are *No*.

Boot to SCO UNIX Set this option for the computer to boot to SCO UNIX. The settings are *Yes* or *No*. The Optimal and Fail-Safe settings are *No*.

Plug and Play-Aware OS Set this option to *Yes* if the operating system in this computer follows the Plug and Play specification. Windows 95 is PnP-aware. The settings are *Yes* or *No*. The default setting is *Yes*. The Optimal and Fail-Safe default settings are *No*.

PCI VGA Palette Snoop When this option is set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example: if there are two VGA devices in the computer (one PCI and one ISA) and the VGA Palette Snoop bit is:

Snoop Bit	Action
<i>Disabled</i>	Data read and written by the CPU is only directed to the PCI VGA device's palette registers.
<i>Enabled</i>	Data read and written by the CPU is directed to the both the PCI VGA device palette registers and the ISA VGA device palette registers, and the palette registers of both devices can be identical.

This option must be set to *Enabled* if an ISA adapter card installed in the system uses VGA palette snooping. The Optimal and Fail-Safe default settings are *Disabled*.

Allocate IRQ to PCI VGA Set this option to *Yes* to allocate an IRQ to a VGA adapter card that uses the PCI local bus. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Cont'd

PCI/PnP Setup, Continued

USB Device Latency This option specifies the latency timings (in PCI clocks) for USB devices. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

PCI Slot-1 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-1 expansion slot. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

PCI Slot-2 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-2 expansion slot. The setting is *128*. The Optimal and Fail-Safe default settings are *128*.

PCI Slot-3 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-3 expansion slot. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

PCI Slot-4 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-4 expansion slot. The setting is *128*. The Optimal and Fail-Safe default settings are *128*.

AGP Slot IRQ Priority This option specifies the IRQ priority for the AGP devices installed in the computer. The setting is *N/A*. The Optimal and Fail-Safe default settings are *N/A*.

USB Device IRQ Priority These options specify the IRQ priority for USB devices installed in the Slot-1 expansion slot. The settings are *Auto, 3, 4, 5, 7, 9, 10, 11, 12, and 14*, in priority order. If *Auto* is selected, AMIBIOS automatically determines the optimal IRQ priority order. The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

PCI Slot1 IRQ Priority These options specify the IRQ priority for PCI devices installed in the computer. The settings are *Auto*, 3, 4, 5, 7, 9, 10, 11, 12, and 14, in priority order. If *Auto* is selected, AMIBIOS automatically determines the optimal IRQ priority order. The Optimal and Fail-Safe default settings are *Auto*.

PCI SCSI-1 Latency

PCI SCSI-2 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-1 and Slot-2 expansion slots. The settings are 32, 64, 96, 128, 160, 192, 224, or 248. The Optimal and Fail-Safe default settings are 32.

PCI Slot-5 Latency

PCI Slot-6 Latency This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-5 and Slot-6 expansion slots. The setting is *N/A*. The Optimal and Fail-Safe default settings are *N/A*.

PCI SCSI-1 IRQ Priority

PCI SCSI-2 IRQ Priority This option specifies the IRQ priority for SCSI devices 1 and 2 installed in the computer. The settings for SCSI-1 are *Auto*, *IRQ5*, or *IRQ9*. The settings for SCSI-2 are *Auto*, *IRQ9*, or *IRQ10*. If *Auto* is selected, AMIBIOS automatically determines the optimal IRQ priority order. The Optimal and Fail-Safe default settings are *Auto*.

PCI Slot-5 IRQ Priority

PCI Slot-6 IRQ Priority This option specifies the IRQ priority for PCI devices installed in the Slot-5 and Slot-6 expansion slots. The setting is *N/A*. The Optimal and Fail-Safe default settings are *N/A*.

Cont'd

IRQ3
IRQ4
IRQ5
IRQ7
IRQ9
IRQ10
IRQ11
IRQ12
IRQ14
IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards. These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an *ISA* setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as *PCI/PnP*. IRQ14 and 15 will not be available if the onboard Triton 2 PCI IDE is enabled. If all IRQs are set to *ISA* and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are *Auto*, *Primary PCI*, *Secondary PCI*, or *ISA*. The Optimal and Fail-Safe default settings are *Auto*.

