MegaPro

Dual Pentium® Pro

PCI ISA Motherboard

User's Guide

MAN–745
2/5/97

American Megatrends, Inc.
6145F Northbelt Parkway
Norcross, GA 30071

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Revision History

2/5/97 Initial release of preliminary version

Preface

To the OEM

Thank you for purchasing the high performance American Megatrends MegaPro Dual Pentium Pro 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 MegaPro 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 MegaPro PCI motherboard. It explains how to assemble a system based on the MegaPro 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 770–246–8645.

American Megatrends BBS

The American Megatrends BBS permits OEMs, VARs, and system integrators to access technical information about motherboard and BIOS products. Product Engineering Change Notices, Tech Tips, Technical Notes, and complete technical manuals are available.

Data Transmission Rates

The American Megatrends BBS automatically handles modems with data transmission rates from 1,200 to 28,800 bps.

BBS Phone Numbers

The following table lists the characteristics of the BBS phone numbers. The BBS requires no parity, eight data bits, and one stop bit.

Phone Number	Characteristics
770–246–8780	28,800 baud rate. Supports v.34.
770–246–8781	28,800 baud rate. Supports v.34.
770–246–8782	Supports HST and v.42.
770–246–8783	Supports HST and v.42.

Packing List

You should have received the following:

- a MegaPro PCI motherboard,
- two serial cables,
- one parallel cable,
- one VGA cable,
- VGA driver diskettes for Windows 95 and Windows NT V3.5x,
- diskette containing the American Megatrends DMI Wizard software utility and the Server Management Software for Windows NT,
- a Warranty Card, and
- the American Megatrends MegaPro PCI Pentium Pro 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.

Seethe memory section for information about approved system memory parts and vendors.

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 MegaPro motherboard features are:

- supports two Intel Pentium Pro CPUs operating at 133, 150, 166, 180, or 200 MHz,
- supports up to 512 MB of system memory,
- server management,
- onboard PCI VGA,
- parity checking or ECC Error Checking and Correction,
- PCI local bus throughput of 132 MBs,
- four ISA expansion slots, and
- four PCI expansion slots.

ISA DMA or Bus Masters

The MegaPro Pentium Pro PCI ISA motherboard conforms to the PCI Version 2.1 specification, if the PCI 2.1 Compliance option in Chipset Setup is set to Enabled. The Version 2.1 PCI specification requires a deterministic latency for PCI devices. Computers that use ISA DMA or ISA bus masters will experience longer access latencies if the PCI 2.1 Compliance Chipset Setup option is set to Enabled. 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

Onboard I/O

The MegaPro motherboard includes:

- 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 VGA connector,
- a keyboard DIN connector, and
- a 9–pin berg mouse connector.

Server Management Software

The server management software for Windows NT only monitors the following hardware parameters:

- CPU ambient temperatures,
- system voltage levels,
- CPU heat sink and chassis fan operation,
- chassis intrusion, and
- memory failure reporting if ECC is enabled

VGA Specification

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

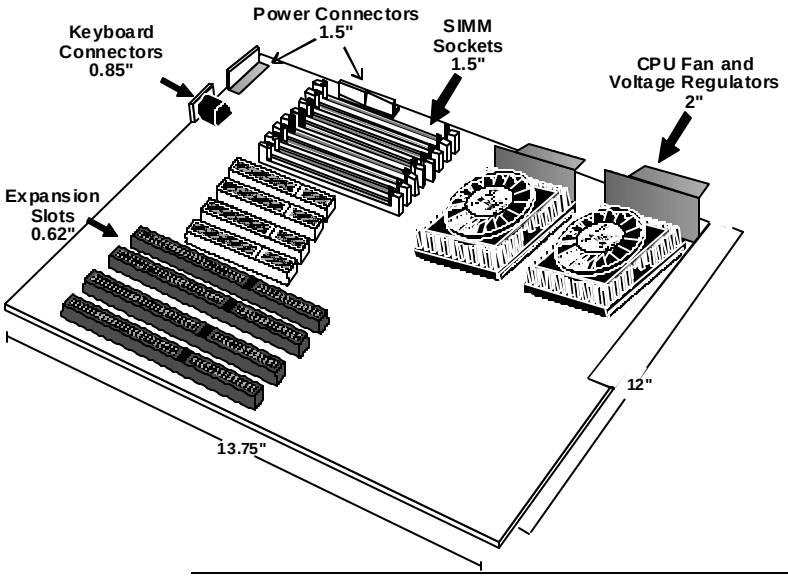
- 2 MB SGRAM. This RAM cannot be upgraded,
- a VGA cable is included, and
- video drivers for Windows 95 and Windows NT will be provided.

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.

MegaPro PCI Dimensions

The motherboard is approximately 12” by 13.75”.



STOP

Warning

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

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 megaohm resistor instead of the anti–static mat. Similarly, a strip of conductive aluminum foil wrapped around the wrist and grounded through a 1 megaohm 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

