



MegaDual
Pentium II[®]/Pentium III[®]
PCI Motherboard
User's Guide

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American Megatrends, Inc.
5555 Oakbrook Parkway,
Building 200,
Norcross, GA 30093

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Revision History

3/15/00 Initial release.
4/20/00 Added information about SCSI and LAN drivers (QLogic and Intel web site URLs.)

Table of Contents

1	Hardware Installation	1
	Overview	1
	MegaDual PCI Motherboard Layout	3
	Step 1 Unpack the Motherboard	4
	Avoid Static Electricity	4
	Step 2 Configure CPU Speed.....	5
	Step 3 Install Additional Voltage Regulator	6
	Step 4 Connect CPU Fans.....	7
	Step 5 Install CPU.....	8
	Step 6 Install Memory.....	9
	Step 7 Install the Motherboard.....	11
	Step 8 Attach Cables	12
	Step 9 Connect I/O.....	19
	Step 10 Set Options on the QLogic Menu	31
	Step 11 Connect SCSI I/O	47
	Step 12 Install Drivers.....	52
	Step 13 Test and Configure.....	53
2	AMIBIOS Setup.....	55
	AMIBIOS Setup Menu	56
	Section 1 Main Setup.....	57
	Section 2 Advanced CMOS Setup.....	58
	Section 3 Chipset Setup.....	77
	Section 4 PCI/PnP Setup	79
	Section 5 Power Management Setup.....	83
	Power Management.....	84
	Section 6 Boot Setup.....	87
	Section 7 Security Setup.....	91
	AMIBIOS Password Support.....	91
	Security Setup	92
	Section 8 Exit Menu	95
3	Programming Flash ROM	97
	Bootblock Code Checkpoint Codes	103
4	Deleting a Password	105
A	Specifications	107
	Engineering Specifications.....	107
B	Cable Information.....	109
Index	111

Preface

To the OEM Thank you for purchasing the high performance American Megatrends MegaDual Pentium II/Pentium III PCI 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 MegaDual 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 MegaDual PCI motherboard. It explains how to assemble a system based on the MegaDual 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 MegaDual Pentium II/Pentium III PCI motherboard
 - one CD containing drivers for the QLogic SCSI controller, and the Intel 82559 LAN controller
 - one CD containing the AMI ASM (AMI Server Manager) server management program. Please refer to the ASM manual for information on how to use this program.
 - one termination card
 - two VRM modules
 - two retention mechanisms for the Pentium II/Pentium III CPUs
 - Warranty Card
 - the *American Megatrends MegaDual Pentium II®/ Pentium III® PCI Motherboard User's Guide*
-

1 Hardware Installation

Overview

The American Megatrends MegaDual Pentium II/III features include:

- support for two Intel Pentium II/Pentium III CPUs
- support for all Pentium II/Pentium III frequencies
- up to 4 GB of onboard ECC SDRAM system memory
- system memory parity checking or ECC (Error Checking and Correction)
- PCI local bus throughput of 132 MB/s for 32-bit at 33 MHz, and 512MB/s for 64-bit at 66 MHz
- onboard dual channel 160M SCSI controller
- the ASM server management software
- four 32-bit, 33 MHz PCI expansion slots
- two 64-bit, 66 MHz PCI expansion slots
- an AGP PRO 4x connector
- 10/100 MB onboard LAN

Warning – Danger of Battery Shorting

In PCI Slot #4 (J11), some adapter cards with larger Ground brackets may short out the battery. This is not a problem with most PCI adapter cards. If there is a problem with the PCI adapter card, the battery may drain and a CMOS error may occur. *Please make sure that the bracket mounting screws do not touch the battery terminal when inserting PCI adapter cards in PCI Slot #4 (J11). If the screws touch the battery terminal, install the PCI adapter card in a different PCI Slot.*

CPUs

This motherboard supports all Intel Slot1 CPUs. CPU speed can be set in the AMIBIOS setup.

Note: Boxed CPUs come with pre-set clock speed ratios. For these CPUs, there is no BIOS option to configure CPU speed.

