



Megathon® AMD Athlon® PCI ISA Motherboard User's Guide

MAN-804
2/9/00

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Revision History

2/9/00 Initial release.

Table of Contents

1	Hardware Installation	1
	Overview.....	1
	Megathon PCI Motherboard Layout	3
	Installation Steps.....	4
	Step 1 Unpack the Motherboard	5
	Avoid Static Electricity.....	5
	Step 2 Clear CMOS RAM.....	6
	Step 3 Install Memory.....	7
	Step 4 Install CPU.....	9
	Step 5 Connect CPU Fan.....	13
	Step 6 Connect System Case Fan	13
	Step 7 Install the Motherboard	14
	Step 8 Attach Cables	15
	Step 9 Connect I/O.....	20
	Step 10 Install Drivers.....	27
	Step 11 Test and Configure	28
2	AMIBIOS Setup.....	29
	AMIBIOS Main Setup Menu	30
	Advanced Setup.....	33
	Security Setup.....	34
	Exit Setup.....	37
3	Programming Flash ROM.....	39
	Bootblock Code Checkpoint Codes	42
4	Deleting a Password	43
	Avoid Static Electricity.....	44
A	Specifications.....	45
	Engineering Specifications	45
Index	47

Preface

To the OEM Thank you for purchasing the high performance American Megatrends Megathon™ AMD Athlon™ 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 Megathon 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 Megathon PCI motherboard. It explains how to assemble a system based on the Megathon PCI motherboard and how to use the AMIBIOS that is specifically designed for this motherboard.

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

Disclaimer

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

Technical Support

AMI provides technical support only for AMI products purchased directly from AMI or from an AMI-authorized reseller.

If...	Then...
You purchased this product from AMI or from a certified AMI reseller,	Call AMI technical support at 770-246-8600. Please be prepared to specify the serial number of the product.
This AMI product was installed as part of a system manufactured by a company other than AMI or you purchased an AMI product from an unauthorized reseller,	Call the technical support department of the computer manufacturer or the unauthorized reseller. AMI does not provide direct technical support in this case.

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 Megathon AMD Athlon motherboard,
 - on AGP miniport driver diskette for Windows 98,
 - one retention mechanism for the AMD Athlon CPUs,
 - a warranty card, and
 - the *American Megatrends Megathon™ AMD Athlon™ PCI ISA Motherboard User's Guide*.
-

1 Hardware Installation

Overview

The Megathon motherboard is powered by the AMD Athlon processors at speeds up to 600 MHz. The Megathon provides the high speed data transfer and data integrity required for graphics and audio applications, and supports Ultra DMA/33, and Ultra DMA/66.

Megathon features include:

- support for one AMD Athlon CPU operating at 500, 550, 600, 700, or 750 MHz,
- up to 768 MB RAM available using three DIMMs (up to 256 MB in each slot), with support for SDRAM (66/100MHz),
- one 32-bit AGP bus with a dedicated 66MHz/133MHz path from the graphics card to system memory,
- support for 3D/NOW™ technology,
- system memory parity checking or ECC (Error Checking and Correction),
- AMD-751 system controller for the North Bridge, and VIA Super South (686A) for the South Bridge,
- PCI local bus throughput of 132 MB/s,
- five 32-bit PCI expansion slots, and
- one 16-bit ISA expansion slot.

Cont'd

Overview, Continued

CPUs This motherboard will support all AMD Athlon CPUs operating at 500 MHz, 550 MHz, 600 MHz, 700 MHz, or 750MHz.

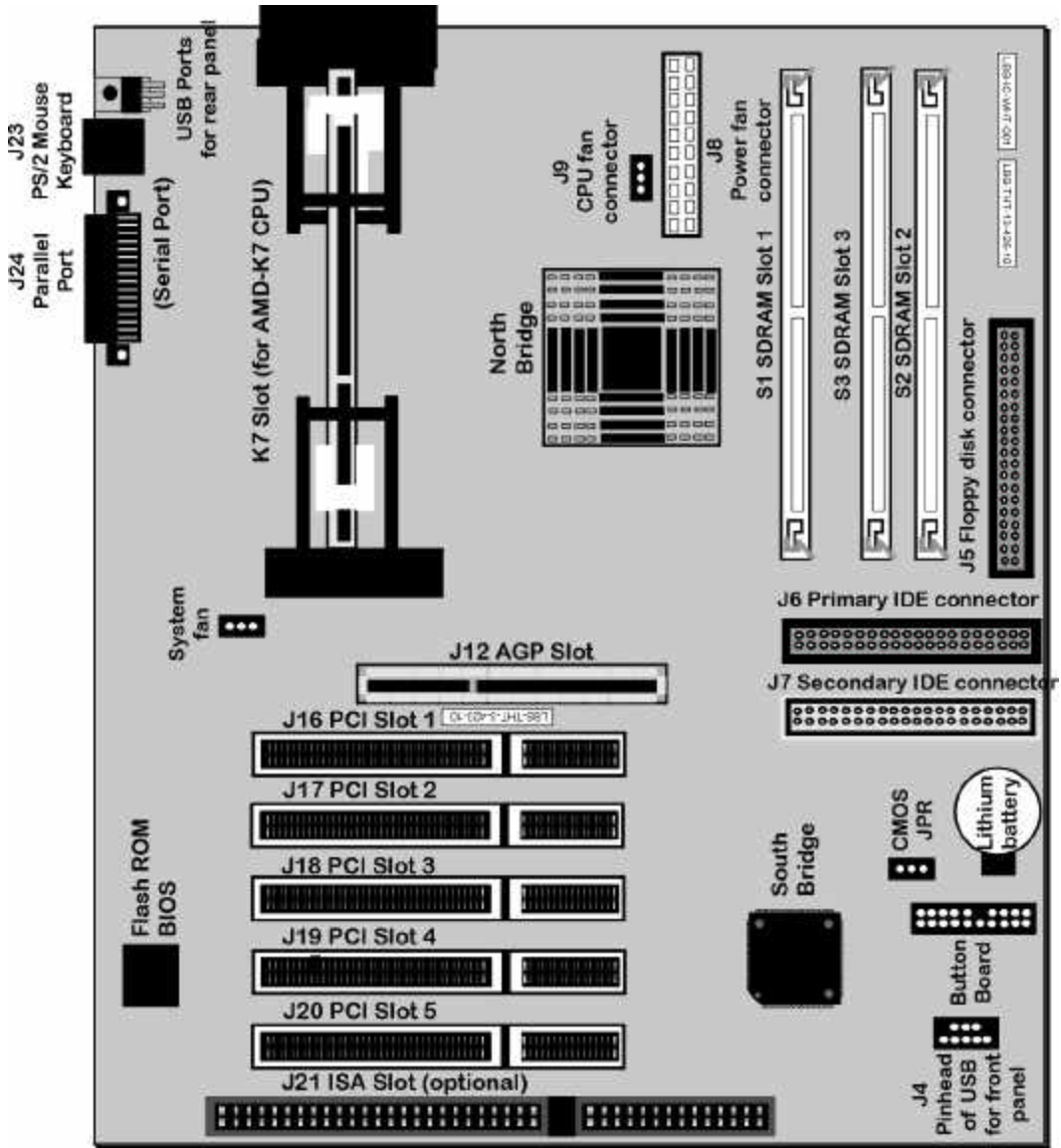
PCI Bus Speed AMIBIOS automatically configures the PCI slots. The PCI slots are synchronous with the CPU clock:

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

Onboard I/O The Megathon AMD Athlon motherboard includes:

- two 40-pin IDE connectors for 1 – 4 IDE drives,
 - a 34-pin floppy drive connector,
 - two serial bus connectors, along with a connector, J4, to connect USB devices,
 - a 25-pin parallel port connector,
 - a 6-pin keyboard DIN connector, and
 - a 6-pin mouse connector.
-

Megathon PCI Motherboard Layout



Installation Steps

Use the following steps to install the motherboard, memory, jumpers, and connectors.

Step	Action
1	Unpack the motherboard.
2	Clear CMOS RAM.
3	Install memory.
4	Install CPU.
5	Connect CPU Fan.
6	Connect System Case Fan.
7	Install the motherboard.
8	Attach cables.
9	Connect I/O (input/output).
10	Install drivers.
11	Test and configure.

Step 1 Unpack the Motherboard

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

Set Jumpers Set all jumpers and install the CPU before placing the motherboard in the chassis. The steps for setting the jumpers and installing the CPU are in the following pages.

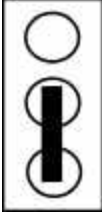
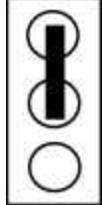
Avoid Static Electricity

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 Clear CMOS RAM

The J3 CMOS RAM (Random Access Memory) contains volatile memory that you can write to as well as read. It contains the Real Time Clock (RTC) information. Use the following procedure to clear the RTC data:

Step	Action
1	Turn the computer off.
2	Set the jumper to CLEAR, as shown below. (Put the black jumper cap over the jumper pins according to the required configuration.) Clear: 
3	Set the jumper back to NORMAL: Normal (default): 
4	Turn the computer on.
5	During bootup, hold the <Delete> key down to enter BIOS setup, where you can reset your preferences.

Step 3 Install Memory

System Memory There are three 72-bit SDRAM DIMM (Dual Inline Memory Module) sockets. System memory must be PC100 Specification and populated one bank at a time. Each bank has one socket. The minimum amount of system memory supported by the Megathon PCI is 8 MB. Each socket can hold one DIMM. You can use:

- 8 MB 168-pin 3.3V SDRAM,
 - 16 MB 168-pin 3.3V SDRAM,
 - 32 MB 168-pin 3.3V SDRAM,
 - 64 MB 168-pin 3.3V SDRAM,
 - 128 MB 168-pin 3.3V SDRAM, or
 - 256 MB 168-pin 3.3V SDRAM.
-

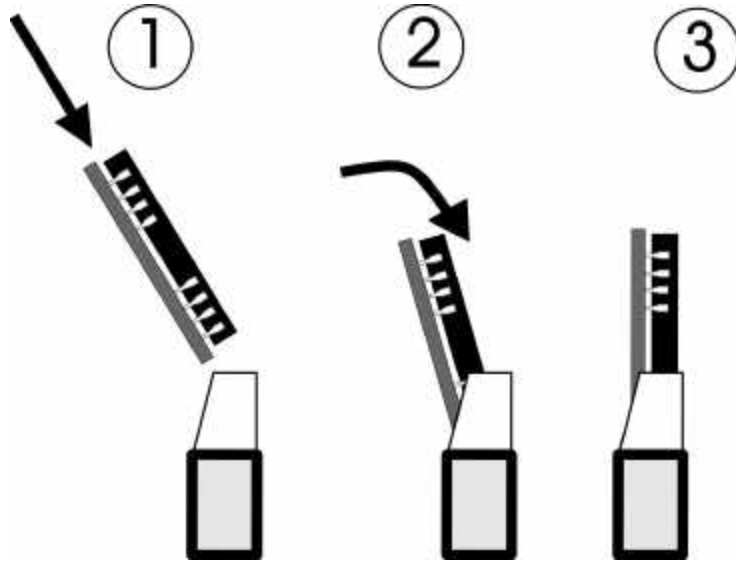
Memory Display System memory is reported by AMIBIOS as it boots and again when the AMIBIOS System Configuration Screen is displayed just before the operating system boots. The memory displayed by AMIBIOS on the System Configuration Screen is 384 KB less than the total memory installed.