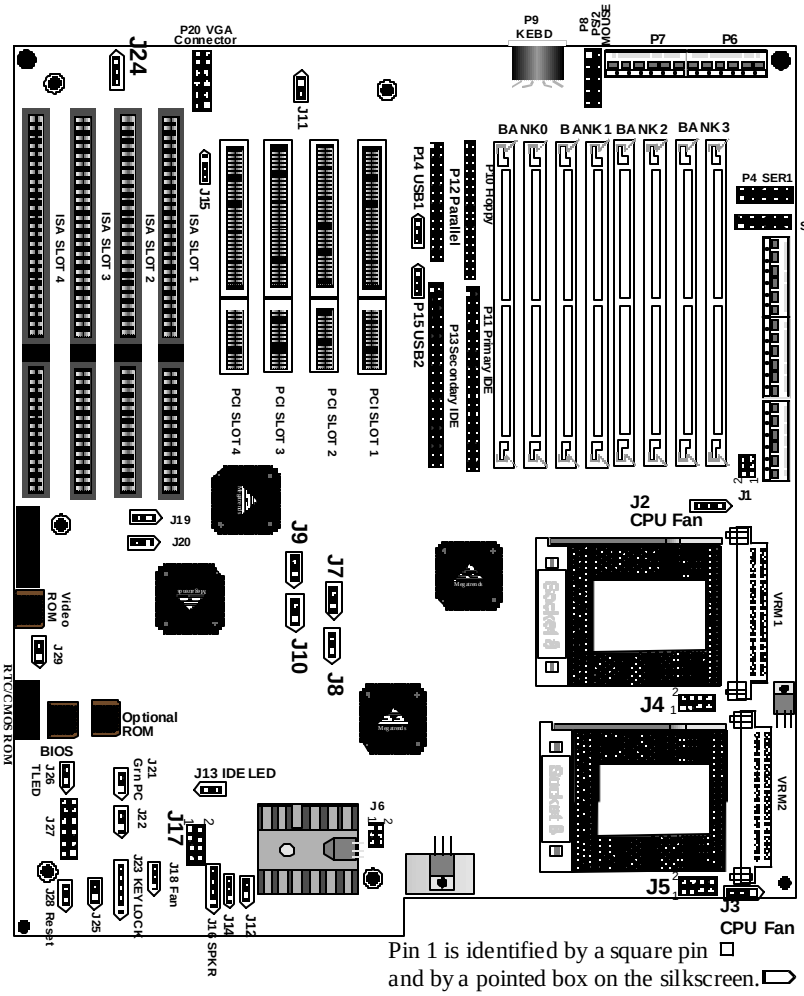
Set all jumpers and install the CPU before placing the motherboard in the chassis.

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.

MegaPro Motherboard Layout



Pin 1 is identified by a square pin □
and by a pointed box on the silkscreen.⌂

Step 2 Configure CPU

J7, J8, J9, J10, J17, and J24 select the CPU speed for the two CPUs. Both CPUs are configured to the same speed. See the illustration on the previous screen for the jumper locations.

CPU Speed

If using two CPUs with different speed ratings, set the motherboard jumpers to the lower CPU speed.

CPU Speed	J7	J8	J9	J10	J17	J24
133 MHz	Open	Short	Open	Short	Short Pins 1–2, Short Pins 3–4, Short Pins 5–6, Short Pins7–8	Short Pins 1–2
150 MHz	Short	Open	Short	Open	Short Pins 3–4, Short Pins 5–6, Short Pins7–8	Short Pins 1–2
166 MHz	Open	Short	Open	Short	Short Pins 3–4, Short Pins 5–6, Short Pins7–8	Short Pins 1–2
180 MHz	Short	Open	Short	Open	Short Pins 1–2, Short Pins 5–6, Short Pins7–8	Short Pins 1–2
200 MHz	Open	Short	Open	Short	Short Pins 1–2, Short Pins 5–6, Short Pins7–8	Short Pins 1–2

Important

Please contact American Megatrends technical support at 770–246–8645 to support a CPU running at a higher speed.

Cont'd

CPU Voltage

J4 and J5 set the CPU voltage. Each CPU can be independently set to the correct CPU core voltage. The factory setting for both CPUs is 3.3V. It should not be changed unless the CPU is rated differently. J4 sets the CPU voltage for the CPU in U14. J5 sets the CPU voltage for the CPU in U15. The CPU voltage settings:

Core CPU Voltage	J4 and J5 Setting
3.5V	Short Pins 1–2 Short Pins 3–4 Short Pins 5–6 Short Pins 7–8
3.4V	Short Pins 1–2 Short Pins 3–4 Short Pins 5–6
3.3V Factory Setting	Short Pins 1–2 Short Pins 3–4 Short Pins 7–8
3.2V	Short Pins 1–2 Short Pins 3–4
3.1V	Short Pins 1–2 Short Pins 5–6 Short Pins 7–8
3.0V	Short Pins 1–2 Short Pins 5–6
2.9V	Short Pins 1–2 Short Pins 7–8
2.8V	Short Pins 1–2
2.7V	Short Pins 3–4 Short Pins 5–6 Short Pins 7–8
2.6V	Short Pins 3–4 Short Pins 5–6
2.5V	Short Pins 3–4 Short Pins 7–8
2.4V	Short Pins 3–4
2.3V	Short Pins 5–6 Short Pins 7–8
2.2V	Short Pins 5–6
2.1V	Short Pins 7–8
No Voltage	OPEN

Cont'd

Step 2 Configure CPU, Continued

Voltage Regulator

One Voltage Regulator Module is shipped with every MegaPro motherboard. You need another VRM if you install two CPUs. Order VRMs for Intel Pentium Pro CPUs from:

Manufacturer	Part Number	AMI Part Number
VXI Electronics, Inc. 4607 SE International Way Milwaukie OR 97222 503–652–7300 Fax: 503–786–5011	073–20674–07X	MDL–P6–V5A124

Connect CPU Fan

J3 and J2 are 3–pin bergs that connect the fan on the CPU heat sink to motherboard power. J2 is the CPU fan connector for the CPU in U14. J3 is the CPU fan connector for the CPU in U15.

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

Warning

The red wire from the CPU fan must be connected to Pin 3.

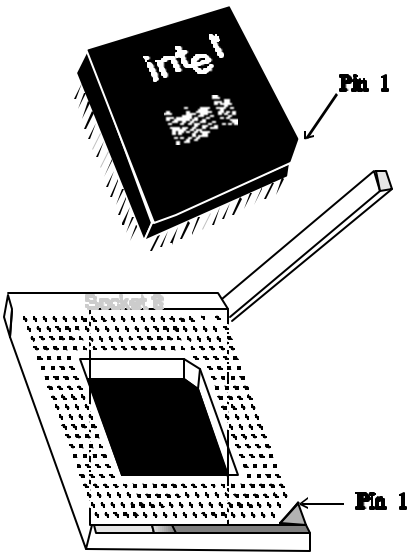
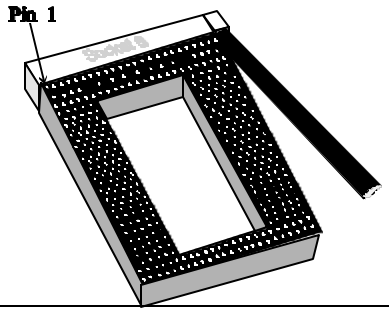
Cont'd

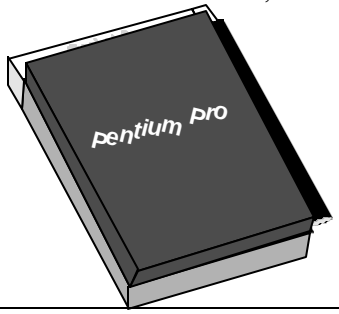
Step 2 Configure CPU, Continued

Install CPU

Install the CPU in the ZIF socket by performing the following steps. The CPU sockets are near one edge of the motherboard.