DMA Channel 0
DMA Channel 1
DMA Channel 3
DMA Channel 5
DMA Channel 6
DMA Channel 7

These options allow you to specify the bus type used by each DMA channel. The settings are *PnP* or *ISA*. The Optimal and Fail-Safe default settings are *PnP*.

Cont'd

Reserved ISA Card Memory Size This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are *Disabled*, *16K*, *32K*, or *64K*. The Optimal and Fail-Safe default settings are *Disabled*.

Reserved ISA Card Memory Address This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

The settings are *C0000*, *C4000*, *C8000*, *CC000*, or *D0000*. The Optimal and Fail-Safe default settings are *C8000*.

Section 6 Peripheral Setup

Choose Peripheral Setup from the AMIBIOS Setup main menu. All Peripheral Setup options are described below.

Onboard Floppy Controller Set this option to *Enabled* to enable the floppy drive controller on the motherboard. The settings are *Auto* (*AMIBIOS automatically determines if the floppy controller should be enabled*), *Enabled*, or *Disabled*. The Optimal and Fail-Safe default settings are *Auto*.

Onboard Primary/Secondary IDE This option specifies the IDE channels used by the onboard IDE controller. The settings are *Disabled*, *Primary*, *Secondary*, or *Both*. The Optimal and Fail-Safe default settings are *Both*.

IDE Bus Mastering Set this option to *Enabled* to specify that the IDE controller on the PCI bus has bus mastering capability. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Primary Prefetch Set this option to *Enabled* to allow prefetch of information from the IDR disk drives by the primary IDE controller. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Secondary Prefetch Set this option to *Enabled* to allow prefetch of information from the IDR disk drives by the secondary IDE controller. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Offboard PCI\ISA IDE Card This option specifies whether an offboard PSI\ISA IDE card is used in the computer. You must also specify the PCI\ISA expansion slot on the motherboard where the offboard PCI\ISA controller card is installed. If an offboard PCI\ISA controller is used, the motherboard onboard IDE controller is automatically disabled. The settings are *Absent*, *ISA*, *PCI Slot1*, *PCI Slot2*, *PCI Slot3*, *PCI Slot4*, *PCI Slot5*, or *PCI Slot6*. The Optimal and Fail-Safe default settings are *Absent*.

Cont'd

Peripheral Setup, Continued

Primary\Secondary This option specifies the PSI/ISA IDE cards used by the offboard IDE controller. The settings are *Disabled*, *Primary*, *Secondary*, or *Both*. The Optimal and Fail-Safe default settings are *Both*.

PCI IDE Card Primary IRQ This option specifies the primary IRQ used by the PCI IDE card. The setting is *IRQ14*. The Optimal and Fail-Safe default settings are *IRQ14*.

PCI IDE Card Secondary IRQ This option specifies the secondary IRQ used by the PCI IDE card. The setting is *IRQ15*. The Optimal and Fail default settings are *IRQ15*.

Onboard Serial Port1 IRQ This option specifies the IRQ used by serial port 1. The settings are *Disabled*, or *IRQ4*. The Optimal and Fail-Safe default settings are *IRQ4*.

Onboard Serial Port1 This option specifies the base I/O port address of serial port 1. The settings are *Auto* (*AMIBIOS automatically determines the correct base I/O port address*), *Disabled*, *3F8h/COM1*, or *3E8h/COM3*. The Optimal and Fail-Safe default settings are *Auto*.

Serial Port1 FIFO The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Onboard Serial Port2 IRQ This option specifies the IRQ used by serial port 2. The settings are *Disabled*, or *IRQ3*. The Optimal and Fail-Safe default settings are *IRQ3*.