Cont'd

Step 3 Install Memory, Continued

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

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



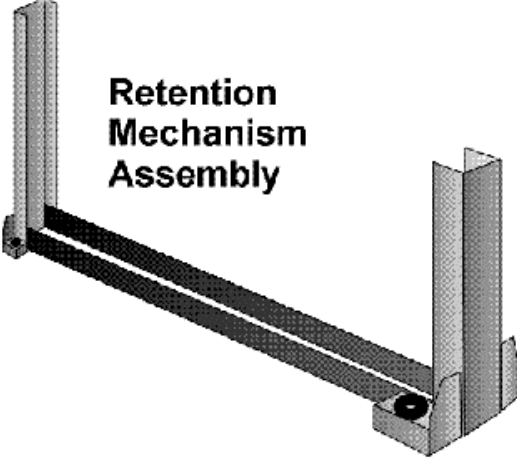
Step 4 Install CPU

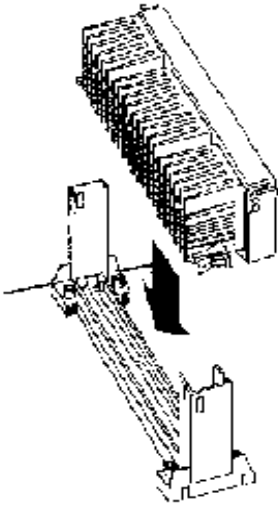
The AMD Athlon CPU is on Slot A adapter cards. The CPU card fits into the Retention Mechanism Assembly in Slot A. The Retention Mechanism Assembly has folding arms to save space in shipping.

Warning

Improper CPU installation can damage the CPU and the motherboard. You must follow the procedures in this section exactly as documented. Make sure you wear an antistatic wristband while installing the CPU. Follow all antistatic procedures described on page 5.

Perform the following procedure to install the CPU.

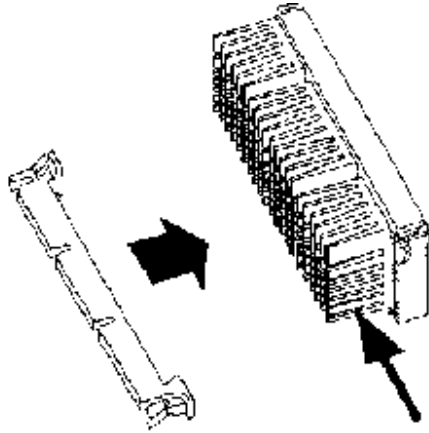
Step	Action
1	Locate the CPU slot for the AMD Athlon. See page 3 to view the board layout.
2	Open the two arms of the Retention Mechanism Assembly upward to the position shown below:  <p>The diagram shows a 3D perspective view of the Retention Mechanism Assembly. It consists of a long, dark horizontal bar with a small circular hole at one end. Two vertical, light-colored rectangular arms are attached to the bar, one at each end. The arms are shown in an open, upright position. The text "Retention Mechanism Assembly" is printed in bold black font above the bar.</p>

Step	Action
3	<p data-bbox="594 233 1122 323">Place the CPU module in the open Retention Mechanism Assembly and carefully slide it down until it is inserted in the CPU slot firmly.</p> 
4	<p data-bbox="594 848 1144 905">Pull the buttons outward until they click in the right position.</p>
5	<p data-bbox="594 911 1096 1003">Hook the heat sink top support to the heat sink support base to firmly hold the CPU module in place.</p>

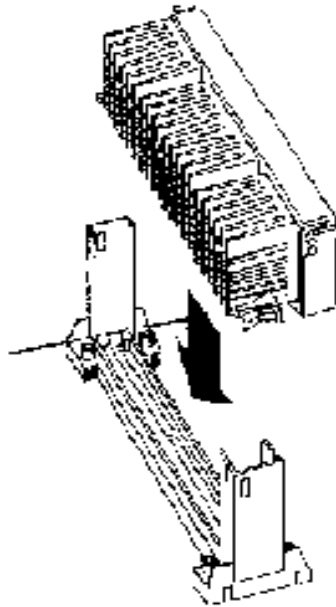
Cont'd

Step 4 Install CPU, Continued

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



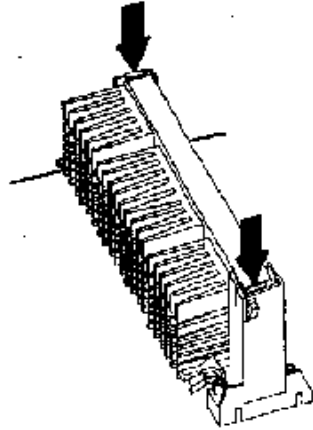
Then slide the CPU module into the Retention Mechanism Assembly, as shown below:



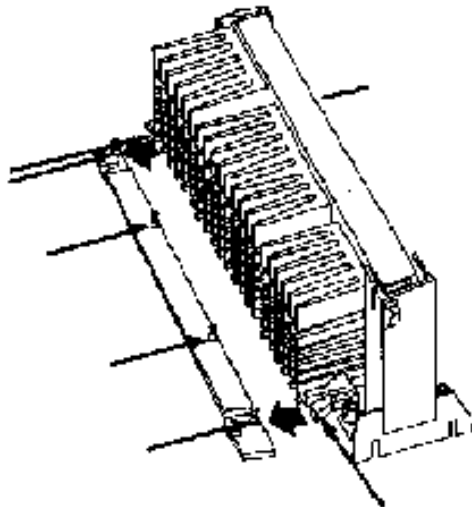
Cont'd

Step 4 Install CPU, Continued

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



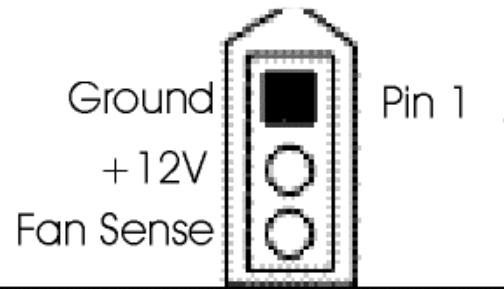
Hook the top support of the heat sink to the support base of the heat sink to complete the CPU module installation:



Step 5 Connect CPU Fan

J9 (shown below) is a 3-pin berg that connects the fan on the CPU heat sink to the motherboard power. J9 is located next to the ATX Power Connector.

J9 and J11 pinouts

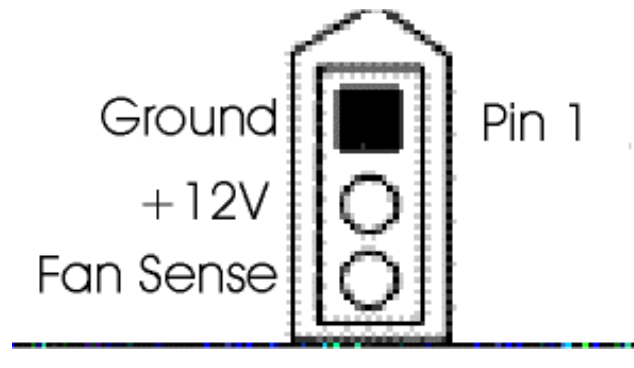


All AMD Athlon CPUs are shipped with a *heat sink and a CPU fan*. J9 and J11 are keyed in such a way that the CPU connector can be attached only in the correct manner.

When the system is in sleep mode, the CPU fan stops. When the system returns to full-on mode, the fan starts again

Step 6 Connect System Case Fan

The system case fan connector is used with the cooling fan in your system case to lower the temperature in the system. The system case fan connector is located by the end of the K7 slot for the CPU. The pinout is:



Step 7 Install the Motherboard

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

Warning

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

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

Step 8 Attach Cables

Connectors

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

Connector	turn to
Power supply connector	page 16
Drain CMOS RAM power J3	page 17
Keyboard connector	page 17
PS/2 mouse connector	page 17
USB connectors USB0, USB1, J4	page 18
Block connector on front panel	page 18
Reset switch connector	page 18
Power switch connector	page 18
Power LED 2-pin connector	page 18
Hard drive LED connector	page 19
Sleep LED connector	page 19
Sleep switch connector	page 19
Speaker connector	page 19
Parallel port connector J22	page 21
Floppy disk drive connector J5	page 22
IDE primary connector J6	page 25
IDE secondary connector J7	page 27

Cont'd

Step 8 Attach Cables, Continued

Cable Connector Ends When connecting chassis connectors to the motherboard, make sure to connect the correct connector end. Most connector wires are color-coded. Match the color of the wires leaving the switch or LED to the same pin on the connector end. There may be more than one connector with the same color-coded wires. If so, follow the wire to the switch or LED.

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

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

Attach the cables from the power supply to the power connector(s) on the motherboard. ATX-compatible power supplies have one 20-pin connector, J8.

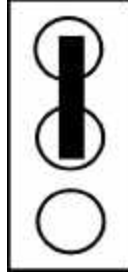
The power connector pinout is:

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

Cont'd

Step 8 Attach Cables, Continued

Drain CMOS RAM Power J3 J3 is a 3-pin berg that can be used to erase the contents of CMOS RAM, where all system configuration information is stored. The Normal (default) setting is:

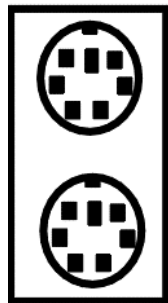


If you forget the AMIBIOS password, you can place a shorting bridge on this berg for a few seconds to erase the old password (and all system configuration information as well). You must then reboot the computer, run AMIBIOS Setup, and restore all system configuration information. The settings are:

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

Keyboard and Mouse Connector J24 The keyboard and mouse connectors are 6-pin female connectors.

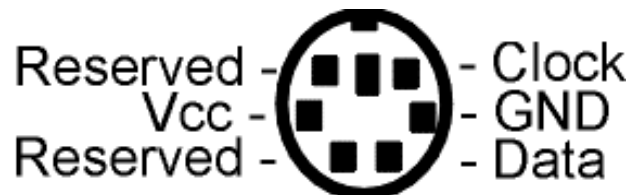
J24



Mouse

Keyboard

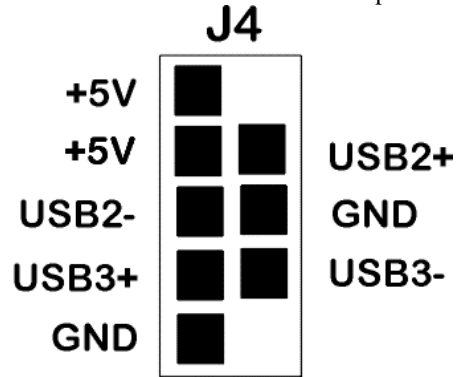
The pinout is:



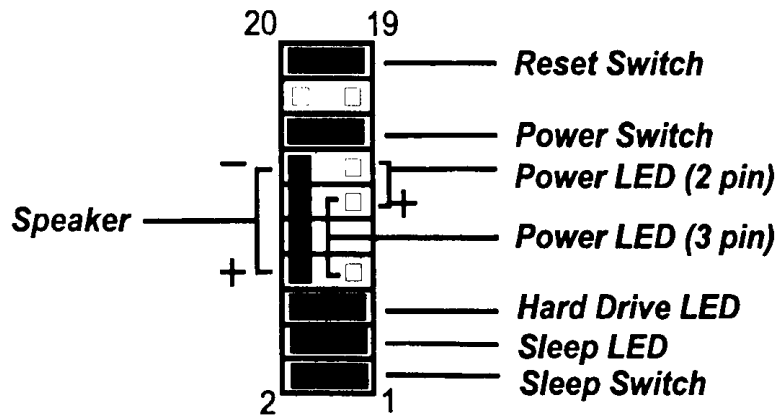
Cont'd

Step 8 Attach Cables, Continued

USB Connectors USB0, USB1, J4 The USB (Universal Serial Bus) connectors, USB0 (bottom), and USB1 (top) are used to link with peripheral devices. J4, a pinhead, is used to connect USB devices on the front panel. The pinout is:



Button Board The block connector contains the following components:



Reset Switch Connector This is a two-pin berg that is attached via a cable to an externally-mounted reset switch. When the reset switch is pressed, the system performs a hard reset.

Power Switch Connector This is a two-pin berg that is attached via a cable to an externally-mounted power switch.

Power LED Connector This is a two-pin connector that attaches to a cable that connects to the hard disk LED mounted on the computer enclosure. The LED indicates data transfers.

Cont'd

Step 8 Attach Cables, Continued

Hard Drive LED Connector This is a two-pin connector that attaches to a cable that connects to the hard disk LED mounted on the computer enclosure. The LED indicates data transfers.

Sleep LED Connector This is a two-pin connector that attaches to a cable that connects to the hard disk LED mounted on the computer enclosure. The LED indicates that the computer is in sleep mode.

Sleep Switch Connector This is a three-pin connector that attaches to a cable that connects to the hard disk LED mounted on the computer enclosure. The LED indicates data transfers.

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

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

Step 9 Connect I/O

Onboard Adapters The Megathon PCI motherboard has:

- one serial port,
- a parallel port,
- an IDE controller on the PCI bus (with a primary IDE connector and secondary IDE connector), and
- a floppy controller.

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

Cont'd

Step 9 Connect I/O, Continued

J22 Parallel Port J22 is a 25-pin D-Sub female connector for a parallel port. The J22 pinout is shown below. The parallel port interface supports:

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

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

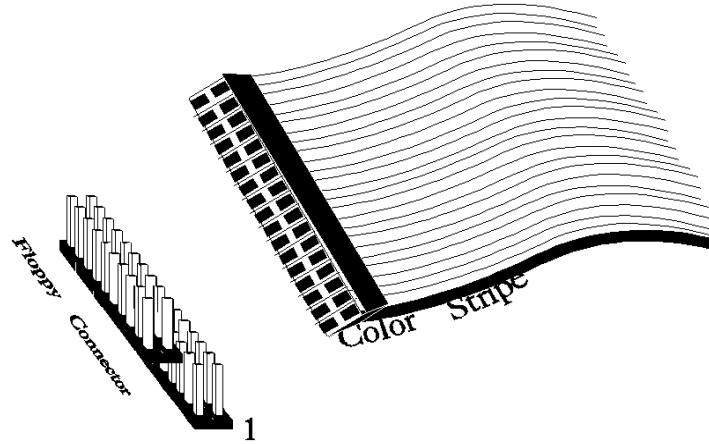
Pin	Signal Description	Pin	Signal Description
1	STROBE#	2	PD0
3	PD1	4	PD2
5	PD3	6	PD4
7	PD5	8	PD6
9	PD7	10	ACK#
11	BUSY	12	PE
13	SLCT	14	AUTOFD#
15	ERROR#	16	INIT#
17	SLCTIN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

Cont'd

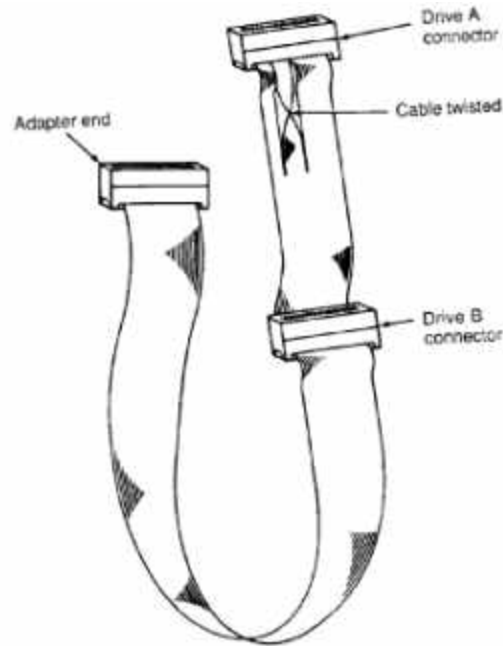
Step 9 Connect I/O, Continued

J5 Floppy

J5 is a 34-pin dual-inline berg. Connect the cable from the floppy drive to J5, 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.



connector with two 34-pin edge connectors for attaching the floppy disk drives. There is a small twist in the cable between the floppy connectors. The last (end) connector should be connected to floppy drive A: as shown below.