> STOP
>
> ***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	Action
1	Lift the lever on the ZIF socket. The empty CPU socket looks like this. 
2	Check for bent pins on the CPU. Gently straighten any bent pins with pliers. Place the CPU in the middle of the socket, as shown below. Make sure that pin 1 of the CPU is aligned with pin 1 of the socket. Make sure you are properly grounded while handling the CPU. 

Step	Action
3	Complete installation by lifting the ZIF lever to the other side of the socket, as shown below. 

Step 3 Set Additional Jumpers

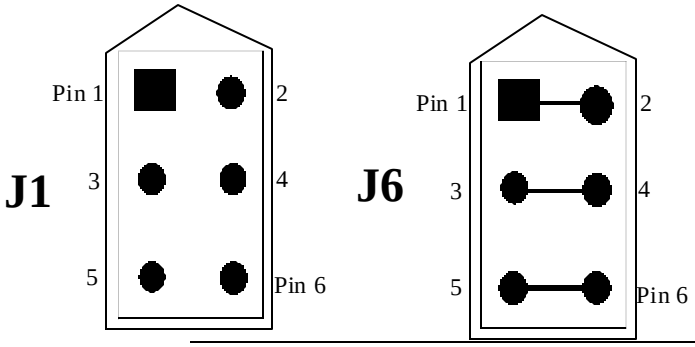
J1 and J6 Power

J1 and J6 select the 3.3V power source. J1 and J6 are 6–pin bergs. You can provide 3.3V power either:

- through the voltage regulator which is the default source, or
- from a 3.3V power supply.

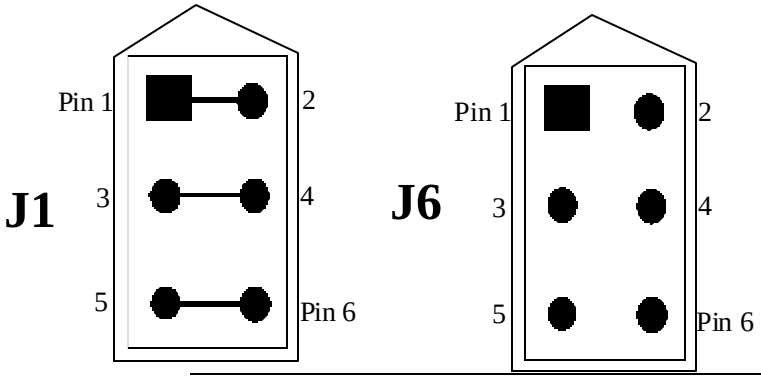
3.3V From Voltage Regulator

Set J1 and J6 as shown below to configure 3.3V power through the voltage regulator.



3.3V from a 3.3V Power Supply

Set J1 and J6 as shown below to configure 3.3V power from a 3.3V power supply.



Cont'd

Step 3 Set Additional Jumpers, Continued

J11 Testing

J11 is a 2–pin berg used only for initial testing. Always leave J11 open. Never place a jumper on J11.

J12 Chassis Door Open

J12 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.

J14 SMI Select

J14 is a 3–pin berg that selects the SMI. Pins 1–2 should always be shorted.

J18 Chassis Fan Connector

J18 is a 3–pin berg that provides +12V power to the main chassis fan. The chassis fan should provide a tachometer output on Pin 1, so it can be monitored by the onboard server management hardware. The pinout is:

Pin	Description
1	Fan Sense
2	Ground
3	+12V

J19 Enable Onboard PCI VGA

J19 is a 2–pin berg that enables or disables the onboard PCI ATI VGA controller. The J19 settings are:

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

J20 VGA Interrupt Enable

J20 is a 2–pin berg that enables interrupt support for the onboard PCI ATI VGA controller:

Onboard PCI ATI VGA Interrupt Setting	J20 Setting
PCI interrupt enabled for onboard PCI ATI VGA Controller	OPEN
PCI interrupt disabled for onboard PCI ATI VGA Controller	Shorted Default

Cont'd

J22 Server Management SMI

J22 is a 2–pin berg that enables the server management SMI. The J22 settings are:

Server Management SMI Setting	J22 Setting
Server management SMI is disabled.	OPEN Default
Server management SMI is enabled.	Shorted

J25 External SMI Switch

J25 is a 2–pin berg that can be connected to a switch to generate an external SMI. The J25 settings are:

External SMI Switch Setting	J22 Setting
External SMI is disabled.	OPEN Default
External SMI is enabled.	Shorted

J27 External 12C Module Connector

J27 is a 14–pin dual inline berg that connects to an external 12C module that has advanced server management capabilities. J27 will be used in the future to support Advanced Server Management. At present, do not connect anything to J27.

J29 Erase Password

J29 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 J29 for a few seconds to erase the old password and all system configuration information. You must then reboot the computer, run AMIBIOS Setup, and restore all system configuration information. The J29 settings are:

CMOS Drain	J29 Setting
Normal operation factory setting	OPEN
The contents of CMOS RAM are destroyed.	Shorted

Step 4 Install Memory

System Memory

There are eight 32–bit SIMM sockets in 4 banks. System memory must be populated one bank at a time. Each bank has two sockets. Bank0 includes U17 and U18. Bank1 includes U13 and U16. Bank2 includes U9 and U12. Bank3 includes U5 and U8. Up to 512 MB of system memory can be installed on the motherboard. 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 MegaPro PCI is 8 MB. Each socket can hold one SIMM. 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, or
- 16 MB x 32 or 36 SIMMs.

