MegaRUM

Dual Pentium® II

PCI ISA Motherboard

User's Guide

MAN-758
6/5/97

American Megatrends, Inc.
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Norcross, GA 30093

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Revision History

6/5/97 Initial release of preliminary version**.**

Preface

To the OEM

Thank you for purchasing the high performance American Megatrends MegaRUM 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 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 PCI motherboard. It explains how to assemble a system based on the MegaRUM 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.

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 Dual Pentium II PCI ISA motherboard,
- two serial cables,
- one parallel cable,
- one VGA cable,
- two VGA driver diskettes for Windows 95 and Windows NT V3.5x,
- 5 SCSI driver diskettes,
- a diskette containing the American Megatrends DMI Wizard 95 software utility,
- The *DMI Wizard 95 User's Guide*,
- the *SystemGuru User's Guide*,
- 4 diskettes containing the SystemGuru Server Management Software for Windows NT,
- a Warranty Card, and
- the *American Megatrends MegaRUM Dual Pentium II PCI ISA Motherboard User's Guide.*

Warning

Do not use 16 MB x 36 (64 MB) SIMMs that have 36 chips per SIMM. This type of 16 MB SIMM does not work reliably because of excessive loading on the motherboard circuitry. If you must use 64 MB SIMMs, use only SIMMs that have 12 or 8 chips per SIMM.

Do not use 70 ns SIMMs. The system memory timing cycle on this motherboard are very sensitive. This motherboard does not work reliably with 70 ns SIMMs.

1 Hardware Installation

Overview

The American Megatrends MegaRUM 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 MHz or higher speeds ,
- up to 1 GB of system memory 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 40 MBs,
- specially designed for the American Megatrends RAID Upgrade controller cards,
- onboard ATI Rage II PCI VGA controller with 2 MB of synchronous graphics RAM,
- the American Megatrends SystemGuru server management software,
- two ISA expansion slots, and
- six PCI expansion slots.

CPUs

The MegaRUM motherboard will support all Intel Slot1 CPUs operating at 233 MHz, 266 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
66 MHz	33 MHz
60 MHz	30 MHz

Cont'd

Onboard I/O The MegaRUM motherboard includes:

- an onboard ATI Rage II PCI VGA controller with 2 MB of synchronous graphics memory,
- two onboard Symbios Logic 53C875 SCSI controllers that provide 2 40 MBs ultra wide SCSI channels and one ultra wide/narrow SCSI channel,
- 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 mouse connector.

Server Management Software The American Megatrends SystemGuru server management software is included with the MegaRUM motherboard. SystemGuru uses the I^2C 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 SystemGuru User's Guide for additional information.

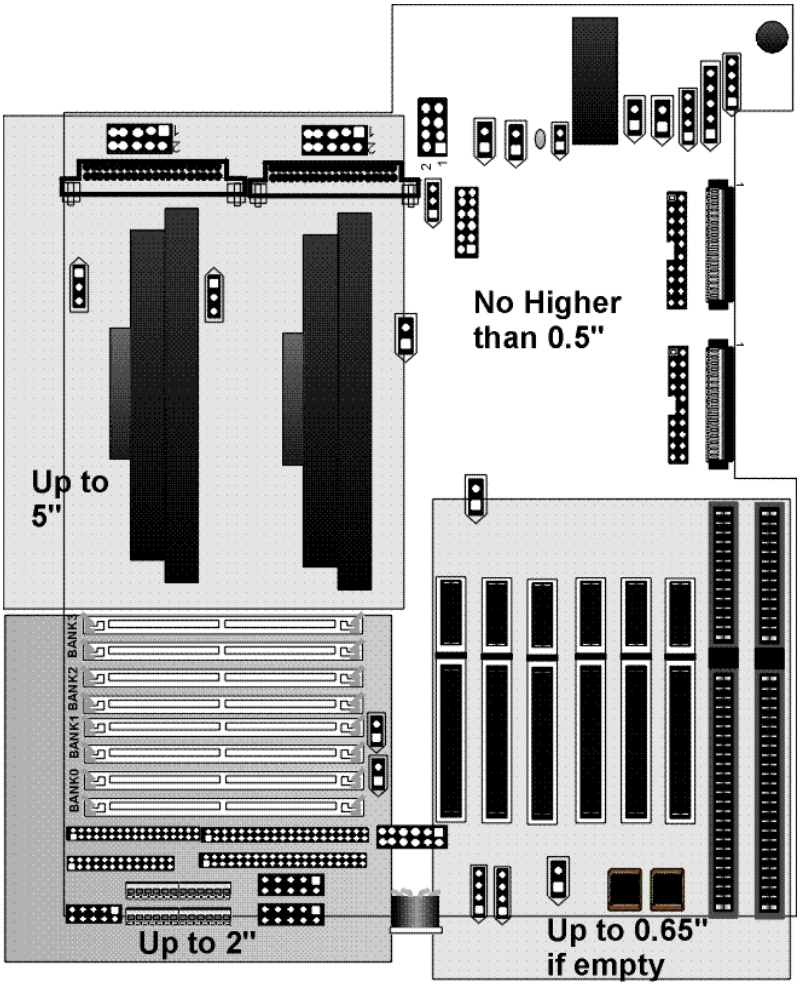
Onboard PCI VGA The PCI VGA on the MegaRUM motherboard is supported by the ATI 3D RAGE II 264GT PCI Graphics Controller chip. The PCI VGA features are:

- 2 MB SGRAM (not upgradable),
- a VGA cable is included, and
- video drivers for Windows 95 and Windows NT will be provided.

You can download video drivers for all other operating systems from the ATI BBS at 905-764-9404. Make sure you load the ATI 3D RAGE II drivers from the diskette provided. Windows 95 auto detection tries to load the ATI Mach 64 drivers, which will not function properly.

MegaRUM PCI Dimensions

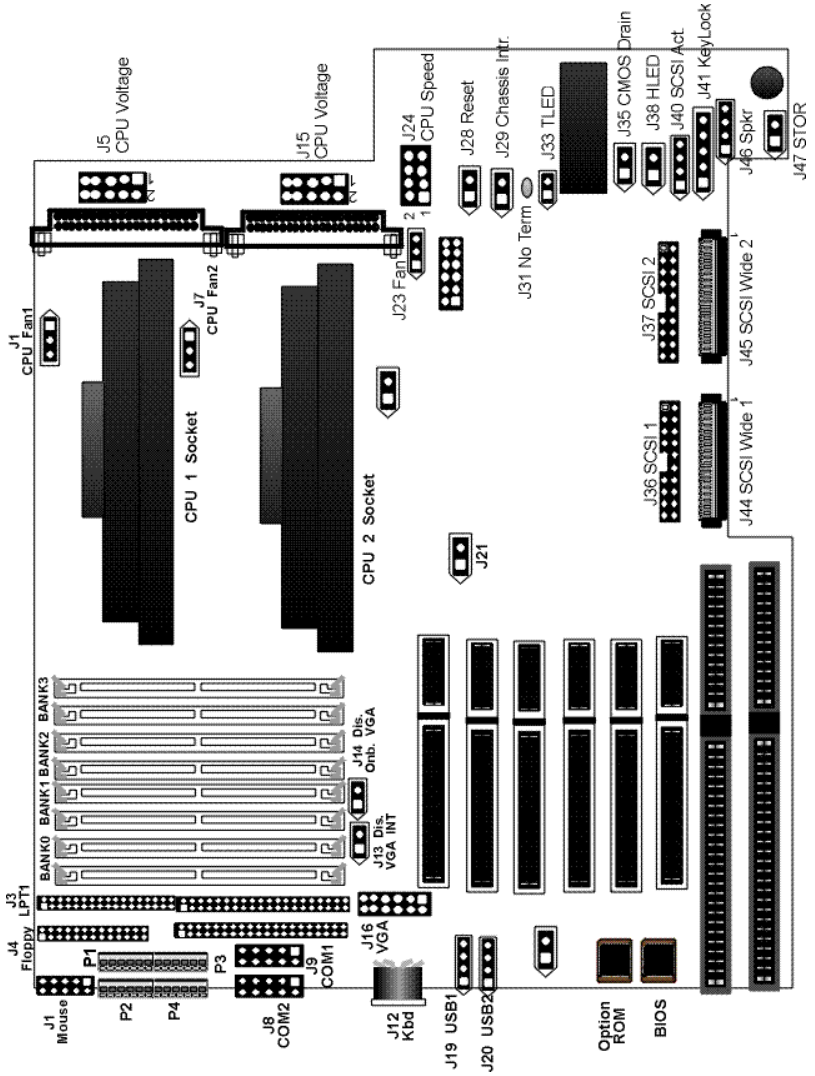
The motherboard is approximately 12.25” by 13.8”. The motherboard height restrictions are shown below:



Warning

This motherboard contains sensitive electronic components that can be easily damaged by static electricity. Follow the antistatic instructions carefully to ensure correct installation and to avoid damage.