Cont'd

Overview, Continued

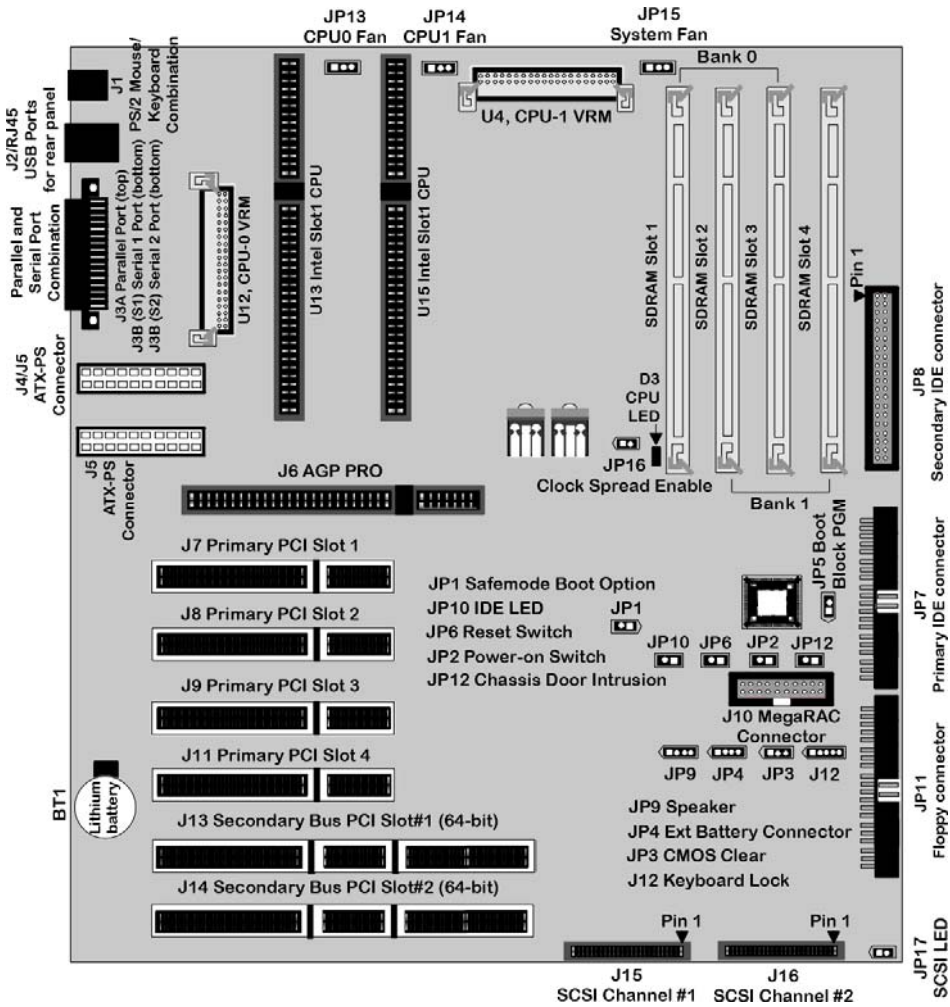
PCI Bus Speed AMIBIOS automatically configures the PCI slots. The PCI slots are synchronous with the CPU clock:

CPU External Clock Frequency	PCI Expansion Slot Frequency
100 MHz	33 MHz for 32-bit, 66 MHz for 64-bit
133 MHz	33 MHz for 32-bit, 66 MHz for 64-bit

Onboard I/O The MegaDual motherboard includes:

- one onboard Qlogic 12160 dual 160M SCSI controller
 - two 40-pin IDE connectors for 1 – 4 IDE drives
 - a 34-pin floppy drive connector
 - two serial port connectors
 - a 25-pin parallel port connector
 - a keyboard and PS/2 mouse dual mini
 - two 4-pin USB ports on dual combo
 - onboard 82559 10/100 Mb LAN
-

MegaDual PCI Motherboard Layout



Step 1 Unpack the Motherboard

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

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

Avoid Static Electricity

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

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

Step 2 Configure CPU Speed

If you use two CPUs with different speed ratings, put the settings to the lower CPU speed.

CPU speed is controlled by the BIOS setup. See the description in the Chapter 2 AMIBIOS setup for more information.

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



Caution

Both CPU slots must be fully populated at all times. If you use only one CPU, install the termination card in the second CPU location.