Fast Page Mode, EDO, and Burst EDO SIMMs cannot be mixed. The motherboard supports SIMMs operating at 50 or 60 ns RAS access time.

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. See the list of approved SIMMs.

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.

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 4 Install Memory, Continued

Select SIMMs

Fast Page Mode SIMMs must meet the following specifications. EDO and Burst EDO SIMMs can also be installed on the MegaPro motherboard.

Parameter	Specification
Page Mode	FAST
Refresh	CAS before RAS
t_{CAC}	≤ 20 ns
t_{RAC}	≤ 60 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–6
"	Mitsubishi	MH1M36ADJ–6
"	PNY	P361000–60
"	Motorola	MCM36100AS–60
"	Oki	MSC2355–60YS12
"	Samsung	KMM5361000AV–6
2 MB x 36	PNY	P362000–60
"	Samsung	EMM53620036–60
4 MB x 36	Micron	MT12D436M–6
"	Mitsubishi	MH4M36SAJ–6
"	Motorola	MCM36400S–60
"	PNY	P364000–60
"	Samsung	KMM5364100–6
8 MB x 36	Motorola	MCM36800S–60
"	PNY	P368000–60
"	Advantage Memory Corp.	A836–4x4–66T
"	Simple Technology, Inc.	STI368000–60T
"	Centon	CX8MEGX36–6T
"	Samsung	KMM5368100–6

Cont'd

64 MB SIMMs

The following 16 MB x 36 64 MB SIMMs have been extensively tested. The test were done with all eight SIMM sockets filled, with a total of 512 MB, under several operating systems in several different operating environments. The MegaPro motherboard uses Tin–Lead SIMM sockets. We recommend that you use only tin–plated SIMMs.

Memory Manufacturer	Contact	Phone	Fax	Part Number
Advantage Memory Corporation	Dwayne Abrader	800–245–5299	714–453–8158	A1636–16XT–66T
Simple Technology Inc.	Maureen Blando	800–367–7330 ext 240	714–851–2758	STI3616100A–60T
Samsung	All–American Semiconductor or Bell Industries	See your local sales rep.	See your local sales rep.	KMM53616000AK–6T

Cont'd

Step 4 Install Memory, Continued

Installing SIMMs

Install 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 in the eight SIMM sockets.

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. See the above table for a list of 64 MB 16 MB x 36 SIMMs that have been tested and approved by American Megatrends. 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.

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.

Step 5 Install the Motherboard

The motherboard mounting hole pattern is the same as the mounting hole pattern on the standard full–sized AT motherboard. 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. See the drawing on the next screen.

Warning

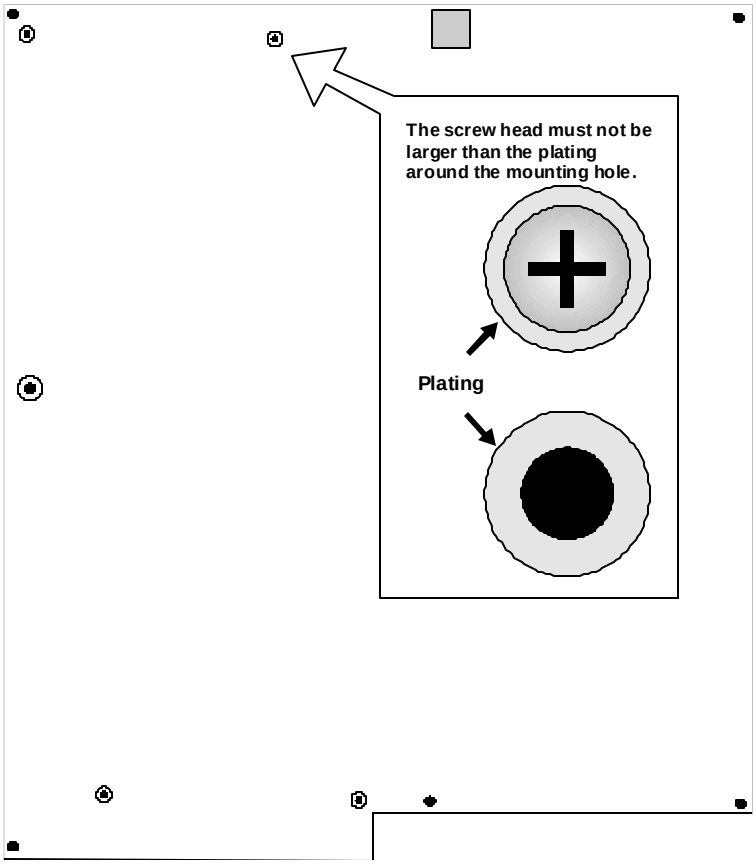
If using metallic screws, make sure you use them only in the plated mounting holes.

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

See the graphic on the following screen.

Cont'd

Step 5 Install Motherboard, Continued



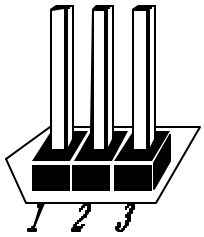
Step 6 Attach Cables

Connectors

The MegaPro PCI motherboard includes many connectors. Connection instructions, illustrations of connectors, and pinouts are described below.

Cable Connector Ends

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



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Calculating Power Requirements

The power requirements are unique for each system. Power requirements depend on the system configuration.

An additional 8A on +5V is required for each Pentium Pro CPU that is installed. If both Pentium Pro CPUs are installed on the MegaPro motherboard, the CPUs alone require 16 A on +5V. Add the power required by each adapter card that is installed. Check the power requirements in the electrical specification for each adapter card. Determine the power required by every drive in the system. Use at least a 400 watt power supply, which should have built–in filters to suppress radiated emissions.

> ***Important***
>
> Use at least a 400 watt power supply to guarantee reliable operation.