MegaRUM PCI Motherboard Layout



Step 1 Unpack the Motherboard

Step	Action
1	Inspect the cardboard carton for obvious damage. If damaged, call 770-246-8645. 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. J21 and J24 select the CPU speed. The drawings on the next screens show how J24 and J21 should look for each possible CPU speed:

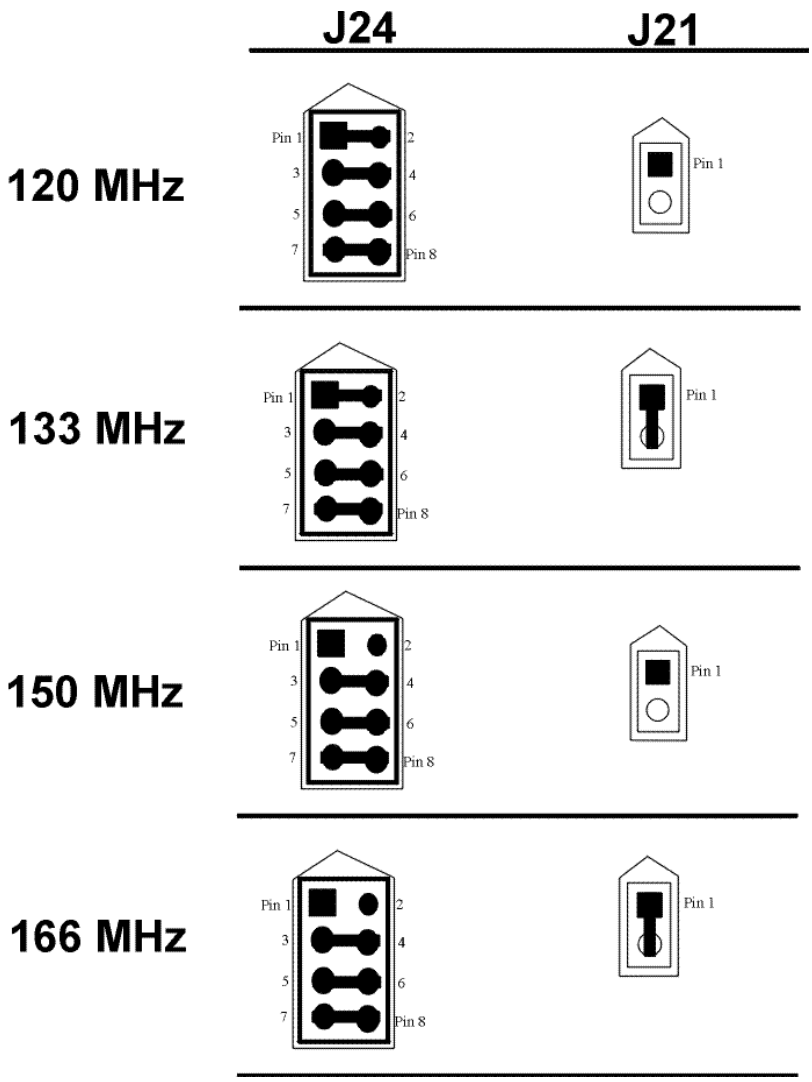
CPU Speed	J21	J24
120MHz	OPEN	Short Pins 1-2, Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
133 MHz	Shorted	Short Pins 1-2, Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
150 MHz	OPEN	Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
166 MHz	Shorted	Short Pins3-4 Short Pins 5-6 Short Pins 7-8
180 MHz	OPEN	Short Pins 1-2 Short Pins 5-6 Short Pins 7-8
200 MHz	Open	Short Pins 1-2 Short Pins 5-6 Short Pins 7-8
210 MHz	OPEN	Short Pin 5-6 Short Pin 7-8
233 MHz	Shorted	Short Pin 5-6 Short Pin 7-8
240 MHz	OPEN	Short Pins 1-2 Short Pins 3-4 Short Pins 7-8
266 MHz	Shorted	Short Pins 1-2 Short Pins 3-4 Short Pins 7-8

Important

Please contact American Megatrends technical support at 770-246-8645 to support a CPU running at other speeds.

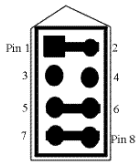
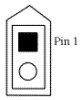
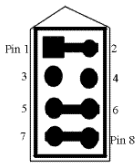
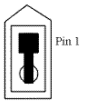
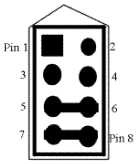
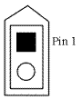
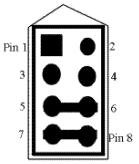
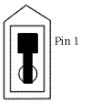
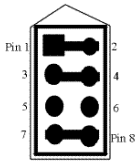
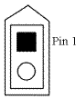
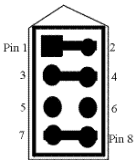
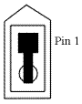
Cont'd

Step 2 Configure CPU Speed, Continued



Cont'd

Step 2 Configure CPU Speed, Continued

	J24	J21
180 MHz		
200 MHz		
210 MHz		
233 MHz		
240 MHz		
266 MHz		

Step 3 Configure CPU Voltage

J5 and J15 Each CPU can be independently set to the correct CPU core voltage. J5 sets the voltage for the CPU in CPU Slot1. J15 sets the voltage for the CPU in Slot2.

Core CPU Voltage	J5 and J15 Setting
3.50V	Short Pins 3-4 Short Pins 5-6 Short Pins 7-8 Short Pins 9-10
3.40V	Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
3.3V (Factory Setting)	Short Pins 3-4 Short Pins 5-6 Short Pins 9-10
3.2V	Short Pins 3-4 Short Pins 5-6
3.1V	Short Pins 3-4 Short Pins 7-8 Short Pins 9-10
3.0V	Short Pins 3-4 Short Pins 7-8
2.9V	Short Pins 3-4 Short Pins 9-10
2.8V	Short Pins 3-4
2.7V	Short Pins 5-6 Short Pins 7-8 Short Pins 9-10
2.6V	Short Pins 5-6 Short Pins 7-8
2.5V	Short Pins 5-6 Short Pins 9-10
2.4V	Short Pins 5-6
2.3V	Short Pins 7-8 Short Pins 9-10
2.2V	Short Pins 7-8
2.1V	Short Pins 9-10
2.05V	Short Pins 1-2 Short Pins 3-4 Short Pins 5-6 Short Pins 7-8 Short Pins 9-10
2.0V	Short Pins 1-2 Short Pins 3-4 Short Pins 5-6 Short Pins 7-8
1.95V	Short Pins 1-2 Short Pins 3-4 Short Pins 5-6 Short Pins 9-10
1.90V	Short Pins 1-2 Short Pins 3-4 Short Pins 5-6
1.85V	Short Pins 1-2 Short Pins 3-4 Short Pins 7-8 Short Pins 9-10
1.8V	Short Pins 1-2 Short Pins 3-4 Short Pins 7-8
No CPU	None

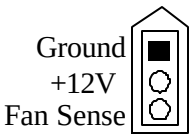
Step 4 Install Additional Voltage Regulator

One Voltage Regulator Module (VRM) is shipped with every MegaRUM 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	073-20715-02	MDL-P681-V5A140
Corsair	SPX560KM	MDL-P681-V5A140

Step 5 Connect CPU Fans

J1 and J7 (shown below) are 3-pin bergs that connect the fan on the CPU heat sink to the motherboard power. J1 is the CPU fan connector for the CPU in CPU Slot1. J7 is the CPU fan connector for the CPU in CPU Slot2.



J1, J7, and J23 pinout

All Pentium II CPUs are shipped with *a heat sink and a CPU fan*. The connector from the CPU fan usually has three leads (has red, yellow, and black leads). *Connect the Red lead to Pin 3 (+12V). Make sure that you use fans that have 3 leads.* The 3rd (yellow) lead should provide a tachometer output to permit the fan speed to be monitored by the onboard server management hardware. If you must use fans with only 2 leads, connect the red lead to Pin 3.

J23 Chassis Fan J23 is a 3-pin berg located near the VRM for the CPU 2 socket. The pinout is the same for J23 as it is for J1 and J7. J23 provides +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 6 Install CPU

The Pentium II CPUs are on Intel Slot1 adapter cards. Insert the Slot1 cards into the CPU card sockets on the motherboard. The CPU Slot1 sockets are below the SIMM sockets.

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.

Step 7 Install Memory

System Memory There are eight 32-bit SIMM (Single Inline Memory Module) sockets. System memory must be populated one bank at a time. Each bank has two sockets.

Each bank must be populated with the same type of SIMM. If a 4 MB SIMM is installed in the first socket in Bank0, then the same type of 4 MB SIMM must be installed in the second Bank0 SIMM socket. The minimum amount of system memory supported by the MegaRUM PCI is 8 MB. Each socket can hold one SIMM. You can use:

- 1 MB x 32 (or 36),
- 2 MB x 32 (or 36),
- 4 MB x 32 (or 36),
- 8 MB x 32 (or 36),
- 16 MB x 32 (or 36), or
- 32 MB x 32 (or 36) SIMMs.

The MegaRUM motherboard will support 128 MB SIMMs when they become available, permitting up to 1 GB of system memory to be installed on the motherboard.

Fast Page Mode, EDO, and Burst EDO SIMMs cannot be mixed. The motherboard supports SIMMs operating at 60 or 70 ns (RAS access time). Set the Chipset Setup **DRAM Speed (ns)** option correctly.

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.