If the board is powered up with one empty CPU slot, the CPU LED (located at D3 on board graphic on page 3) will light up and the board will stay in RESET mode.

Step 3 Install Additional Voltage Regulator

Two Voltage Regulator Modules (VRMs) are shipped with every MegaDual motherboard. Each installed CPU requires its own VRM. Even if you use only one CPU, you can install both VRMs on the motherboard.



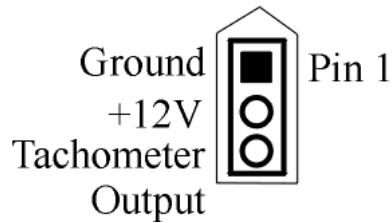
Caution

Do not power up the MegaDual board if there is a CPU installed without a corresponding VRM.

Step 4 Connect CPU Fans

JP13 and JP14 (shown below) are 3-pin bergs that connect the fan on the CPU heat sink to the motherboard power. JP13 is the CPU0 fan connector for the CPU in location U13. JP14 is the CPU1 fan connector for the CPU in location U15.

JP13 and JP14 pinouts



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

The connector from the CPU fan usually has three leads:

- the black lead represents ground
 - the red lead represents +12V
 - the yellow lead represents tachometer output
-

JP15 System Fan JP15 is a 3-pin berg. The pinout is the same for JP15 as it is for JP13 and JP14. The chassis fan should provide a tachometer output on Pin 3 so it can be monitored by the onboard server management hardware.

Step 5 Install CPU

MegaDual supports Intel Pentium II/Pentium III SECC2 CPUs. MegaDual has two slot 1 connectors that can house these CPUs.

Warning

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

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

You must install the termination card in the empty CPU slot if installing only one Pentium II/Pentium III CPU. The motherboard will not power up unless both CPU slots are occupied. If both CPU slots are not occupied, the CPU LED D3 will come on.

Step 6 Install Memory

System Memory There are four 72-bit SDRAM DIMM (Dual Inline Memory Module) sockets. System memory must be populated one bank at a time. Each bank contains two sockets. Bank0 contains DIMM sockets U17 and U19. Bank1 contains U18 and U20.

The minimum amount of system memory supported by the MegaDual PCI is 16 MB. Each socket can hold one DIMM. You can use:

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

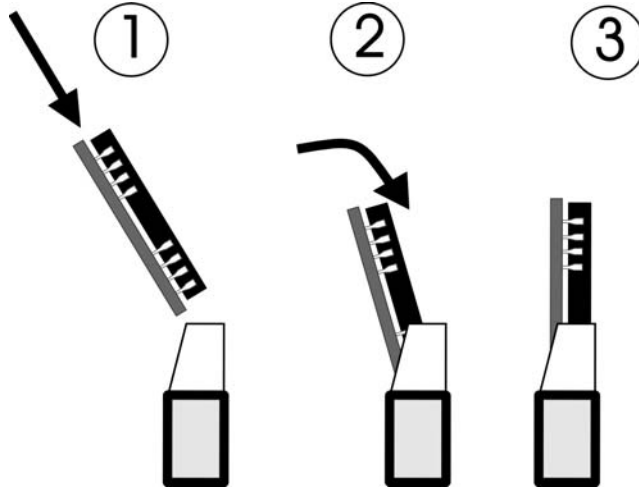
Memory must be installed one bank at a time. The two modules in a bank must be **exactly** the same.

MegaDual supports up to 4 GB of system memory using PC-100 unbuffered DIMMs. Both registered and non-registered DIMMs are supported.

Cont'd

Step 6 Install Memory, Continued

Installing 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 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	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.
4	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

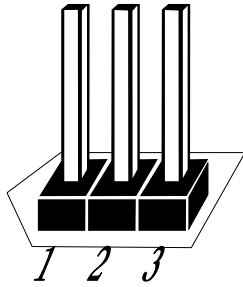
Connectors The MegaDual PCI motherboard includes many connectors. Connection instructions, illustrations of connectors, and pinouts are supplied in the following pages. A list of all connectors follows:

Connector	turn to
CPU0 fan JP13	page 7
CPU1 fan JP14	page 7
External battery connector JP4	page 13
Power supply connectors J4, J5	page 14
Drain CMOS RAM power JP3	page 15
Boot block pgm JP5	page 15
IDE LED JP10	page 16
PS/2 keyboard and mouse combination J1	page 16
Chassis intrusion JP12	page 16
SCSI LED JP17	page 16
Clock spread enable JP16	page 17
Hardware reset switch JP6	page 17
Speaker JP9	page 17
Keyboard lock connector J12	page 17
USB/RJ45 connector J2	page 18
Power-on switch JP2	page 18
Safe mode boot option JP1	page 18
Parallel port connector J3A	page 20
Serial port connectors J3B S1 and S2	page 21
Floppy connector JP11	page 22
IDE primary connector JP7	page 25
IDE secondary connector JP8	page 28
MegaRAC Port J10	page 30
SCSI channel 1 J15	page 47
SCSI channel 2 J16	page 47

Cont'd

Step 8 Attach Cables, Continued

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



External Battery Connector JP4 JP4 is the connector to the external battery.

The pinout is:

Pin	Assignments
1	External battery positive terminal
2	N/C
3	Ground
4	Ground

Cont'd

Step 8 Attach Cables, Continued

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

Before attaching all components, make sure the proper voltage has been selected. Power supplies often can run on a wide range of voltages and must be set (usually via a switch) to the proper range. Use at least a 300-watt ATX power supply, which should have built-in filters to suppress radiated emissions. Power supply voltage depends upon system load. For example, +12V rating should be matched to the amount of the external load (SCSI, IDE, or hard disks.)

Attach the cables from the power supply to the power connector(s) on the motherboard. ATX-compatible power supplies can have either one or two 20-pin connectors. You can use either one or both power connectors.

You can connect the ATX power supply to either J4 or J5 on the motherboard, or you can use both connectors if there are two power cables from the ATX power supply.

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	PSON	4	+5V (VCC)
15	Ground	5	Ground
16	Ground	6	+5V (VCC)
17	Ground	7	Ground
18	-5V	8	POWER GOOD
19	+5V	9	5VSB
20	+5V	10	+12V

Cont'd

Step 8 Attach Cables, Continued

JP3 Drain CMOS RAM Power JP3 is a 3-pin berg that can be used to erase the contents of CMOS RAM, where all system configuration information is stored.

Before you change JP3 from the default setting (1-2), turn off the power supply using the mechanical switch (not the soft-off power button.) This switch is normally located on the power supply. If there is no switch, remove the AC cord going to the power supplies.

To drain CMOS RAM power, perform the following steps:

Step	Action
1	Turn off power to the computer.
2	Remove the computer cover.
3	Remove the jumper from pins 1-2 of JP3.
4	Place a shorting bridge on pins 2-3 of JP3.
5	Wait for five seconds.
6	Remove the shorting bridge from pins 2-3 of JP3.
7	Put the shorting bridge back on pins 1-2 of JP3.
8	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.

You must then reboot the computer, run AMIBIOS Setup, and restore all system configuration information. The JP3 settings are:

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

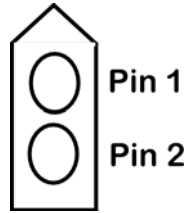
JP5 Boot Block Pgm JP5 is a 2-pin berg. JP5 is used to protect the boot block portion of the AMIBIOS.

In normal operation, this jumper must be left open. Refer to Chapter 3 Programming the Flash ROM for the correct use of this jumper.

Cont'd

Step 8 Attach Cables, Continued

JP10 IDE LED JP10 is a 2-pin connector. This jumper normally connects to the chassis. Pin 1 is indicated by the arrow:



J1 PS/2 Keyboard and Mouse Combination The keyboard connector (on bottom) is a 9-pin MINIDIN socket. The pinout is shown below.

Pin	Assignments
1	Keyboard data
2, 6	Not used
4	VCC
5	Keyboard clock
3, 13, 14	Ground

The mouse connector (on top) is a 9-pin MINIDIN. The pinout is:

Pin	Description	Pin	Description
7	Mouse data	8, 12	N/C
3	Keyboard ground	10	VCC
11	Mouse clock	9, 15, 16	Ground

JP12 Chassis Door Intrusion JP12 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.

JP17 SCSI LED JP17 is a 2-pin single inline berg that indicates whether the SCSI is active.