Connect Power Supply

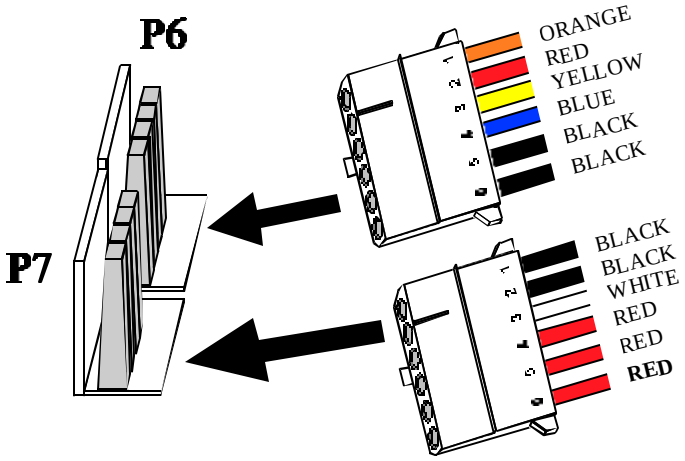
The power supply should match the physical configuration of the chassis. Make sure the power switch is off before assembly.

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.

Cont'd

Connect Power Cables

Attach the power supply cables to the power connector P6 and P7 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 P7. The other connector on the end of the power cable is attached to P6.

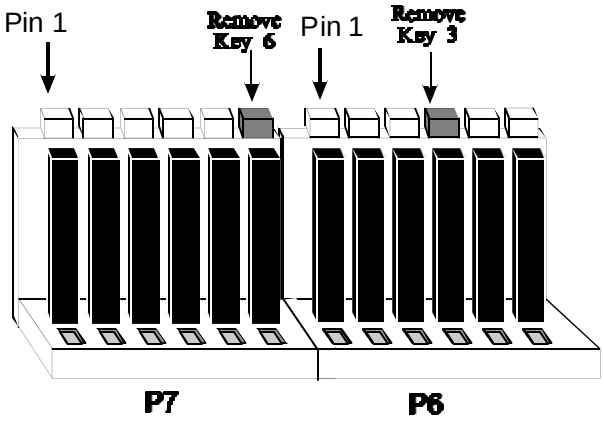


Power Supply Connectors

Cont'd

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.



P6 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

P7 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

Step 6 Attach Cables, Continued

P1 Pinout P1 is an auxiliary 5V power connector.

Pin	Description
1	VCC Red wire
2	VCC Red wire
3	VCC Red wire
4	Ground Black wire
5	Ground Black wire
6	Ground Black wire

P2 Pinout P1 provides 3.3V power.

Pin	Description
1	3.3V
2	3.3V
3	3.3V
4	Ground Black wire
5	Ground Black wire
6	Ground Black wire

P3 Pinout P3 provides 3.3V power.

Pin	Description
1	Ground Black wire
2	Ground Black wire
3	Ground Black wire
4	3.3V
5	3.3V
6	3.3V

P9 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

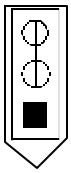
Connect Mouse Cable

P8 is the mouse connector. P8 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

J15 PS/2 Mouse IRQ

J15 is a three–pin berg that enables the PS/2 mouse interrupt IRQ12). Short Pins 2–3 of J15 to enable IRQ12 as the PS/2 mouse interrupt. You should always short Pins 2–3 of J15 to enable the PS/2 mouse interrupt. The only reason you would ever have to short Pins 1–2 of J15 is if you wanted an adapter card on the ISA bus to use IRQ12. You would then have to set the Mouse Support option in Advanced Setup to Disabled.



J15 Pins 2-3 Shorted
IRQ12 used for PS/2 Mouse

Cont'd

J21 Green PC Power

J21 is a two–pin berg that connects to a Green PC–compliant power supply. When the computer enters a power conserving state, a signal is sent from this berg to the power supply to permit the power supply to switch to a low power, high–efficiency mode.

The + on Pin 2 identifies the positive connector.

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.

J16 Speaker Connector

J16 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.

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

Cont'd

J23 Keyboard Lock

J23 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

J26 Turbo LED

J26 is a two–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.

J13 IDE LED

J13 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 J13.

Cont'd

Step 6 Attach Cables, Continued

Onboard Adapters

The MegaPro PCI motherboard has:

- two serial ports P4 and P5,
- two USB connectors P14 and P15,
- a parallel port P12,
- a VGA connector P20,
- an IDE controller on the PCI bus the primary IDE connector is P11 and the secondary IDE connector is P13, and
- a floppy controller P10.

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

P4 SER1 P5 SER2

P4 and P5 are 9–pin connectors that provide an AT–compatible serial port interface. Connect the cables supplied with the motherboard to P4 and P5. Pin 10 is cut. The serial port base I/O port address and other serial port settings can be selected in Peripheral Setup in WINBIOS Setup. The P4 and P5 pinout is:

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

P14, P15 USB Connectors

P14 and P15 are 4–pin USB connectors.

Cont'd

P12 Parallel Port

P12 is a 25–pin connector for a parallel port. The pinout is below. All parallel port settings must be configured in Peripheral Setup in WINBIOS Setup. Connect the 16–pin to DB25 cable provided with the motherboard to P12. This interface supports:

- the standard Centronics–compatible parallel port,
- the Extended Capabilities Port , and
- the Enhanced Parallel Port .

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

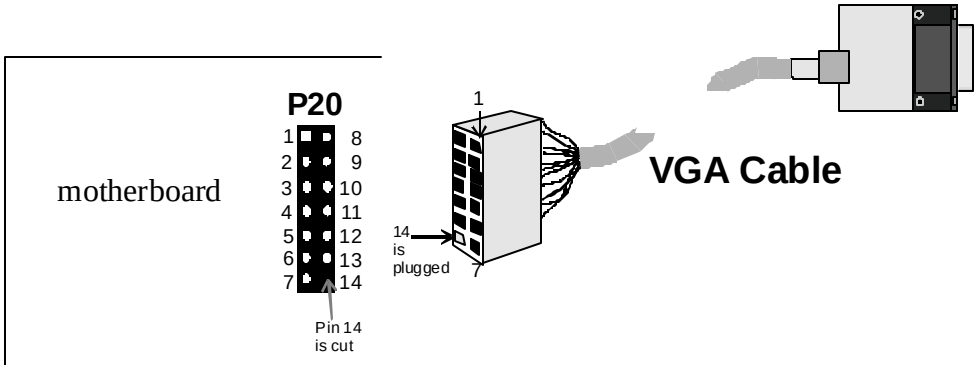
P20 VGA Connector

P20 is a 14–pin dual inline berg. Connect the VGA cable supplied with this motherboard to P20. This cable converts P20 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 P20. 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 P20 Connectors