Cont'd

Step 7 Install Memory, Continued

Select SIMMs SIMMs must meet the following specifications:

Parameter	Specification
Page Mode	FAST
Refresh	CAS before RAS
t_{CAC}	≤ 20 ns
t_{RAC}	≤ 80 ns
t_{AA}	≤ 45 ns
t_{RP}	70 ns
t_{CPA}	≤ 45 ns

SIMM Part Numbers

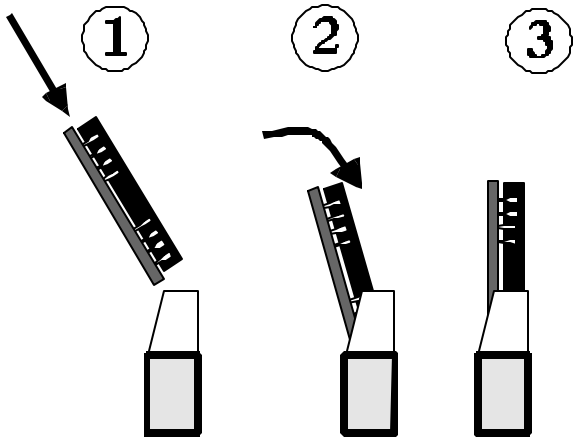
Type	Manufacturer	Part Number
1 MB x 36	Micron	MT12D136M-7
"	Mitsubishi	MH1M36ADJ-7
"	PNY	P361000-70
"	Motorola	MCM36100AS-70
"	Oki	MSC2355-70YS12
"	Samsung	KMM5361000AV-7
2 MB x 36	PNY	P362000-70
"	Samsung	EMM53620036-70
4 MB x 36	Micron	MT12D436M-7
"	Mitsubishi	MH4M36SAJ-7
"	Motorola	MCM36400S-70
"	PNY	P364000-70
"	Samsung	KMM5364100-7
8 MB x 36	Motorola	MCM36800S-70
"	PNY	P368000-707
"	Samsung	KMM5368100-7
16 MB x 36	Samsung	KMM53616000AKG-6

Cont'd

Step 7 Install Memory, Continued

Installing SIMMs The four SIMM sockets on the motherboard can be filled with either 1 MB x 32 (or 36), 2 MB x 32 (or 36), 4 MB x 32 (or 36), 8 MB x 32 (or 36), or 16 MB x 32 (or 36) SIMMs.

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



Step 8 Install the Motherboard

The motherboard mounting hole pattern is shown below. Standoffs and mounting screws are not supplied with the motherboard. The chassis manufacturer should supply these parts.

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 9 Attach Cables

Connectors

The MegaRUM 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
Power supply connectors P1, P2, P3, and P4
Drain CMOS RAM power – J35
Keyboard connector J12
PS/2 mouse connector J2
Chassis intrusion LED – J29
External SMI connector – J18
Disable onboard VGA – J14
Hardware reset switch J28
Speaker J46
SCSI activity LED – J40
Keyboard lock connector J41
Turbo LED connector J33
IDE LED connector J38
USB port 1 connector J19
USB port 2 connector J20
System override – J47
AMI-specific VGA cable – J16
Disable VGA interrupt – J13
Serial port 1 connector J9
Serial port 2 connector J8
Parallel port connector J3
Floppy connector J4
IDE channel 0 connector J10
IDE channel 1 connector J11
SCSI channel 1 (Wide) – J44
SCSI channel 1 (Narrow) – J36
SCSI channel 2 (Wide) – J45
SCSI channel 2 (Narrow) – J37

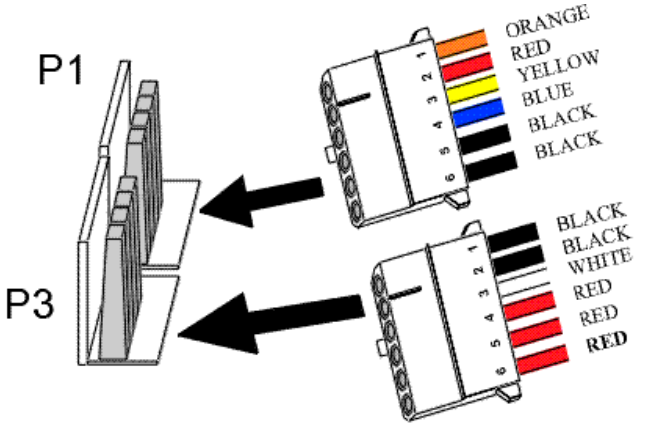
Cont'd

Step 9 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 450 watt power supply, which should have built-in filters to suppress radiated emissions.

Connect Power Cables Attach the power supply cables to the power connector (P1 and P3) on the motherboard. AT-compatible power supplies have two six-pin connectors, attached as shown below. The six-pin connector on the power cable with three red wires and two black wires is attached to P3. The other connector on the end of the power cable is attached to P1.

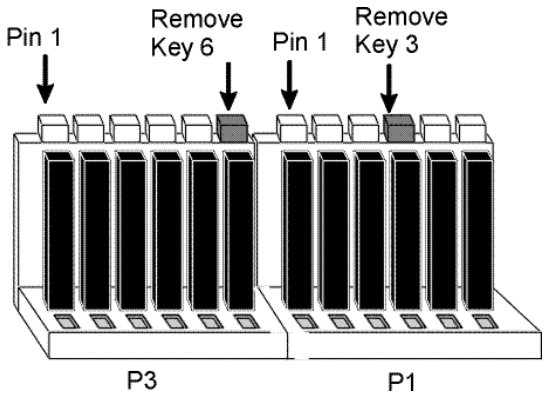


Standard AT Power Supply Connectors

Cont'd

Step 9 Attach Cables, Continued

Power Connector Keys The power connectors are keyed to prevent incorrect installation. The keys on the connector must be cut to fit on some power supplies, as shown below.



P1 Pinout

Pin	Description
1	Power Good (Orange wire) (Not used)
2	VCC (Red wire)
3	+12 Volts (Yellow wire)
4	-12 Volts (Blue wire)
5	Ground (Black wire)
6	Ground (Black wire)

P3 Pinout

Pin	Description
1	Ground (Black wire)
2	Ground (Black wire)
3	-5 Volts (White wire)
4	VCC (Red wire)
5	VCC (Red wire)
6	VCC (Red wire)

Cont'd

P2 Pinout

Pin	Description
1	5V
2	5V
3	5V
4	Ground
5	Ground
6	Ground

P4 Pinout

Pin	Description
1	3V
2	3V
3	3V
4	Ground
5	Ground
6	Ground

J35 Erase Password J35 is a 2-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 J35 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 J35 settings are:

CMOS Drain	J35 Setting
Normal operation (factory setting).	OPEN
The contents of CMOS RAM are destroyed.	Shorted

Cont'd

Step 9 Attach Cables, Continued

J12 Keyboard Connector The keyboard connector is a 6-pin DIN socket. The pinout is shown below.

Pin	Assignments
1	Keyboard clock
2	Keyboard data
3, 6	Not used
4	Ground
5	VCC

Connect Mouse Cable The mouse connector (J2) is a 10-pin berg. The mouse cable is the same as the serial cable in the motherboard. Two serial cables are shipped with the motherboard. Use one of these cables for the mouse, or make your own cable. The pinout is:

Pin	Description	Pin	Description
1	Mouse Clock	2	N/C
3	N/C	4	N/C
5	N/C	6	VCC
7	N/C	8	Mouse Data
9	Ground	10	N/C

J29 Chassis Door Intrusion J29 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.

J18 External SMI J18 is a 3-pin berg. An external SMI (System Management Interrupt) source can be connected to J18. When an external SMI needs to generate an SMI to the system, Pin 1 must be shorted to Pin 2 (as a pulse).

Cont'd

J28 Reset Switch Connector J28 is a two-pin single-inline 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 1 is ground and Pin 2 is Hard Reset.

J46 Speaker Connector J46 is a four-pin single-inline berg that is optionally attached via a cable to a standard system speaker. AMIBIOS signals hardware problems through the speaker. Pin 1 on the motherboard is identified by the arrow on the white box around the berg. The MegaRUM PCI motherboard also has a built-in speaker mounted on the motherboard.

Pin	Description
1	Data Out
2	Key
3	N/C
4	VCC

J40 SCSI Activity J40 is a 4-pin berg that attaches to a cable connected to the SCSI activity indicator.

J47 System Override J47 is a 2-pin berg that attached to a system override switch.

Cont'd

J41 Keyboard Lock J41 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

J33 Turbo LED J33 is a 2-pin berg that is attached via a cable to the externally-mounted bipolar Turbo LED. The LED lights when the motherboard is running at high speed.

J38 IDE LED J38 is a two-pin berg that is attached via a cable to the externally-mounted IDE Activity LED. This LED lights when the IDE drive is running.

> ***Warning***
> In some IDE drives, you may have to disable the IDE LED mounted on the drive by changing a jumper or setting a switch on the IDE drive itself, before the IDE drive sends a signal to J34.

Cont'd

Step 9 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.