Onboard Serial Port2 This option specifies the base I/O port address of serial port 2. The settings are *Auto* (*AMIBIOS automatically determines the correct base I/O port address*), *Disabled*, *3F8h/COM1*, *2F8h/COM2*, *3E8h/COM3*, or *2E8h/COM4*. The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

Peripheral Setup, Continued

Serial Port2 Mode This option specifies the operating mode for serial port 2. This option appears only if the **Onboard Serial Port2** option is not set to *Auto* or *Disabled*. The settings are *IrDA*, *ASK IR*, or *Normal*. The Optimal and Fail-Safe default settings are *Normal*.

IR Duplex Mode This option specifies the infrared transmission method. This option appears only if the **Onboard Serial Port2** option is not set to *Auto* or *Disabled*. The settings are *Full* or *Half*. There are no default settings.

Cont'd

IrDA Protocol The settings are *1.6 us* or *3/16*. The Optimal and Fail-Safe default settings are *1.6 us*.

Onboard Parallel Port IRQ This option specifies the IRQ used by the parallel port. The settings are *Disabled*, *IRQ7*, or *IRQ5*. The Optimal and Fail-Safe default settings are *IRQ7*.

Parallel Port Mode This option specifies the parallel port mode. The Optimal and Fail-Safe default settings are *ECP*. The settings are:

Setting	Description
<i>Normal</i>	The normal parallel port mode is used.
<i>EPP</i>	The parallel port can be used with devices that 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.
<i>ECP</i>	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bidirectional communication.
<i>Bi-Dir</i>	Data can be sent to and received from the parallel port.

Cont'd

Peripheral Setup, Continued

Parallel Port DMA Channel This option is available only if the setting for the **Parallel Port Mode** option is *ECP*. This option sets the DMA channel used by the parallel port. The settings are *Auto*, (*DMA Channel*) *1*, or *3*.

EPP Version This option specifies the Enhanced Parallel Port specification version number that is used in the system. This option appears only if the **Parallel Port Mode** option is set to *EPP*. The settings are *1.7*, *1.9*, and *N/A*.

There are no Optimal and Fail-Safe default settings because the default setting for the **Parallel Port Mode** option is not *EPP*. If the **Parallel Port Mode** is set to *Normal* or *ECP*, then *N/A* displays.

Section 7 Other Setup Options

Auto-Detect Hard Disks

Choose this option to let AMIBIOS automatically detect the hard disk drive parameters. The Standard CMOS Setup screen will appear after AMIBIOS has configured the drives. Press <Esc> and choose Save Settings and Exit to reconfigure the system configuration with the new hard disk drive parameters.

AMIBIOS Password Support

Two Levels of Password Protection AMIBIOS provides both a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when AMIBIOS Setup is executed, using either or both the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security.

Set the **Password Check** option in Advanced Setup (see the Advanced Setup section) by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when AMIBIOS Setup is executed). The password is encrypted and stored in NVRAM.

If you select password support, you are prompted for a 1 – 6 character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and reconfigure.

Remember the Password Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM (Non-Volatile Random Access Memory). See page 75 for information about erasing system configuration information.

Change User Password

Select Change User Password from the AMIBIOS Setup main menu.

Enter new User password:

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes. The next time the system boots, a password prompt appears if the Password Check option is set to *Always*.

Change Supervisor Password

Select Change Supervisor Password from the AMIBIOS Setup main menu.

Enter new supervisor password:

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes. The next time the system boots, a password prompt appears if the Password Check option is set to *Always*.

Change Language Settings

This option is not implemented in this AMIBIOS.

Auto Configuration with Optimal Settings

AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option. The following appears:

Load high performance settings (Y/N) ? N

The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal AMIBIOS Setup options if your computer is experiencing system configuration problems.

Auto Configuration with FailSafe Settings

AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option. The following appears:

Load Failsafe settings (Y/N) ? N

The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Choose the Fail-Safe AMIBIOS Setup options if your computer is experiencing system configuration problems.

Save Settings and Exit

When you have completed the system configuration changes, choose this option to leave AMIBIOS Setup and to reboot the computer so the new system configuration parameters can take effect.

Exit Without Saving

Choose this option to quit AMIBIOS Setup without making any permanent changes to the system configuration.