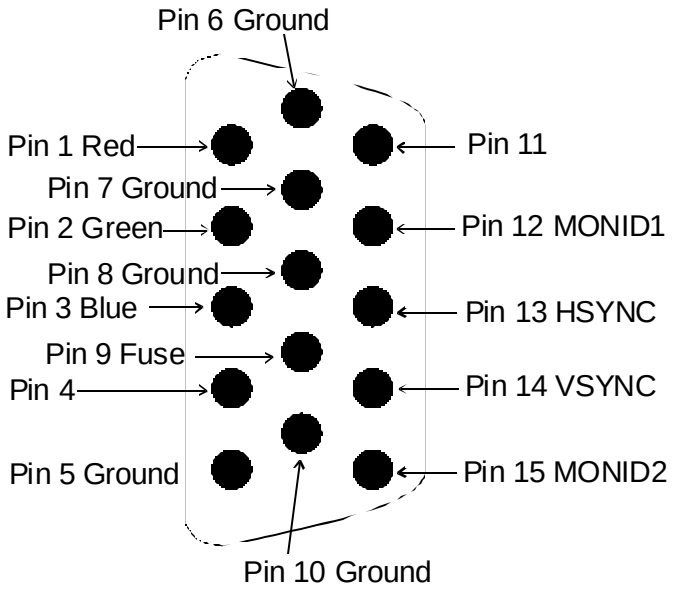
The following drawing illustrates the VGA connectors on the VGA cable and the motherboard :



Cont'd

Standard VGA Connector

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



Standard VGA Female Connector

P20 VGA Connector and Standard VGA

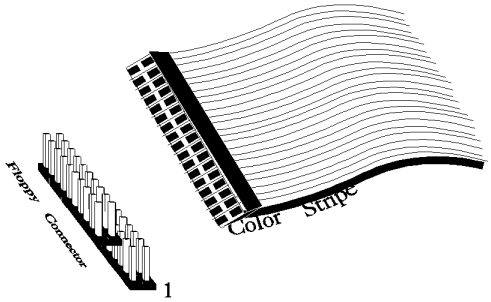
The connections on the VGA cable that has a standard DB15 female VGA connector and a 14–pin berg connector at the other end are shown below:

P20		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

Cont'd

P10 Floppy

P10 is a 34–pin dual–inline berg. Connect the cable from the floppy drive to P10, 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 connector should be connected to floppy drive A:.

Cont'd

P10 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

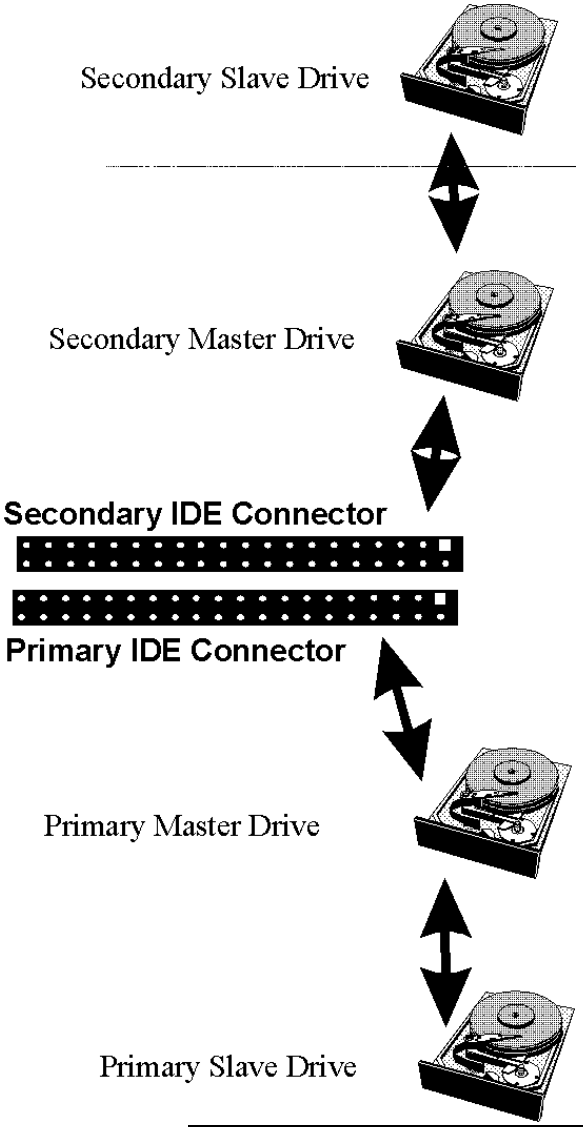
Floppy B to A	Floppy B to A	Floppy B to A	Floppy B to A
10 to 16	12 to 14	14 to 12	16 to 10
11 to 15	13 to 13	15 to 11	

Cont'd

Step 6 Attach Cables, Continued

IDE Drives

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

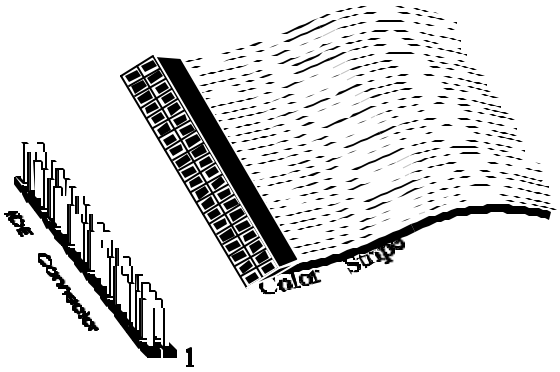


Cont'd

Step 6 Attach Cables, Continued

Attach IDE Cable to P11

P11 is the primary IDE hard disk drive connector. Both the primary master and the primary slave IDE drives must be connected by cable to P11, as shown below.