J19, J20 USB Connectors J19 and J20 are 4-pin USB (Universal Serial Bus) connectors. The pinouts are:

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

J14 Enable Onboard PCI VGA J14 is a 2-pin berg that enables or disables the onboard PCI ATI VGA controller. The J14 settings are:

Onboard PCI ATI VGA Setting	J19 Setting
PCI VGA Enabled	OPEN (Default)
PCI VGA Disabled	Shorted

Cont'd

Step 9 Attach Cables, Continued

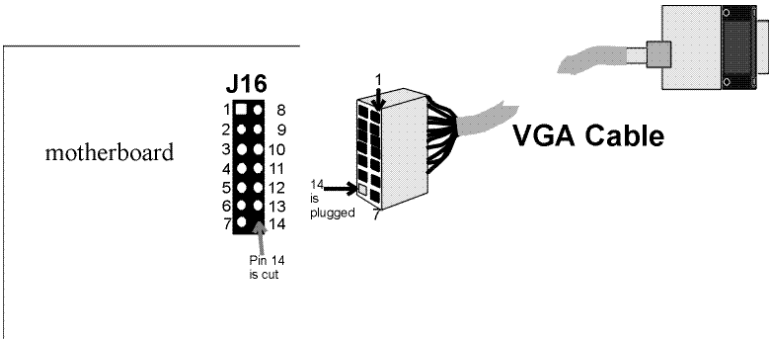
J13 VGA Interrupt Enable J13 is a 2-pin berg that enables interrupt support for the onboard PCI ATI VGA controller:

Onboard PCI ATI VGA Interrupt Setting	J13 Setting
PCI interrupt enabled for onboard PCI VGA.	OPEN
PCI interrupt disabled for onboard PCI VGA.	Shorted (Default)

J16 VGA Connector J16 is a 14-pin dual inline berg for the onboard ATI Rage II PCI VGA controller. Connect the VGA cable supplied with this motherboard to J16. This cable converts J16 14-pin berg signals to a standard DB15 VGA connector, which can be mounted on the chassis. *Make sure the red wire on the cable is connected to Pin1 of J16.* The pinout is:

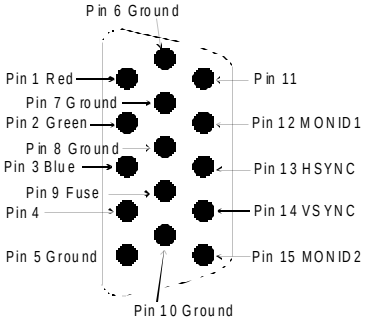
Pin	Signal Description	Pin	Signal Description
1	Red	8	Ground
2	Green	9	Ground
3	Blue	10	Ground
4	VSYNC	11	Fuse
5	HSYNC	12	Ground
6	MONID1	13	Ground
7	MONID2	14	Pin is Cut

VGA Cable and J16 Connectors The following drawing illustrates the VGA connectors on the VGA cable and J16 on the motherboard:



Cont'd

Standard VGA Connector The pinout for the standard female DB15 VGA connector is shown below:



Standard VGA Female Connector

J16 VGA Connector and Standard VGA The connections on the VGA cable that has a standard DB15 female VGA connector and a 14-pin berg connector at the other end are shown below:

J16		Standard VGA Connector	
Pin	**Signal**	**Pin**	**Signal**
1	Red	1	Red
2	Green	2	Green
3	Blue	3	Blue
4	VSYNC	14	VSYNC
5	HSYNC	13	HSYNC
6	MONID1	12	MONID1
7	MONID2	15	MONID2
8	Ground	6	Ground
9	Ground	7	Ground
10	Ground	8	Ground
11	Fuse	9	Fuse
12	Ground	5	Ground
13	Ground	10	Ground
14	Pin is Cut	N/A	
N/A	N/A	4, 11	Unused

Step 10 Connect I/O

Onboard Adapters The MegaRUM PCI motherboard has:

- two serial ports (J8 and J9),
- a parallel port (J2),
- two Ultra Wide SCSI connectors,
- two Ultra narrow SCSI connectors,
- an IDE controller on the PCI bus (the primary IDE connector is J12 and the secondary IDE connector is J10), and
- a floppy controller (J1).

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 PCI motherboard for a hard disk or floppy controller and serial or parallel ports.

J8 SER1 J9 SER2 J8 and J9 are 9-pin connectors that provide an AT-compatible serial port interface. Connect the cables supplied with the motherboard to J8 and J9. The serial port base I/O port address and other serial port settings can be selected in Peripheral Setup in WINBIOS® Setup.

The J8 and J9 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

J3 Parallel Port J3 is a 25-pin connector for a parallel port. The J3 pinout is shown below. Connect the 16-pin to DB25 cable provided with the motherboard to J3. The parallel port interface supports:

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

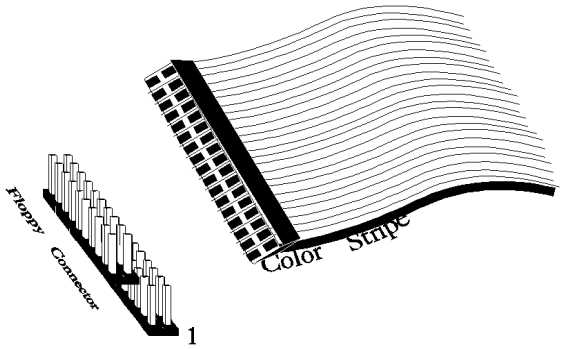
All parallel port settings must be correctly configured through Peripheral Setup in WINBIOS Setup.

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

J4 Floppy

J4 is a 34-pin dual-inline berg. Connect the cable from the floppy drive to J4, 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:.

Cont'd

J1 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

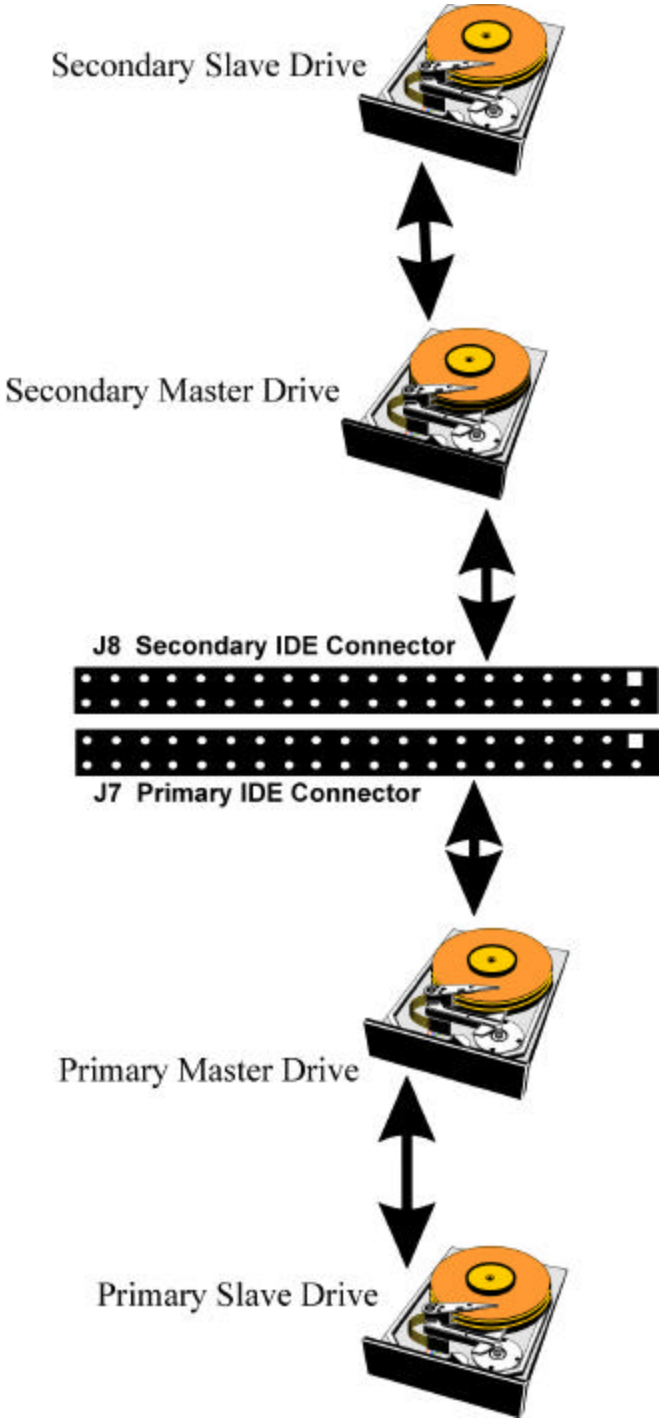
Twist in Floppy Cable

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

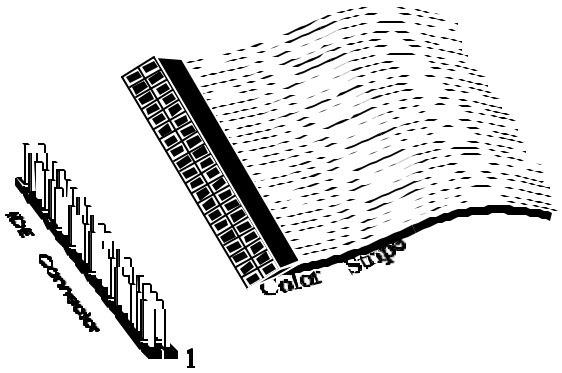
Step 10 Connect I/O, Continued

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



Cont'd

Attach IDE Cable to J10 J10 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 J10, as shown below.



J10 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 WINBIOS 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

J10 Pinout J10 is the primary IDE connector. The J10 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

J11 Secondary IDE Controller J11, 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 J11 via a standard 40-pin IDE cable.