Cont'd

Step 9 Connect I/O, Continued

Floppy Connector Pinout

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

Twist in Floppy Cable

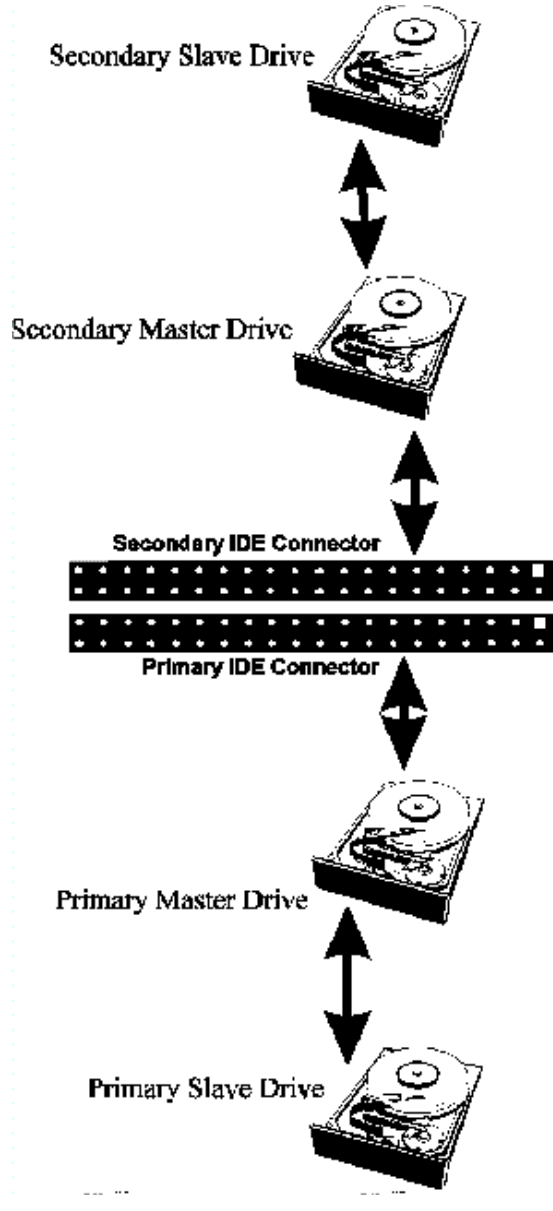
Floppy B to A	Floppy B to A	Floppy B to A	Floppy B to A
10 to 16	12 to 14	14 to 12	16 to 10
11 to 15	13 to 13	15 to 11	

Cont'd

Step 9 Connect I/O, Continued

IDE Drives

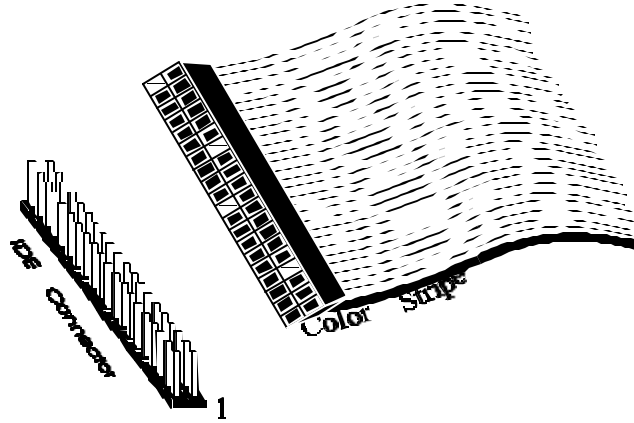
Attach the IDE drives in the following manner. Choose Peripheral Setup in AMIBIOS Setup to enable the onboard IDE controller.



Cont'd

Step 9 Connect I/O, Continued

Attach IDE Cable to J6 J6 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 J6, as shown below.



J6 is a 40-pin dual-inline berg that connects an IDE drive to the primary onboard IDE connector. This motherboard supports IDE Modes 0, 1, 2, 3, and 4, IDE prefetch, LBA (Logical Block Address) mode, high capacity drives (over 528 MB), 32-bit data transfer, and fast IDE transfer. These IDE features are configured in Peripheral Setup in the AMIBIOS Setup utility.

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

Cont'd

Step 9 Connect I/O, Continued

J6 Pinout

J6 is the primary IDE connector. The J6 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

Cont'd

Step 9 Connect I/O, Continued

J7 Secondary IDE Controller J7, 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 J7 via a standard 40-pin IDE cable as shown on page 25.

J7 Pinout

J7 is the secondary IDE connector. The J7 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

Install Adapter Cards You can install any PCI adapter cards at this time.

Step 10 Install Drivers

Installing Drivers The 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 driver installation procedure.

Step 11 Test and Configure

Review the following points before powering up:

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

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

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

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

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

2 AMIBIOS Setup

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

The system parameters are configured by a system BIOS Setup utility. Historically, BIOS Setup utilities have been character-based, required keyboard input, and have had user interfaces that were not very intuitive. The BIOS chips acts as an interface between the processor and the rest of the motherboard's components. This chapter describes the parameters in the Setup program and explains how to modify the settings for your system configuration.

Starting AMIBIOS Setup As POST executes, the following appears:

Hit DEL if you want to run SETUP

Press Delete to run AMIBIOS Setup.

AMIBIOS Main Setup Menu

The AMIBIOS Setup main menu appears as shown below. The menu items have one or more settings. You can use this screen to change the system date and time, IDE hard disk, and the floppy disk drive types for drives A and B.