Cont'd

Step 8 Attach Cables, Continued

JP16 Clock Spread Enable JP16 is a 2-pin single inline berg that is *normally open*. JP16 should be used only to reduce emissions. When JP16 is shorted, the main clock chip on MegaDual spreads the clock spectrum to reduce emissions.

Note: Before changing the jumper setting for JP16, make sure that the system is turned off.

JP6 Reset Switch Connector JP6 is a two-pin berg that is attached via a cable to an externally-mounted reset switch. When the reset switch is pressed, the system performs a hard reset. Pin 2 is ground and Pin 1 is Hard Reset.

JP9 Speaker Connector JP9 is a four-pin single-inline berg that is optionally attached via a cable to a standard speaker.

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

J12 Keyboard Lock J12 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
5	Ground

Cont'd

Step 8 Attach Cables, Continued

J2 USB/RJ45 Combination J2A is 4-pin USB (Universal Serial Bus) stacked connector. J2A, the USB connector, is on bottom. J2B, the RJ45 connector, is on top. The pinout for the USB port is:

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

JP2 Power-on Switch JP2 is a two-pin single-inline berg. This is the soft-off power switch. When the system is on, if JP2 is shorted for more than four seconds, then the system power supplies go into soft-off state.

Once the system is in soft-off state, one push of this button turns the system back on.

JP1 Safe Mode Boot Option JP1 is a 2-pin single inline berg.

MegaDual uses AMIBIOS setup to control CPU speed. If the CPU speed is set too high (above the CPU stamped speed), the system might not boot. If the system does not boot, perform the following procedure:

Step	Action
1	Turn the power off.
2	Plug the JP1 jumper.
3	Turn the power on. The system will boot in safe mode at 200 MHz CPU speed.
4	Turn the power off.
5	Remove the jumper.
6	Turn the power on.
7	Press to enter Setup.
8	Configure the correct CPU speed.

Cont'd

Step 9 Connect I/O

Onboard Adapters The MegaDual PCI motherboard has:

- two serial ports (J3B S1 and J3B S2),
 - a parallel port (J3A),
 - two Ultra Wide SCSI connectors (J15 and J16),
 - an IDE controller on the PCI bus (the primary IDE connector is JP7 and the secondary IDE connector is JP8), and
 - one floppy controller (JP11).
-

Conflicts

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

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

Cont'd

Step 9 Connect I/O, Continued

J3 Parallel and Serial Port Combination J3 combines a parallel port and two serial ports. Each port is described in the following sections.

J3A Parallel Port J3A is a 25-pin connector for a parallel port. The J3A 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 the Advanced menu (Port Configuration subscreen) 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

J3B (S1) SER1

J3B (S2) SER2 J3B (S1) and J3B (S2) are 9-pin connectors that provide an AT-compatible serial port interface. The serial port base I/O port address and other serial port settings can be configured through the Advanced menu (Port Configuration subscreen) in AMIBIOS® Setup.

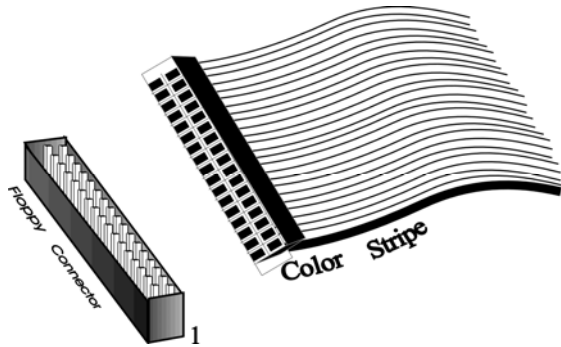
The pinout for J3B (S1) and J3B (S2) is shown below.