P11 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 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

P11 Pinout The P11 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
21	–REQ	22	GND
23	–IOW	24	GND
25	–IOR	26	GND
27	IDERDY	28	Pullup
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

P13 Secondary IDE Controller

P13, 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 P13 via a standard 40–pin IDE cable.

Cont'd

P13 Pinout The P13 pinouts 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
21	–REQ	22	GND
23	–IOW	24	GND
25	–IOR	26	GND
27	IDERDY	28	Pullup
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 7 Test and Configure

Review the following points before powering up:

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

Start the Test

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

BIOS Errors

If the system operates normally, a display should appear on the monitor. The BIOS Power On Self Test 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 , also called CMOS RAM. Unlike the DRAM 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.

Using a Mouse with 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.

WINBIOS Setup Menu

The WINBIOS Setup main menu, shown below, 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 on the next screen.

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 Security icons allow you to configure passwords and enable AMIBIOS anti–virus protection.	2
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.	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 Not Installed 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 Detect IDE from the WINBIOS Setup main screen to let AMIBIOS determine the parameters. AMIBIOS automatically configures the correct IDE parameters for all IDE hard disk drives attached to the primary and secondary IDE channels. To manually set IDE 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. Make sure the IDE drive supports block mode. Data may be destroyed if block mode is selected but the IDE drive does not support block mode. 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 configures the screen colors for WINBIOS Setup. The settings are LCD, Army, Pastel, or Sky. The Optimal and Fail–Safe default settings are LCD.

Mouse Support

Set this option to Enabled to enable AMIBIOS support for a PS/2–type mouse. Pins 2–3 of J15 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 Configuration 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, 10 sec, or Disabled. The Optimal and Fail–Safe default settings are Disabled.

Boot Up Num Lock

Set this option to On to turn off the Num Lock key when the system is powered on so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are On or Off. The Optimal default setting is Off. The Fail–Safe default setting is On.

Password Check

This option enables password checking every time the system boots or when you run WINBIOS 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 WINBIOS is executed. The Optimal and Fail–Safe defaults are Setup.

Cont'd

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 No or Yes. The Optimal and Fail–Safe default settings are No.

Floppy Drive Seek

When this option is set to Enabled, AMIBIOS performs a Seek command on floppy drive A: before booting the system. The settings are Enabled or Disabled. The Optimal default is Disabled. The Fail–Safe default is Enabled.

Floppy Drive Swap

Set this option to Enabled to permit drives A: and B: to be swapped. The settings are Enabled or Disabled. The Optimal and Fail–Safe default settings are Disabled.

Quick Boot

Set this option to Enabled to allow the BIOS to boot to the operating system within 5 seconds after the computer power switch is turned on. The settings are Enabled or Disabled. The Optimal default setting is Enabled. The Fail–Safe default setting is Disabled.

1st Boot Device

This option sets the sequence of boot drives for the first boot device that AMIBIOS attempts to boot from after POST completes. The settings are Disabled, 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 sequence of boot drives for the second boot device. The settings are Disabled, Floppy, or CDROM. The Optimal and Fail–Safe default settings are Floppy.

Cont'd

3rd Boot Device

This option sets the sequence of boot drives for the third boot device. The settings are Disabled or CDROM. The Optimal and Fail–Safe default settings are Disabled.

4th Boot Device

This option sets the sequence of boot drives for the fourth boot device. The settings are Disabled or CDROM. The Optimal and Fail–Safe default settings are Disabled.

SMART for Hard Disks

Set this option to Enabled if the System Management and Reporting Technologies protocol is supported in this computer. The settings are Enabled or Disabled. The Optimal and Fail–Safe default settings are Disabled.

L1/L2 Cache

Set this option to Enabled to enable the L1 internal cache memory on the CPU and the L2 secondary cache memory. The settings are WriteBack, Write–Thru, or Disabled. The Optimal default setting is Enabled. The Fail–Safe default setting is Disabled.

System BIOS Cacheable

When this option is set to Enabled, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h 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 cache controller is installed in the computer. The Optimal and Fail–Safe default settings are Absent.

Setting	Description
Absent the Optimal and Fail–Safe default setting	To comply with the PCI specifications, PCI adapter cards must be reset every time the CPU is reset. When the end user forces a soft reset by pressing <Ctrl> <Alt> <Del>, only the CPU is reset. When this option is set to No, all soft resets are converted to hard resets, and all PCI adapter cards are reset when the CPU is reset.
Present	Soft resets still behave like soft resets when Present is selected. Select this option if a caching controller is installed in the computer. Soft resets must not generate a hard reset if a caching controller is used. If a hard reset is generated, a PCI caching controller card may not be able to flush data from its cache memory to a hard disk drive before the reset.

Video Shadow C000, 32K

This option specifies the way that the 32 KB of video ROM beginning at C0000h is treated. The settings are:

Setting	Description
Disabled	The contents of the video ROM are not copied to RAM.
Cached	The contents of the video ROM area from C0000h – C7FFFh are not only copied from ROM to RAM, the contents of the C0000h – C7FFFh RAM area can be written to or read from cache memory.
Shadow	The contents of the video ROM area from C0000h – C7FFFh are copied from ROM to RAM for faster execution.

The Optimal default setting is Cached. The Fail–Safe default setting is Disabled.

Cont'd

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 title. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. The settings are:

Setting	Description
Disabled	The contents of the video ROM are not copied to RAM.
Cached	The contents of the video ROM area from C0000h – C7FFFh are not only copied from ROM to RAM, the contents of the C0000h – C7FFFh RAM area can be written to or read from cache memory.
Shadow	The contents of the video ROM area from C0000h – C7FFFh 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 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 J25 External SMI software jumper on the Series 745 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 is enabled. If you do not want to enable power management, set the Advanced Power Management 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

ISA VGA USWC/Video Frame Buffer

This option specifies the starting address of the VGA video frame buffer using USWC memory. The settings are:

Setting	Description
Disabled	No VGA video frame buffer is available.
A0000h	The system memory segment beginning at A0000h is used for the VGA USWC/video frame buffer.
B0000h	The system memory segment beginning at B0000h is used for the VGA USWC/video frame buffer.
Both	The 128 KB of system memory from A0000h through BFFFFh is used for the VGA USWC/video frame buffer.