3 Programming Flash ROM

All versions of the MegaRUM II PCI motherboard use Flash EPROM to store the system BIOS. The advantage of Flash EPROM is the EPROM chip does not have to be replaced to update the BIOS. The end user can actually reprogram the BIOS, using a ROM file supplied by American Megatrends.

Programming the Flash EPROM

Step	Action
1	Turn power off. Make sure the computer has a working speaker.
2	Insert the floppy disk with the S774P.ROM file in drive A:.
3	Press and hold the <Ctrl> and <Home> keys down while turning the power on. Continue to hold the <Ctrl> and <Home> keys down until the access light on the floppy drive comes on. It may take 10 seconds or more before this light turns on. Since MegaRUM II uses a 2 megabit BIOS, the flashing process may take up to 3 minutes.
4	Release the <Ctrl> and <Home> keys. AMIBIOS issues a series of beep codes that indicate that the system BIOS ROM file is being updated.
5	When the flash ROM has successfully been programmed, the computer will reboot.
6	When the computer reboots, check the BIOS Release text at the bottom of the first boot screen to make sure that the correct BIOS has been used.
7	The error message NVRAM checksum bad, NVRAM cleared will appear during the first boot after a successful BIOS ROM update. This message indicates that the NVRAM area in the system BIOS has been cleared. AMIBIOS will reconstruct the NVRAM area before the computer boots completely, so you can safely ignore this message.
8	<u>Load</u> the optional default and save.

Cont'd

Programming the Flash ROM, Continued

Bootblock Actions When you reprogram from system boot, the bootblock code:

Step	Action
1	Reads S774P.ROM from the root directory of the floppy disk in drive A:.
2	Erases the Flash EPROM.
3	Programs the Flash EPROM with the data read from the floppy disk in drive A:.
4	Generates a CPU reset, rebooting the computer.

The bootblock part of the Flash EPROM is not programmed. Should you inadvertently open the disk drive door or turn power off to the computer while programming the Flash EPROM, the bootblock will be unaffected. Simply turn power back on and begin the Flash ROM programming process again.

S774P.ROM S774P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the AMIBIOS for the MegaRUM II PCI ISA motherboard must be updated.

S774P.ROM must be present in the root directory of the floppy disk before the onboard Flash EPROM can be reprogrammed. The file that has the main BIOS code must be named S774P.ROM.

Cont'd

Programming the Flash ROM, Continued

Beep Codes The bootblock code produces a series of beeps during Flash ROM programming to: signify completion of a step (as shown on the previous page), or to signal an error.

Error beeps are arranged in a coded sequence and have different meanings depending on when they occur. The error beep codes and when they can occur are:

Number of Beeps	Description
1	Insert diskette in floppy drive A:.
2	The S774P.ROM file was not found in the root directory of the diskette in floppy drive A:.
3	Base memory error.
4	Flash program successful.
5	Floppy read error.
6	Keyboard controller BAT command failed.
7	No Flash EPROM detected.
8	Floppy controller failure.
9	Boot Block BIOS checksum error.
10	Flash erase error.
11	Flash Program error.
12	S774P.ROM file size error.
Continuous beep	Flash Programming successful. Turn power off. Then turn power on again to restart.