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

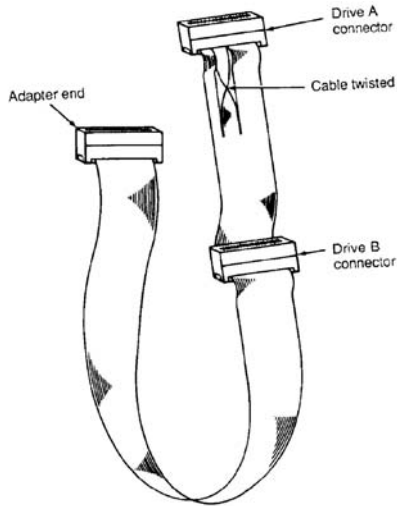
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Step 9 Connect I/O, Continued

JP11 Floppy Connector JP11 is a 34-pin dual-inline berg. Connect the cable from the floppy drive to JP11, as shown below. The onboard floppy controller cannot be used if a hard disk card with a floppy controller is installed. Choose the Advanced menu (Floppy Configuration subscreen) to configure the floppy controller.



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



Cont'd

Step 9 Connect I/O, Continued

JP11 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

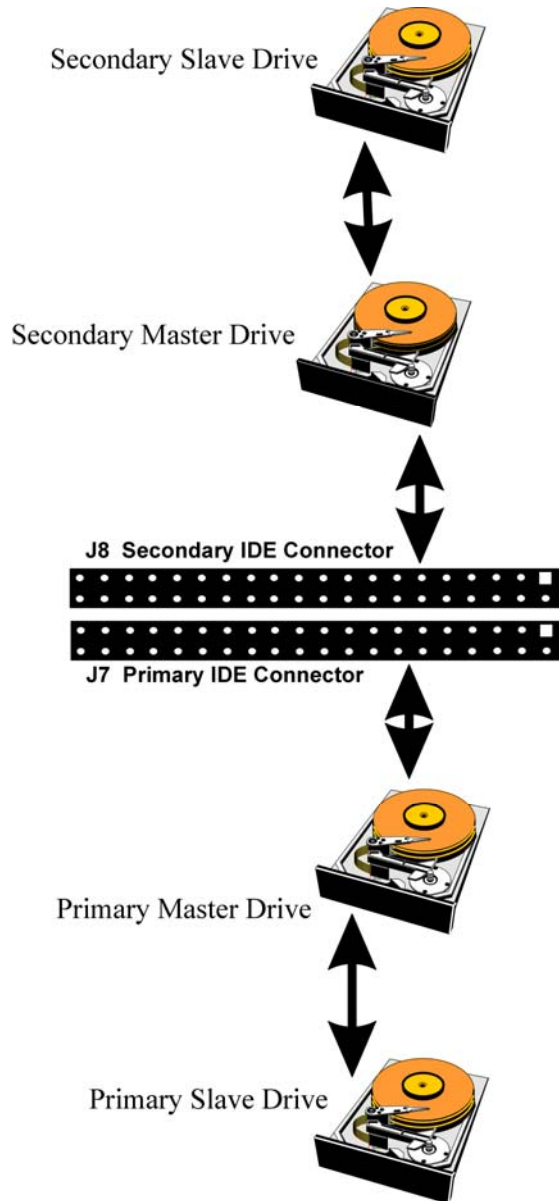
Twist in Floppy Cable

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

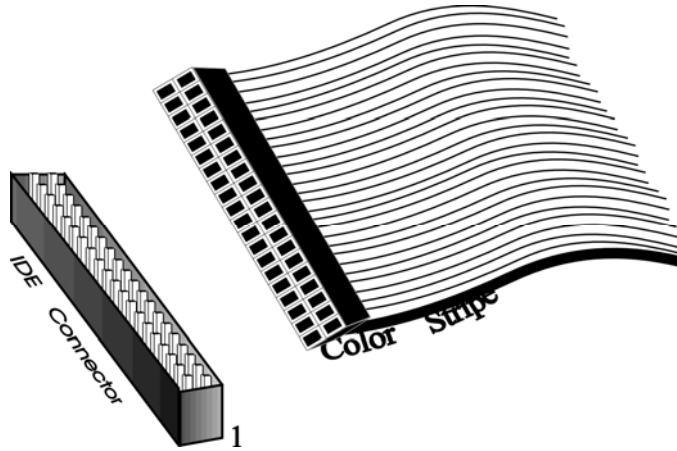
IDE Drives Attach the IDE drives in the following manner. Choose Advanced menu (IDE Configuration subscreen) in AMIBIOS® Setup to enable the onboard IDE controller.



Cont'd

Step 9 Connect I/O, Continued

Attach IDE Cable to JP7 JP7 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 JP7, as shown below.