Cont’d

J11 Pinout J11 is the secondary IDE connector. The J11 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

Step 11 Connect SCSI I/O

SCSI Connectors J44 (SCSI channel 1) and J45 (SCSI channel 2) are 68-pin high density (Wide) SCSI connectors. J36 (SCSI channel 1) and J37 (SCSI channel 2) are 50-pin low density (Narrow) SCSI connectors.

All SCSI connectors are located in the same area below the two ISA 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

High-Density 68-Pin SCSI Connector Pinout

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

Cont’d

50-Pin Low-Density SCSI Connector The MegaRUM motherboard includes a 50pin low-density 0.0100" pitch shrouded SCSI connector for each SCSI channel. The pinout for the 50-pin low-density connector is specified in SCSI-2 X39T9.2 project 375R, revision 10K, April 28, 1993.

50-Pin Low-Density SCSI Connector Pinout

Signal	Connector Pin	Cable Pin	Cable Pin	Connector Pin	Signal
Ground	1	1	2	2	-DB(0)
Ground	3	3	4	4	-DB(1)
Ground	5	5	6	6	-DB(2)
Ground	7	7	8	8	-DB(3)
Ground	9	9	10	10	-DB(4)
Ground	11	11	12	12	-DB(5)
Ground	13	13	14	14	-DB(6)
Ground	15	15	16	16	-DB(7)
Ground	17	17	18	18	-DB(8)
Ground	19	19	20	20	-DB(P)
Ground	21	21	22	22	Ground
Reserved	23	23	24	24	Ground
OPEN	25	25	26	26	Reserved
Reserved	27	27	28	28	TERMPWR
Ground	29	29	30	30	Reserved
Ground	31	31	32	32	Ground
Ground	33	33	34	34	-ATN
Ground	35	35	36	36	Ground
Reserved	37	37	38	38	-BSY
Ground	39	39	40	40	-ACK
Ground	41	41	42	42	-RST
Ground	43	43	44	44	-MSG
Ground	45	45	46	46	-SEL
Ground	47	47	48	48	-C/D
Ground	49	49	50	50	-REQ

Cont'd

Step 11 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:

```
(3 meter-(SCSI signal length on AMI RAID)-(SCSI length in storage box)
= (3 meter - 0.305 meter - SCSI length in storage box)
= 2.695 - SCSI length in storage box
```

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:

```
(1.5 meter-(SCSI signal length on AMI RAID)-(SCSI length in storage box)
= (1.5 meter - 0.305 meter - SCSI length in storage box)
= 1.195 - SCSI length in storage box
```

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:

```
90 ohms +/- 6 ohms for the REQ and ACK signals
90 ohms +/- 10 ohms for all other signals
```

Cont’d

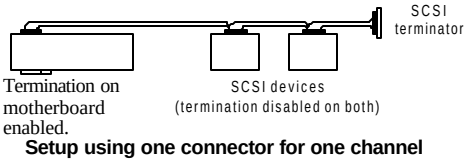
SCSI Termination The SCSI channels on the MegaRUM motherboard use active termination for each SCSI channel. You must terminate the SCSI bus properly. The SCSI bus on each SCSI channel is an electrical transmission line and it must be terminated properly at both ends to minimize reflections and losses.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

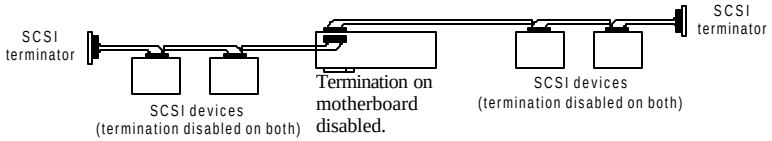
Stub length The stub length shall not exceed 0.1 meter. The spacing of devices on the SCSI bus should be at least three times the stub length to avoid stub clustering.

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.

SCSI Termination Possibilities



Setup using one connector for one channel



Setup using two connectors for one channel

If the MegaRUM is at one end of a cable, it sets termination automatically at that end. Otherwise, MegaRUM disables its own termination and you must set termination at the cable ends. If another connector on MegaRUM is also used for the same channel, the termination on MegaRUM 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 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 MBs or higher synchronous data transfer.

Cont’d

Step 12 Install Drivers

The following drivers are provided with the MegaRUM motherboard:

- one VGA driver diskettes for Windows NT v3.51 and v4.0,
- one VGA driver diskette for Windows 95,
- one diskette containing the American Megatrends DMI Wizard 95 utility,
- four diskettes containing the American Megatrends SystemGuru server management software,
- one diskette with SCSI drivers for Windows NT v3.51 and v4.0,
- one diskette with SCSI drivers for SCO Unix V5.0,
- one diskette with SCSI drivers for Windows 95,
- one diskette with SCSI drivers for DOS and SCSI utility programs,
- One diskette with SCSI drivers for Novell NetWare v3.xx and 4.xx.

Installing DMI Wizard 95 The *American Megatrends DMI Wizard 95 User's Guide* is provided with the MegaRUM motherboard. Follow the DMI Wizard 95 installation instruction in the *American Megatrends DMI Wizard 95 User's Guide.*

Installing SystemGuru The *American Megatrends SystemGuru User's Guide* is provided with the MegaRUM motherboard. Follow the DMI Wizard 95 installation instruction in the *American Megatrends SystemGuru User's Guide.*

Installing VGA Drivers The VGA 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 VGA driver installation procedure.

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.

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 WINBIOS 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 WINBIOS® 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 NVRAM (Non-Volatile Random Access Memory), also called CMOS RAM. Unlike the DRAM (dynamic random access memory) that is used for standard system memory, NVRAM requires very little power. When the computer is turned off, a back-up battery provides power to NVRAM, which retains the system parameters. Every time the computer is powered-on, the computer is configured with the values stored in NVRAM 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.

Graphical Setup American Megatrends has a new type of system BIOS Setup utility. WINBIOS Setup has a graphical user interface the end user can access using a mouse. The WINBIOS Setup code is so compact that it can reside on the same ROM as the system BIOS. The system configuration parameters are set by WINBIOS Setup.

Since WINBIOS Setup resides in the ROM BIOS, it is available each time the computer is turned on.

Starting WINBIOS Setup As POST executes, the following appears:

```
Hit <DEL> if you want to run SETUP
```

Press <Del> to run WINBIOS Setup.

WINBIOS Setup has a built-in mouse driver and can be accessed by either a serial mouse or PS/2-style mouse. WINBIOS Setup supports Microsoft-Compatible serial mice and all PS/2-type mice.

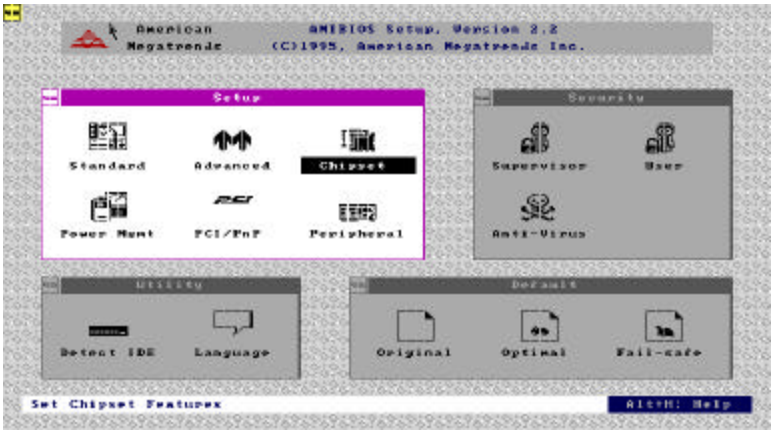
The mouse click functions are: single click to change or select both global and current fields and double-click to perform an operation in the selected field.

Using the Keyboard with WINBIOS Setup

WINBIOS has a built-in keyboard driver that uses simple keystroke combinations:

Keystroke	Action
<Tab>	Change or select a global field.
<→, ←, ↑, ↓	Change or select the current field.
<Enter>	Perform an operation in the current field
+	Increment a value.
–	Decrement a value.
<Esc>	Abort any window function.
<PgUp>	Return to the previous screen
<PgDn>	Advance to the next screen
<Home>	Returns to the beginning of the text.
<End>	Advance to the end of the text.
<Ctrl><Alt><+>	Change to high speed
<Ctrl><Alt><->	Change to low speed.

The WINBIOS Setup main menu is organized into four sections. Each of these sections corresponds to a section in this chapter.



Each section contains several icons. Clicking on each icon activates a specific AMIBIOS function. The WINBIOS Setup main windows and related functions are described below.