VGA card drivers may not behave correctly when this option is not set to Disabled. The Optimal and Fail–Safe default settings are Disabled.

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

Optional ROM

The MegaPro PCI Pentium Pro motherboard has an empty option ROM socket near the ISA expansion slots. 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.

Cont'd

Optional ROM Shadow Before Init

Set this option to Enabled to permit the contents of the optional 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 optional 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.

Watchdog Timer

This motherboard has an integrated system watchdog timer. The watchdog timer reboots the computer 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.

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 USB support. 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 support for older keyboards and mouse devices if the USB Function option is set to Enabled. 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., 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 Megakey the power savings state determined by the Megakey keyboard controller, Standby, Suspend or Disabled. The Optimal and Fail–Safe default settings are Disabled.

Cont'd

Power Management Setup, Continued

DPMS Video Power Down Mode

This option specifies the power state that a DPMS–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 Off, Standby, Suspend, or Disabled. 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, 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, 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, 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 for all the above options except IRQ3, IRQ4, IRQ7, IRQ12, IRQ14, and IRQ15. The Optimal default setting for these options is Monitor.

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 allocate an IRQ to the PCI VGA controller. The settings are No or Yes. The Optimal and Fail–Safe default settings are No.

Cont'd

PCI Slot–1 Latency Timer
PCI Slot–2 Latency Timer
PCI Slot–3 Latency Timer
PCI Slot–4 Latency Timer
USB Device Latency Timer

These options specify the latency timings in PCI clocks for USB devices and 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

These options specify the IRQ priority for USB devices and the PCI devices installed in the PCI expansion slots. The settings are Auto, IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, and IRQ14, in priority order. 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 is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM . If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP.

IRQ12 only appears if the Mouse Support option in Advanced Setup is set to Disabled.

IRQ14 and 15 will not be available if the onboard PIIX3 PCI IDE is enabled. If all IRQs are set to ISA/EISA and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices.

The settings are ISA or PCI/PnP. The Optimal and Fail–Safe default settings are PCI/PnP.

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 hexadecimal 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 not provided.

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. 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, ISA, Slot1, Slot2, Slot3, or Slot4. 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 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.

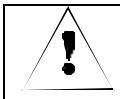
Serial Port1 Address

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 not provided.



Caution

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

Serial Port2 IRQ

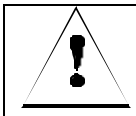
This option specifies the IRQ used by serial port 1. The settings are IRQ 3 or Disabled. The Optimal default setting is IRQ 3. The Fail–Safe default setting is Disabled.

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 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 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 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

If the Parallel Port Mode option is ECP, this option is displayed. This option specifies 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 and
- User Password.

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.

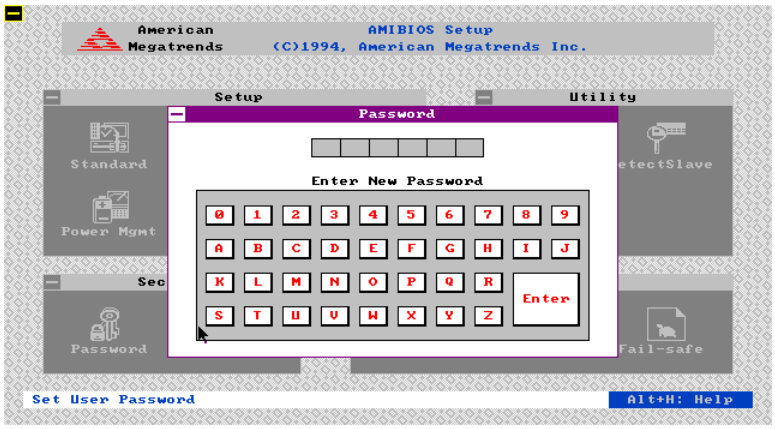
AMIBIOS Password Support

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 Setup is executed. The password is encrypted and stored in NVRAM.



As shown on the above screen, you are prompted for a 1 – 6 character 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.

Section 3 Utility

The icons in this section of the WINBIOS Setup main screen permit you to display WINBIOS Setup text displayed on the screen in a different language and to detect IDE hard disk drive parameters.

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.

Language

If this feature is enabled, you can choose to display all WINBIOS Setup screen text in different languages. This WINBIOS Setup only displays screen messages in English.

Detect IDE

Choose this option to let AMIBIOS find the IDE hard disk drive parameters for all IDE drives connected to the primary and secondary IDE channels installed in the system.

AMIBIOS automatically configures the drive parameters after it has detected these parameters.

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 MegaPro 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 S745P.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 S745P.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.

S745P.ROM

S745P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the AMIBIOS for the MegaPro PCI ISA motherboard must be updated.

S745P.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 S745P.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 AMIBOOT.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	AMIBOOT.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 AMIBOOT.ROM in the root directory of the floppy diskette in drive A:.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the AMIBOOT.ROM.
F3h	Start reading the AMIBOOT.ROM file, cluster by cluster.
F4h	The AMIBOOT.ROM file is not the correct size.
F5h	Disable the internal cache. Raise the Vpp. Enable Flash write and reset the Flash ROM.
FBh	Detect the flash type.
FCh	Start erasing flash blocks.
FDh	Program the Flash ROM in the E0000–EFFFFh region.
FEh	Start programming Flash at F0000–FFFFF region.
FFh	Flash programming is successful. The computer reboots.

4 Deleting a Password

If you forget the passwords you set up through 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 J29 on the motherboard. J29 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 occurs. ESD can ruin your motherboard. Wear an antistatic wristband attached to a ground. See "Avoid Static Electricity".

Step	Action
1	Turn the computer power off and remove the computer cover.
2	Place a shorting bridge on J29.
3	Turn on computer power for about 10 seconds.
4	Turn the computer off again.
5	Remove the shorting bridge from J29.
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 Pro 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
133, 150, 166, 180, or 200 MHz,	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.