AMIBIOS SETUP-STANDARD CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved	
Main Advanced Security Exit	
2000	System Date Tue Jan 14, System Time 16:05:13
	<<<Setup Help>>>
	Floppy Drive A 1.44MB 3½ Floppy Drive B Not Installed
	Primary IDE Master Auto Primary IDE Slave Auto Secondary IDE Master Auto Secondary IDE Slave Auto
	Auto-Detect Hard Disks [Enter]
	Boot Sector Virus Protection Disabled
	↑ Previous Item ↓ Next Item ←→ Select Menu
Esc:Exit Enter:Select F5:Setup Defaults F6:Original Values	
F10:Save & Exit	

Date/Time

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

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

Cont'd

AMIBIOS Main Menu Setup, Continued

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

Primary IDE Master, Primary IDE Slave, Secondary IDE Master, Secondary IDE Slave Select one of these hard disk drives to configure the hard disk drive named in the option. Press <Enter> to autodetect. The settings for the drives are:

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

Cont'd

AMIBIOS Main Menu Setup, Continued

Auto-Detect Hard Disks This allows the system BIOS to detect the hard disk parameters automatically.

Boot Sector Virus Protection This option is near the bottom of the Main Setup screen. The settings are *Enabled* or *Disabled*. Choose *Enabled* to enable boot sector protection. AMIBIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. You may have to type *N* several times to prevent the boot sector write.

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

The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service:

```
Format!!!  
Possible VIRUS: Continue (Y/N)? _
```

Advanced Setup

To display the Advanced Setup options, choose an item from the AMIBIOS Setup main menu. The Advanced Setup screen displays as shown below. To change setup options, move the cursor to the desired item, such as Advanced Chipset Setup, and press <Enter>. The Setup Help section describes each of the Advanced Setup options.

AMIBIOS SETUP-STANDARD CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved	
Main Advanced Security Exit	
Advanced CMOS Setup [Enter] Advanced Chipset Setup [Enter] Power Management Setup [Enter] Plug and Play Setup [Enter] Peripheral Setup [Enter] Change Language Setting English	<<<Setup Help>>> Advanced CMOS setup for configuring system options ↑ Previous Item ↓ Next Item ↔ Select Menu
Esc:Exit Enter:Select F5:Setup Defaults F6:Original Values F10:Save & Exit	

Security Setup

You can use the Security Setup screen to set Supervisor and User passwords.
The Security Setup screen displays as shown below.

AMIBIOS SETUP-STANDARD CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved	
Main Advanced Security Exit	
Set Supervisor Password [Enter] Set User Password [Enter]	<<<Setup Help>>> Change the supervisor password. ↑ Previous Item ↓ Next Item ↔ Select Menu
Esc:Exit Enter:Select F5:Setup Defaults F6:Original Values F10:Save & Exit	

Cont'd

Security Setup, Continued

Two Levels of Password Protection AMIBIOS provides a Supervisor and a User password. You can set either a Supervisor or User password. If you do not want to use a password, press <Enter> when the password prompt displays.

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

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

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

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

Remember the Password Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM (Non-Volatile Random Access Memory). See page 43 for information about erasing system configuration information.

Cont'd

Security Setup, Continued

Set Supervisor Password Select Change Supervisor Password from the AMIBIOS Setup main menu. The password prompt displays.

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

Set User Password Select Change User Password from the AMIBIOS Setup main menu. The password prompt displays.

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

Exit Setup

You can use the Exit Setup screen to exit, save or discard changes, or load different types of settings. The screen displays as shown below.

AMIBIOS SETUP-STANDARD CMOS SETUP (C)1998 American Megatrends, Inc. All Rights Reserved	
Main Advanced Security Exit	
Exit Saving Changes [Enter] Exit Discarding Changes [Enter] Load Optimal Settings [Enter] Load Fail Safe Settings [Enter] Load Original Values [Enter]	<<<Setup Help>>> Write the current settings to CMOS and exit. ↑ Previous Item ↓ Next Item ↔ Select Menu
Esc:Exit Enter:Select F5:Setup Defaults F6:Original Values F10:Save & Exit	

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

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

Cont'd

Exit Setup, Continued

Load Optimal Settings AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option.

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

Load Fail Safe Settings AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option.

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

Load Original Values AMIBIOS will automatically set all AMIBIOS Setup options to your last set of previous settings. This is helpful if you change settings and decide that you want to return to the original settings.

3 Programming Flash ROM

All versions of the Megathon 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 S804P.ROM file in drive A:.
3	Press and hold the <Ctrl> and <Home> keys down while turning the power on. Continue to hold the <Ctrl> and <Home> keys down until the access light on the floppy drive comes on. It may take 10 seconds or more before this light turns on. Since Megathon uses a 2 megabit BIOS, the flashing process may take up to 3 minutes.
4	Release the <Ctrl> and <Home> keys. AMIBIOS issues a series of beep codes that indicate that the system BIOS ROM file is being updated.
5	When the flash ROM has successfully been programmed, the computer will reboot.
6	When the computer reboots, check the BIOS Release text at the bottom of the first boot screen to make sure that the correct BIOS has been used.
7	The error message NVRAM checksum bad, NVRAM cleared will appear during the first boot after a successful BIOS ROM update. This message indicates that the NVRAM area in the system BIOS has been cleared. AMIBIOS will reconstruct the NVRAM area before the computer boots completely, so you can safely ignore this message.
8	<u>L</u> oad the optional default and save.

Cont'd

Programming the Flash ROM, Continued

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

Step	Action
1	Reads S804P.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.

S804P.ROM S804P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the AMIBIOS for the Megathon PCI ISA motherboard must be updated.

S804P.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 S804P.ROM.