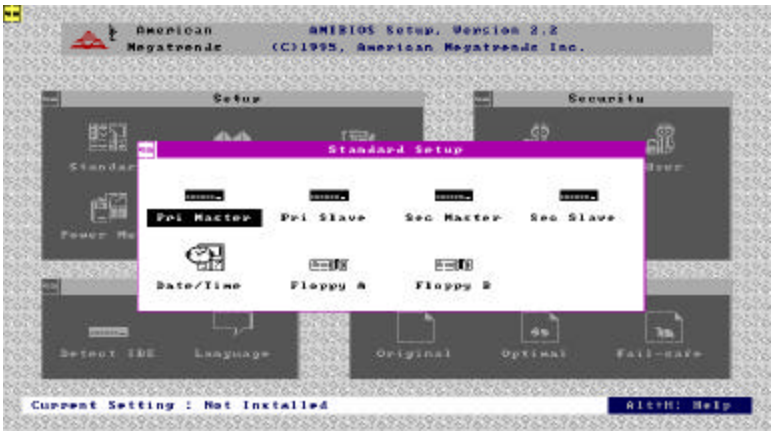
Main Windows The WINBIOS Setup main windows are:

WINBIOS Setup Windows	See Section
The Setup icons allow you to set system configuration options such as date, time, hard disk type, and floppy type.	1
The Utilities section allows you to change the WINBIOS Setup screen colors and to change the language that WINBIOS Setup screen message are written in.	2
The Security icons allow you to configure passwords and enable AMIBIOS anti-virus protection.	3
Default has three icons that permit you to select a group of settings for all AMIBIOS WINBIOS Setup options.	4

Section 1 Setup

Standard Setup

Standard Setup options are displayed by choosing the Standard icon from the WINBIOS Setup main menu. All Standard Setup options are described in this section.



Date/Time Select the Standard option. Select the Date and Time icon. The current values for each category are displayed. Enter new values through the keyboard.

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, 1.44 MB 3½ inch*, or *2.88 MB 3½ inch.*

Pri Master, Pri Slave, Sec Master, Sec Slave Select one of these hard disk drive icons to configure the hard disk drive named in the option. Select *Auto* from the drive parameters screen to let AMIBIOS automatically configure the drive. A screen with a list of drive parameters appears. Click on *OK* to configure the drive.

Drive Type	How to Configure
SCSI	Select *Type*. Select *SCSI* in the drive parameter screen. The SCSI drivers provided by the SCSI drive or SCSI host adapter manufacturer should allow you to configure the SCSI drive.
IDE	Select *Type*. Select *Auto* to let AMIBIOS determine the parameters. Click on OK when AMIBIOS displays the drive parameters. Select *LBA/Large Mode*. Select *On* if the drive has a capacity greater than 540 MB. Select *Block Mode*. Select *On* to allow block mode data transfers. Select *32-Bit Transfer*. Select *On* to allow 32-bit data transfers. Select the *PIO Mode*. It is best to select *Auto* 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.
CD-ROM	Select *Type*. Select *CDROM*. Click on *OK* when AMIBIOS displays the drive parameters.
Standard MFM Drive	Select *Type*. You must know the drive parameters. Select the drive type that exactly matches your drive's parameters.
Non-Standard MFM Drive	Select *Type*. If the drive parameters do not match the drive parameters listed for drive types 1 - 46, select *User* and enter the correct hard disk drive parameters.

Cont'd

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.
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.
Capacity	The formatted capacity 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).

Cont'd

Hard Disk Drive Types

Type	Cylinders	Heads	Write Precompensation	Landing Zone	Sectors	Capacity
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.					

Advanced Setup

Advanced Setup options are displayed by choosing the Advanced icon from the WINBIOS Setup main menu. All Advanced Setup options are described in this section.

Typematic Rate This option sets the rate at which characters on the screen repeat when a key is pressed and held down. The settings are *Slow or Fast.* The Optimal and Fail-Safe default settings are *Fast.*

System Keyboard This option does not specify if a keyboard is attached to the computer. Rather, it specifies if error messages are displayed if a keyboard is not attached. This option permits you to configure workstations with no keyboards. The settings are *Absent* or *Present.* The Optimal and Fail-Safe default settings are *Present.*

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

Setup Color Scheme This option specifies the foreground, background, and border color combinations that AMIBIOS Setup is displayed in. The settings are Pastel, Army, LCD, and Sky. The Optimal and Fail-Safe default settings are LCD.

PS/2 Mouse Support Set this option to *Enabled* to enable AMIBIOS support for a PS/2-type mouse. Pins 2-3 of the PS/2 Mouse Selector jumper on the motherboard must be shorted together to enable PS/2 mouse support. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

Cont'd

Hit <DEL> Message Display Set this option to *Disabled* to prevent

```
Hit <DEL> if you want to run Setup
```

from appearing when the system boots. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

Wait for <F1> If Error AMIBIOS POST runs system diagnostic tests that can generate a message followed by:

```
Press <F1> to continue
```

If this option is set to *Enabled,* AMIBIOS waits for the end user to press <F1> before continuing. If this option is set to *Disabled,* AMIBIOS continues the boot process without waiting for <F1> to be pressed. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

Pause on Config. Screen This option specifies the length of time that the AMIBIOS configuration screen appears. The settings are *2 sec, 3 sec, 4 sec, 5 sec, 6 sec, 7 sec, 8 sec, 9 sec,* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled.*

Boot Up Num Lock Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off.* The default settings are *On.*

Password Check This option enables password checking every time the system boots or when you run AMIBIOS 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 the Advanced Setup chapter for instructions on changing a password. The Optimal and Fail-Safe defaults are *Setup*.

Cont'd

Boot To SCO Unix Set this option to *Yes* only if running the SCO Unix v3.0, 5.0 or higher operating system. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

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*.

Floppy Drive Seek Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Floppy Drive Swap Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Floppy Access Control This option specifies the read/write access that is set when booting from a floppy drive. The settings are *Read/Write* or *Read-Only*. The Optimal and Fail-Safe default settings are *Read/Write*.

Hard Disk Access Control This option specifies the read/write access that is set when booting from a hard disk drive. The settings are *Read/Write* or *Read-Only*. The Optimal and Fail-Safe default settings are *Read/Write*.

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*.

Cont'd

Quick Boot Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old **Above 1 MB Memory Test** Advanced Setup option. The settings are:

Setting	Description
Disabled	AMIBIOS test all system memory. AMIBIOS waits up to 40 seconds for a READY signal from the IDE hard disk drive. AMIBIOS waits for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a <Del> key press and runs AMIBIOS Setup if the key has been pressed.
Enabled	AMIBIOS does not test system memory above 1 MB. AMIBIOS 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 from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS 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. You cannot run AMIBIOS Setup at system boot, because there is no delay for the *Hit <Del> to run Setup* message.

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, Network, Floptical, SCSI, CDROM, IDE-0, IDE-1, IDE-2,* or *IDE-3.* The Optimal and Fail-Safe default settings are *IDE-0.*

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, Floppy, Floptical, CDROM,* or *IDE-0.* The Optimal and Fail-Safe default settings are *Floppy.*

Cont'd

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, Floptical, Floppy, CDROM,* or *IDE-0.* The Optimal and Fail-Safe default settings are *CD-ROM.*

4th 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, Floptical, CDROM,* or *IDE-0.* The Optimal and Fail-Safe default settings are *CD-ROM.*

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 Yes.

L1/L2 Cache This option sets the type of caching algorithm used by the L1 internal cache memory on the CPU and the L2 secondary cache memory. The settings are *WriteBack, WriteThru,* or *Disabled.* The Optimal and Fail-Safe default settings are *WriteBack.*

System BIOS Cacheable When set to *Enabled,* the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment are always copied from the BIOS ROM to system RAM for faster execution. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled.*

Cont'd

Caching Controller Set this option to *Present* if a caching controller is installed in the computer. The settings are *Present* or *Absent*. The Optimal and Fail-Safe default settings are *Absent*.

Video Shadow C000,32K This option specifies how the 32 KB of video ROM at C0000h is treated. The settings are:

Setting	Description
Disabled	The contents of the video ROM are not copied to RAM.
Enabled	The contents of the video ROM area from C0000h - C7FFFh are copied (shadowed) from ROM to RAM for faster execution.
Cached	The contents of the video ROM area from C0000h - C7FFFh are copied from ROM to RAM and can be written to or read from cache memory.

The Optimal default setting is Cached. The Fail-Safe default setting is *Disabled*.

Shadow C800,16K
Shadow CC00,16K
Shadow D000,16K
Shadow D400,16K
Shadow D800, 16K
Shadow DC00,16K These options enable shadowing of the contents of the ROM area named in the option. ROM areas not used by ISA adapter cards are allocated to PCI adapter cards. The settings are:

Setting	Description
Disabled	The contents of the named ROM area (C800, CC00, etc.) are not copied to RAM.
Cached	The contents of the named ROM area (C800, CC00, etc.) are copied from ROM to RAM and can be written to or read from cache memory.
Enabled	The contents of the named ROM area (C800, CC00, etc.) are copied from ROM to RAM for faster execution.

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

Chipset Setup

Chipset Setup options are displayed by choosing the Chipset icon from the WINBIOS Setup main menu. All Chipset Setup options are described in this section.

PCI 2.1 Compliance Set this option to *Enabled* to program the chipset to comply with the PCI Version 2.1 specification. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

DRAM Speed (ns) This option specifies the RAS access time (in nanoseconds) of the DRAM used in the computer for system memory. The settings are *60 ns* or *70 ns*. The Optimal and Fail-Safe default settings are *70 ns*.

Cont'd

DRAM ECC Mode This option sets the type of system memory checking. The settings are:

Setting	Description
Disabled	No error checking or error reporting is done.
Level I	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. If *Level I* is selected, the J27 External SMI software jumper on the Series 735 board is disabled.
Level II	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. If *Level II* is selected, AMIBIOS automatically sets the **Standard Power Management** option in Power Management Setup to *Enabled* to make sure that the System Management Interface (SMI) is enabled. If you do not want to enable power management, set the **Advanced Power Management (APM)** option to *Disabled* and set all Power Management Setup timeout options to *Disabled*. To enable power management, set **Advanced Power Management (APM)** to *Enabled* and set the power management timeout options as desired.