Bootblock Code Checkpoint Codes

Code	Description
E0h	Verify the Boot Block BIOS checksum. Disable the internal cache, DMA, and interrupt controllers. Initialize the system timer. Start memory refresh.
E1h	Initialize the chipset registers. Set the BIOS size to 128K. Make the 512 KB base memory available.
E2h	Test the base 64 KB of system memory. Send the BAT command to the keyboard controller. Make sure that <Ctrl> <Home> was pressed. Verify the main system BIOS checksum.
E3h	The main system BIOS is good. Transfer control to the main system BIOS.
E4h	Start the memory test.
E5h	The memory test is over. Initialize the interrupt vector table.
E6h	Initialize the DMA and interrupt controllers.
E7h	Determine the CPU internal clock frequency.
E8h	Initialize the I/O chipset, if any.
E9h	Program the CPU clock-dependent chip set parameters.
EAh	Enable the timer and the floppy diskette interrupt. Enable the internal cache. Copy the boot block BIOS and pass control to the boot block BIOS in the 0000h segment.
EDh	Initialize the floppy drive.
EEh	Look for a diskette in drive A:. Read the first sector of the diskette.
EFh	Floppy read error.
F0h	Search for S774P.ROM in the root directory of the floppy diskette in drive A:.
F1h	The S774P.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the S774P.ROM.
F3h	Start reading the S774P.ROM file, cluster by cluster.
F4h	The S774P.ROM file is not the correct size.
F5h	Disable the internal cache. Raise the Vpp. Enable Flash write and reset the Flash ROM.
FBh	Detect the flash type.
FCh	Start erasing flash blocks.
FDh	Program the Flash ROM in the E0000-EFFFFh region.
FEh	Start programming Flash at F0000-FFFFF region.
FFh	Flash programming is successful. The computer reboots.

4 Deleting a Password

If you forget the passwords you set up through AMIBIOS Setup, the only way you can restart the computer is to erase the system configuration information where the passwords are stored. System configuration data is stored in CMOS RAM, a type of memory that consumes very little power.

Erase Old Password You can drain CMOS RAM power via J35 on the motherboard. J35 is a 2-pin berg that is normally always OPEN. Perform the following steps to erase the old password.

Important

Make sure you are properly grounded before performing the following procedure. You must be certain that no electrostatic discharge (ESD) occurs. ESD can ruin your motherboard. Wear an antistatic wristband attached to a ground. See “Avoid Static Electricity” on the following page.

Step	Action
1	Turn the computer power off and remove the computer cover.
2	Place a shorting bridge on J35.
3	Turn on computer power for about 10 seconds.
4	Turn the computer off again.
5	Remove the shorting bridge from J35.
6	Turn on computer power again.
	Since you drained power from CMOS RAM, all system configuration information has been erased. You must now re-enter the system configuration information by running AMIBIOS Setup.

Avoid Static Electricity

Static electricity can damage the motherboard and other computer components. Keep the motherboard in the anti-static bag until it is to be installed. Wear an anti-static wrist grounding strap before handling the motherboard. Make sure you stand on an anti-static mat when handling the motherboard.

Avoid contact with any component or connector on any adapter card, printed circuit board, or memory module. Handle these components by the mounting bracket.

5 AMI_ClientCare Installation Procedure

This procedure is valid when installing AMI_ClientCare in a computer with an AMI Series 774 MegaRUM II motherboard.

Installation Requirements

- A computer with a Series 774 MegaRUM II motherboard and a system BIOS that has the DMI-enabled BIOS file *S774P.ROM*, dated 11/05/98.
 - The AMI_ClientCare installation CD
-

Procedure

- Step 1 Flash the new *S774P.ROM* file on to the MegaRUM II BIOS on the Series 774 MegaRUM II motherboard. See Chapter 3, *Flashing ROM BIOS*, for information about flashing the BIOS. The new BIOS must be installed before system information can be displayed correctly.
- Step 2 Boot Windows NT on this computer after the new BIOS has been successfully installed.
- Step 3 Place the AMI_ClientCare CD in the CD-ROM drive. Run the SETUP program on the AMI_ClientCare CD. Follow the instructions on the screen. See the American Megatrends *AMI_ClientCare User's Guide* (part number MAN-CLIENT) for information about using AMI_ClientCare.
-

A Specifications

Engineering Specifications

Temperature Ranges The following values are ambient temperatures inside the computer case. The board temperatures reflect the dual Pentium II II CPU Heat dissipation requirements because they will be the hottest motherboard components. Temperature specifications vary with the CPU frequency.

Frequency	Heat Sink	Airflow over CPU	Airflow over other components	Temperature Range
All frequencies	YES	200 feet per minute	Not critical	0 ° through 50 ° C. ambient

You must make sure that there is adequate air flow over the CPU inside the case.

Humidity The recommended humidity range for operation of the motherboard is 20% to 80% non-condensing.

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