Cont'd

Programming the Flash ROM, Continued

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

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

Number of Beeps	Description
1	Insert diskette in floppy drive A:.
2	The S804P.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	S804P.ROM file size error.
Continuou s 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 S804P.ROM in the root directory of the floppy diskette in drive A:.
F1h	The S804P.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the S804P.ROM.
F3h	Start reading the S804P.ROM file, cluster by cluster.
F4h	The S804P.ROM file is not the correct size.
F5h	Disable the internal cache. Raise the Vpp. Enable Flash write and reset the Flash ROM.
FBh	Detect the flash type.
FCh	Start erasing flash blocks.
FDh	Program the Flash ROM in the E0000-EFFFFh region.
FEh	Start programming Flash at F0000-FFFFF region.
FFh	Flash programming is successful. The computer reboots.

4 Deleting a Password

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

Erase Old Password You can drain CMOS RAM power via J3 on the motherboard. J3 is a 3-pin berg that has pins 1 and 2 jumpered for normal operation. Perform the following steps to erase the old password.

Important

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

Step	Action
1	Turn the computer power off and remove the computer cover.
2	Place a shorting bridge on J3 (2-3) CLEAR CMOS option.
3	Turn on computer power for about 10 seconds.
4	Turn the computer off again.
5	Remove the shorting bridge from J3 and put on J3 (1-2) for NORMAL operation.
6	Turn on computer power again. Since you drained power from CMOS RAM, all system configuration information has been erased. You must now re-enter the system configuration information by running AMIBIOS Setup.

Avoid Static Electricity

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

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

A Specifications

Engineering Specifications

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

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

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

Humidity

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

Index

A

- Advanced Setup, 33
- AMD Athlon, 1
- AMIBIOS Main Setup Menu**, 30
- AMIBIOS Password Support, 36
- AMIBIOS Setup, 29
- AMIFlash
 - Beep Codes, 41
- ARMD, 31
- Auto-Detect Hard Disk, 32

B

- BIOS
 - Password Support, 35
- BIOS Errors, 28
- Board layout, 3
- Boot Sector Virus Protection, 32
- Bootblock**
 - Checkpoint Codes**, 42

C

- Cables**
 - Attaching**, 15
 - Connecting, 16
- CD-ROM drive
 - Configuring, 31
- CMOS Drain, 17
- Configure CMOS RAM**, 6
- Configuring System, 28
- Conflicts, 20
- Connectors, 15
 - DIMM, 8
 - Floppy disk, 22
 - Hard Drive LED Switch, 19
 - IDE Hard Disk Drive, 25
 - Keyboard, 17
 - Power LED, 18
 - Power Switch, 18
 - Reset Switch, 18
 - Sleep LED Switch, 19
 - Sleep Switch, 19
 - Speaker, 19
- CPU Fan**, 13

D

- Date/Time, 30
- Deleting a Password**, 43
- DIMMs
 - Installing, 8
- Drivers
 - Installing, 27

E

- Enhanced Parallel Port, 21
- Exit Discarding Changes, 37
- Exit Saving Changes, 37
- Exit Setup, 37
- Extended Capabilities Port, 21

F

- Figures
 - Floppy drive cable, 22
 - Floppy drive connector, 22
- Flash ROM**
 - Programming**, 39
- Floppy Disk Connector
 - Pinout, 22
- Floppy Drive A: and B, 31
- Floppy Drive connector
 - Pinout, 23

H

- Hard Disk Drive Type D:, 31
- Hard Drive LED Connector, 19
- Hardware installation, 1
- Heat sink, 11

I

- IDE drive
 - Configuring, 31
- IDE Hard Disk Connector, 25
- Install CPU**, 9
- Install Memory**, 7
- Install the Heat Sink**, 11, 12
- Installation Steps, 4
- Installing the Motherboard**, 14
- Iomega Zip drive, 31

J

- J11 System Case Fan, 13
- J22 Parallel Port connector, 21
- J24 Keyboard Connector, 17
- J3 Drain CMOS RAM power, 17
- J3 Erase Password, 43
- J4 USB Connectors, 18
- J5 Floppy Connector, 22
- J6 IDE Connector
 - Primary, 25
- J6 Pinout, 26
- J7 Pinout, 27
- J7 Secondary IDE Controller, 27
- J9 CPU Fan, 13

K

- Keyboard connector, 17

L

- Load FailSafe Settings, 38
- Load Optimal Settings, 38
- Load Original Values, 38
- LS-120 drive, 31

M

- Magneto-Optical drive, 31
- Memory
 - Reporting, 7

N

- NVRAM (Non-Volatile Random Access Memory), 35

O

- Onboard Adapters, 20
- Onboard I/O, 2
- Overview, 1

P

- Parallel Port, 21
- Password**
 - Deleting**, 43
- Password Support
 - Levels of, 35
- PCI Bus Speed, 2
- Pinout
 - Parallel Port, 21

- Primary IDE connector, 26
- Pinouts
 - Reset Switch, 18
- Power LED Connector, 18
- Power Supply, 16
 - Connecting, 16
- Power Switch Connector, 18
- Primary IDE Master, Primary IDE Slave,
 - Secondary IDE Master, Secondary IDE Slave, 31

R

- Reporting Memory, 7
- Reset Switch Connector, 18
- Resource conflicts, 20
- Retention Mechanism Kit, 10

S

- S804P.ROM, 40
- S804P.ROM file, 39
- SDRAM DIMM Sockets, 7
- Secondary IDE Controller, 27
- Security Setup, 34
- Set Supervisor Password, 36
- Set User Password, 36
- Sleep LED Connector, 19
- Sleep Switch Connector, 19
- Speaker Connector, 19
- Static Electricity**, 5, 44
- System Case Fan**, 13
- System memory, 7

T

- Tables
 - Floppy pinout, 23
 - I/O conflicts, 20
 - Twist in floppy cable, 23
- Technical Support, v
- Testing System, 28

U

- Unpack the Motherboard**, 5
- USB Connectors, 18