The following illustrates the difference between *Level I* and *Level II* ECC. Suppose a DRAM SIMM has a single bit uncorrectable error. Even writing fixed data to this bit will not remove the error.

Setting	then...
Level I	the data error is fixed during the memory read cycle every time the bad bit is accessed and the system continues to run, although every time the bad bit is read and corrected, CPU cycles are wasted.
Level II	the system tries to write the corrected data back to the bad bit in the DRAM SIMM. Since the bad bit in the SIMM cannot be fixed, writing data to the bad bit has no effect. The next time the error location is read, the chipset will once again find a bad bit. The chipset generates a Parity Error, indicating an uncorrectable memory error.

The Optimal and Fail-Safe defaults are *Disabled.*

Cont'd

PCI VGA USWC/Video Frame Buffer Set this option to *Enabled* to enable the USWC memory attribute and improve video performance when a PCI video adapter is installed. However, VGA card drivers may not behave correctly when this option is set to *Enabled*. This option is only available if the PCI VGA card supports pre-fetchable video frame buffers.

The settings are *Disabled* or *Enabled.* The Optimal and Fail-Safe defaults are *Disabled.*

Optional ROM *The MegaRUM motherboard has an empty option ROM socket. You can install a 32 KB ROM in this socket. The starting memory address of this ROM can be either C000h* ***(only if this computer does not have a VGA controller****), C800h, D000h, or D800h. The following three Chipset Setup options configure the option ROM only if you have installed a ROM chip in the option ROM socket.*

Optional ROM Decode This option specifies the starting address of an adapter ROM to be decoded. The settings are *C000h, C800h, D000h, D800h*, or *Disabled.* The Optimal and Fail-Safe defaults are *Disabled.*

Optional ROM Shadow Before Init Set this option to *Enabled* to permit the contents of the option ROM to be copied to RAM before being initialized by AMIBIOS during Power On Self Test. This option does not appear if the **Optional ROM Decode** option is set to *Disabled*. The settings are *Disabled* or *Enabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Optional ROM Cacheable Set this option to *Enabled* to allow the contents of the option ROM to be read from or written to cache memory. This option does not appear if the **Optional ROM Shadow Before Init** option is set to *Disabled*. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

SCSI Channel #1 Set this option to *Enabled* to enable SCSI channel 1 on the motherboard. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled.*

SCSI Channel #2 Set this option to *Enabled* to enable SCSI channel 2 on the motherboard. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled.*

Watchdog Timer This motherboard has an integrated system watchdog timer. The watchdog timer reboots the computer if the computer locks up (if there is no bus activity for 1.2 seconds). Set this option to *Enabled* when running applications (such as a security system) that require continuous monitoring. The computer then automatically resets after it locks up and the application can continue running with no human intervention required. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

CPU Thermal Alarm Set this option to *Enabled* to enable an alarm if the Pentium II CPU overheats. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

ISA 8 Bit I/O Recovery Time This option specifies the length of the delay that is added to the CPU cycle between consecutive 8-bit I/O operations. The length of the delay is related to the CPU type and frequency. The settings are *1 Sysclock, 2 Sysclocks, 3 Sysclocks, 4 Sysclocks, 5 Sysclocks, 6 Sysclocks, 7 Sysclocks, 8 Sysclocks,* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

ISA 16 Bit I/O Recovery This option specifies the length of the delay that is added to the CPU cycle between consecutive 16-bit I/O operations. The length of the delay is related to the CPU type and frequency. The settings are *1 Sysclock, 2 Sysclocks, 3 Sysclocks, 4 Sysclocks,* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Memory Hole This option specifies the location of an area of memory that cannot be addressed on the ISA bus. The settings are *Disabled, 15 MB-16 MB,* or *512KB-640KB.* The Optimal and Fail-Safe default settings are *Disabled.*

Deturbo Frequency (MHz) This option specifies the deturbo frequency (in megahertz). The deturbo frequency is a low speed used only for old software that cannot operate at high speed. The settings are *6 MHz, 8 MHz, 12 MHz,* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

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 *Disabled.*

USB Keyboard/Mouse Legacy Support Set this option to *Enabled* to enable USB support for legacy keyboards and mice. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Power Management Setup

The AMIBIOS Setup options described in this section are selected by choosing the Power Management Setup icon from the Setup section on the AMIBIOS Setup main menu.

Standard Power Management Set this option to *Enabled* to enable standard power management, including SMI support. The settings are *Enabled, Instant On,* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled.*

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

Instant-On Timeout (Minute) This option specifies the length of a period of system inactivity while the computer is in Full power on state. When this length of time expires, the computer enters a low power consumption state, but the computer can return to full power instantly when any system activity occurs. *This option is only available if supported by the computer hardware.* 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., 14 min,* or *15 min*. The Optimal and Fail-Safe default settings are *Disabled.*

Auxiliary Power Supply Timeout This option specifies the power state that the auxiliary power supply 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 and Fail-Safe default settings are *Disabled.*

Cont'd

DPMS Video Power Down Mode This option specifies the power state that a DPMS (Display Power Management Specification)-compliant 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 and Fail-Safe default settings are *Disabled.*

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 *Standby, Suspend,* or *Off.* The Optimal and Fail-Safe default settings are *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, Standby,* or *Suspend.* The Optimal and Fail-Safe default settings are *Disabled.*

Hard Disk Timeout (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., 14 min,* or *15 min*. The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

Standby Timeout 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, 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., 14 min,* or *15 min*. The Optimal and Fail-Safe default settings are *Disabled.*

Suspend Timeout 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, 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., 14 min,* or *15 min*. The Optimal and Fail-Safe default settings are *Disabled.*

Slow Clock Ratio This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as a ratio between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are *1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64,* or *1:128*. The Optimal and Fail-Safe default settings are *1:8.*

Cont'd

IRQ3
IRQ4
IRQ5
IRQ7
IRQ9
IRQ10
IRQ11
IRQ12
IRQ15

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 and Fail-Safe default settings are *Disabled*.

PCI/PnP Setup

Choose the PCI/PnP Setup icon from the WINBIOS Setup screen to display the PCI and Plug and Play Setup options, described below.

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:

VGA Palette Snoop Bit Setting	Action
Disabled	Data read and written by the CPU is only directed to the PCI VGA device's palette registers.
Enabled	Data read and written by the CPU is directed to the both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

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

Allocate IRQ To PCI VGA Set this option to *Yes* to allow AMIBIOS to allocate an IRQ for the VGA controller on the PCI bus. When set to *No*, AMIBIOS will not allocate an interrupt to the PCI VGA, even if the PCI VGA request an interrupt. The settings are *Yes* or *No*. The Optimal default setting is *No*. The Fail-Safe default setting is *Yes*.

USB Device Latency This option specifies the latency for USB device. The settings are *Disabled*, The settings are *32, 64, 96, 128, 160, 192, 224,* or *248*. The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

PCI Slot-1 Latency
PCI Slot-2 Latency
PCI Slot-3 Latency
PCI Slot-4 Latency
PCI Slot-5 Latency
PCI Slot-6 Latency These options specify the latency timings (in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are *32, 64, 96, 128, 160, 192, 224,* or *248*. The Optimal default setting is *248*. The Fail-Safe default setting is 248.

USB Device IRQ Preference
PCI Slot-1 IRQ Preference
PCI Slot-2 IRQ Preference
PCI Slot-3 IRQ Preference
PCI Slot-4 IRQ Preference
PCI Slot-5 IRQ Preference
PCI Slot-6 IRQ Preference These options specify the IRQ priority for USB and PCI devices installed in the PCI expansion slots. The settings are *Disabled, Auto, IRQ 5, IRQ 9, IRQ10, IRQ11, IRQ 14,* or *IRQ15*. The Optimal and Fail-Safe default settings are *Auto*.

PCI SCSI-1 Latency
PCI SCSI-2 Latency These options specify the latency timings (in PCI clocks) for PCI SCSI devices. The settings are *32, 64, 96, 128, 160, 192, 224,* or *248*. The Optimal and Fail-Safe default settings are *Disabled*.

Cont'd

PCI SCSI-1 IRQ Preference
PCI SCSI-2 IRQ Preference
PCI SCSI-3 IRQ Preference
PCI SCSI-4 IRQ Preference
PCI SCSI-5 IRQ Preference
PCI SCSI-6 IRQ Preference These options specify the IRQ priority for USB and PCI devices installed in the PCI expansion slots. The settings are *Disabled, Auto, IRQ 5, IRQ 9, IRQ10, IRQ11, IRQ 14,* or *IRQ15*. The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

IRQ3
IRQ4
IRQ5
IRQ7
IRQ9
IRQ10
IRQ11
IRQ12
IRQ14
IRQ15

These options specify the bus that the specified IRQ line uses. Use these options to reserve IRQs for legacy ISA adapter cards. The setting determines if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that can be configured by the system BIOS. The BIOS reads the ESCD NVRAM to find all available IRQs. If more IRQs must be removed from the pool, use these options to reserve the IRQ by assigning an *ISA/EISA* setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as *PnP*. **IRQ12** only appears if the **PS/2 Mouse Support** option in Advanced Setup is set to *Disabled.* IRQ14 and 15 are not available if the onboard PCI IDE is enabled. If all IRQs are set to *ISA* and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 is still available because at least one IRQ must be available for PCI and PnP devices. The settings are *ISA, Auto, PnP, Primary PCI, or Secondry PCI.* The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

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*.

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.

This option does not appear if the **Reserved Memory Size** option is set to *Disabled.*

The settings are *C0000, C4000, C8000, CC000, D0000, D4000, D8000,* or *DC000*. The Optimal and Fail-Safe default settings are *N/A.*

Peripheral Setup

Peripheral Setup options are displayed by choosing the Peripheral Setup icon from the WINBIOS Setup main menu. All Peripheral Setup options are described in this section.

Onboard Floppy Controller Set this option to *Enabled* to enable the floppy drive controller on the motherboard. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled.*

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

Onboard IDE Bus Master Set this option to *Enabled* if the onboard IDE controller is a PCI bus mastering device. This option is not available if the **Onboard Primary/Secondary IDE** option is set to *Disabled*. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled.*

Onboard Primary Prefetch This option enables the prefetch feature for the specified IDE device attached to the onboard Primary IDE controller. The settings are *Master, Slave, Both,* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Onboard Secondary Prefetch This option enables the prefetch feature for the specified IDE device attached to the onboard Secondary IDE controller. The settings are *Master, Slave, Both,* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

Offboard PCI/ISA IDE Card This option specifies the expansion slot that the offboard PCI or ISA IDE Controller adapter card is installed in. The **Onboard Primary/Secondary IDE** option must be set to *Disabled* if this option is set to any value except *Disabled*.

The settings are *Absent, Primary PCI, Secondry PCI,* or *ISA.* The Optimal and Fail-Safe default settings are *Absent*.

Offboard Primary/Secondary This option specifies the IDE channel used by the offboard PCI controller. The settings are *Primary, Secondary,* or *Both*. The Optimal and Fail-Safe default settings are *Primary.*

Offboard PCI IDE Primary IRQ
Offboard PCI IDE Secondary IRQ These options specify the PCI interrupt used by the primary and secondary IDE channels if an offboard IDE controller is installed in the computer. The settings are *Disabled, Hardwired, INTA, INTB, INTC,* or *INTD.* The Optimal and Fail-Safe default settings are *Disabled.*

Serial Port1 IRQ This option specifies the IRQ (Interrupt Request Line) used by serial port 1. The settings are *IRQ 4* or *Disabled.* The Optimal default setting is *IRQ 4.* The Fail-Safe default setting is *Disabled.*

Serial Port1 Address This option specifies the base I/O port address for serial port 1. The settings are *3E8h, 3F8h,* or *Disabled.* The Optimal default setting is *3F8h.* The Fail-Safe default setting is not provided

Cont'd

Serial Port1 FIFO This option enables the FIFO buffer for the first serial port. The settings are *Enabled* or *Disabled*. The Optimal default setting is *Disabled.* The Fail-Safe default setting is *Disabled.*

> ***Caution***
> Do not enable the Serial Port 1 FIFO option if a mouse is attached to COM1.

Serial Port2 IRQ This option specifies the IRQ (Interrupt Request Line) used by serial port 1. The settings are *IRQ 3, IRQ 4* or *Disabled*. The Optimal default setting is *IRQ 3.* The Fail-Safe default setting is *Disabled*.

Serial Port2 Address This option specifies the base I/O port address for serial port 2. The settings are *2F8h, 2E8h,* or *Disabled*. The Optimal default setting is *2F8h.* The Fail-Safe default setting is not provided.

Serial Port2 FIFO This option enables the FIFO buffer for the second serial port. The settings are *Enabled* or *Disabled.* The Optimal default setting is *Disabled.* The Fail-Safe default setting is not provided.

> ***Caution***
> Do not enable the Serial Port2 FIFO option if a mouse is attached to COM2.

Parallel Port IRQ This option specifies the IRQ (Interrupt Request Line) used by the parallel port. The settings are *Disabled, IRQ 5,* or *IRQ 7*. The Optimal default setting is *IRQ 7*. The Fail-Safe default setting is *Disabled.*

Cont'd

Parallel Port Address This option specifies the base I/O port address for the parallel port. The settings are *378h, 278h,* or *Disabled.* The Optimal default setting is *378h*. The Fail-Safe default setting is not provided.

Parallel Port Mode This option specifies the parallel port mode. ECP and EPP are both bidirectional data transfer modes that adhere to the IEEE P1284 specifications. The settings are:

Setting	Description
Normal	The standard AT-compatible parallel port mode is used.
EPP	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.
ECP	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.

The Optimal default setting is *Normal*. The Fail-Safe default setting is not provided.

Parallel Port DMA Channel This option is only available if the setting for the **Parallel Port Mode** option is *Extended* or *ECP*. This option sets the DMA channel used by the parallel port. The settings are *DMA CH 1* or *DMA CH 3*. The Optimal and Fail-Safe default settings are not provided.

Section 2 Security

Three icons appear in this part of the WINBIOS Setup screen:

- Supervisor (Password),
- User (Password), and
- Anti-Virus.

Two Levels of Passwords Both the Supervisor and the User icons configure password support. If you use both, 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 WINBIOS Setup is executed, using either or both the Supervisor password or User password.

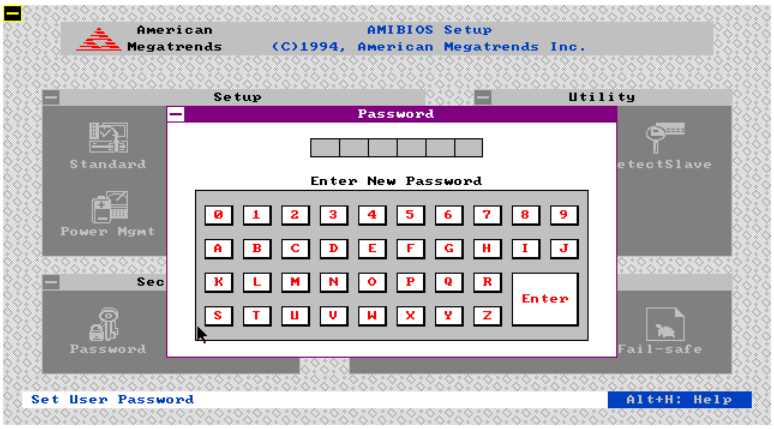
AMIBIOS Password Support

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

In addition, the computer can be configured so that all users must enter a password every time the system boots or when WINBIOS Setup is executed.

Setting a Password

The password check option is enabled in Advanced Setup by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when WINBIOS is run). The password is encrypted and stored in NVRAM.



password. You can either type the password on the keyboard or select each letter of the password, one at a time, using the mouse. 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.

If You Do Not Want to Use a Password Just press <Enter> when the password prompt appears.

Changing a Password

Select the *Supervisor* or *User* icon from the Security section of the WINBIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the characters entered. After the new password is entered, retype the new password as prompted and press <Enter>.

If the password confirmation is incorrect, an error message appears. If the new password is entered without error, press <Esc>. The password is stored in NVRAM after WINBIOS completes. The next time the system boots, a password prompt appears if the password function is present and enabled.

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).

Anti-Virus

When this icon is selected from the Security section of the WINBIOS Setup main menu, AMIBIOS issues 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. The settings are *Enabled* or *Disabled*. 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)? _
```

Section 3 Utility

The icons in this section of the WINBIOS Setup main screen permit you to choose a different set of colors for the WINBIOS Setup screens and to display all WINBIOS Setup text displayed on the screen in a different language.

If you choose to display the WINBIOS Setup screen text in a different language, the text for the screen messages written in the selected language must have been incorporated into the WINBOIS Setup code in AMIBIOS when the BIOS was manufactured.

Color Set Color Set sets the Setup screen colors.

Language If this feature is enabled, you can choose to display all WINBIOS Setup screen text in different languages.

Section 4 Default

The icons in this section permit you to select a group of settings for all WINBIOS Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a better chance of working when the system is having configuration-related problems.

Original Choose the Original icon to return to the system configuration values present in WINBIOS Setup when you first began this WINBIOS Setup session.

Optimal You can load the optimal default settings for the WINBIOS by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If NVRAM is corrupted, the Optimal settings are loaded automatically.

Fail-Safe You can load the Fail-Safe WINBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the WINBIOS Setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

3 Programming Flash ROM

All versions of the MegaRUM 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 S758P.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.
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	Load the optional default and save.

Cont'd

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

Step	Action
1	Reads S758P.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.

S758P.ROM S758P.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 PCI ISA motherboard must be updated.

S758P.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 S758P.ROM.

Cont'd

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 screen), 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 S758P.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	S758P.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 S758P.ROM in the root directory of the floppy diskette in drive A:.
F1h	The S758P.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the S758P.ROM.
F3h	Start reading the S758P.ROM file, cluster by cluster.
F4h	The S758P.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 F0000-FFFFFh 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 WINBIOS 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 J33 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 screen.*

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 WINBIOS 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.

A Specifications

Engineering Specifications

Temperature Ranges The following values are ambient temperatures inside the computer case. The board temperatures reflect the dual Pentium 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
120, 133, 150, 166, 180, 200, 210, 233, 240, 266 MHz or higher speeds	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.