JP7 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 Advanced Setup (IDE Configuration subscreen) to use a RLL, MFM, or SCSI hard disk drive controller.

Cont'd

Step 9 Connect I/O, Continued

Ultra DMA 4/ATA66 Drives on the Primary Channel AMI MegaDual ships with two 80-pin IDE cables. Although the cable is 80-pin, the connectors are still 40-pin.

80-pin cables are required to support UDMA-4/ATA66 IDE drives.

AMIBIOS automatically detects the cable type and drive type so that it can enable the fastest IDE mode possible.

Primary Cable Type	Primary Master	Primary Slave	Result
40-pin	N/A	N/A	Highest possible mode is UDMA-2 or ATA33.
80-pin	UDMA-4	UDMA-4	Master/slave are both set to UDMA-4.
80-pin	UDMA-4	UDMA-2	Master is set to UDMA-4. Slave is set to UDMA-2.
80-pin	UDMA-2	UDMA-4	Master is set to UDMA-2. Slave is set to UDMA-4.
80-pin	UDMA-2	UDMA-2	Master is set to UDMA-2. Slave is set to UDMA-2.

Cont'd

Step 9 Connect I/O, Continued

JP7 Pinout JP7 is the primary IDE connector. The JP7 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

JP8 Secondary IDE Controller JP8, 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 JP8 via a standard 40-pin IDE cable as shown on page 25.

Ultra DMA 4/ATA66 Drives on the Secondary Channel AMI MegaDual ships with two 80-pin IDE cables. Although the cable is 80-pin, the connectors are still 40-pin.

80-pin cables are required to support UDMA-4/ATA66 IDE drives.

AMIBIOS automatically detects the cable type and drive type so that it can enable the fastest IDE mode possible.

Secondary Cable Type	Secondary Master	Secondary Slave	Result
40-pin	N/A	N/A	Highest possible mode is UDMA-2 or ATA33.
80-pin	UDMA-4	UDMA-4	Master/slave are both set to UDMA-4.
80-pin	UDMA-4	UDMA-2	Master is set to UDMA-4. Slave is set to UDMA-2.
80-pin	UDMA-2	UDMA-4	Master is set to UDMA-2. Slave is set to UDMA-4.
80-pin	UDMA-2	UDMA-2	Master is set to UDMA-2. Slave is set to UDMA-2.

Cont'd

Step 9 Connect I/O, Continued

JP8 Pinout JP8 is the secondary IDE connector. The JP8 pinout is:

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

Cont'd

Step 9 Connect I/O, Continued

J10 Pinout J10 is the 20-pin connector specifically for AMI's MegaRAC PCI adapter, which is a PCI remote assistant card.

Pin	Description
1	MEGSMI#
2	I2CSCLK_LM
3	RAC_PRESENT
4	GROUND
5	PWRBTN#
6	I2CSDA_LM
7	No connection
8	No connection
9	No connection
10	No connection
11	MEGRST#
12	GROUND
13	GROUND
14	No connection
15	No connection
16	GROUND
17	No connection
18	No connection
19	No connection
20	GROUND

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

Warning – Danger of Battery Shorting

In PCI Slot #4, some adapter cards with larger Ground brackets may short out the battery. This is not a problem with most PCI adapter cards. If there is a problem with the PCI adapter card, the battery may drain and a CMOS error may occur. *Please make sure that the bracket mounting screws do not touch the battery terminal when inserting PCI adapter cards in PCI Slot #4. If the screws touch the battery terminal, install the PCI adapter card in a different PCI Slot.*

Step 10 Set Options on the QLogic Menu

Overview The setup utility for the QLogic adapter, Fast!UTIL Version 1.1, contains the configuration options that you can choose for the adapter. There are several items that that can be configured, such as the adapter, the SCSI device, and the SCSI bus.

This section displays the screens, options, default settings, and other possible settings for each item.

How to access the QLogic Fast!UTIL When you boot the system, the information below displays. Press <Alt>-<Q> to access Fast!UTIL.

```
AMIBIOS© 1999 American Megatrends, Inc., Version 07.00.00
BIOS Date 02/08/00 16:32:05
.....
.....
Pres Del to run Setup
WAIT..
.....
.....
QLogic Corporation
QLA1216X PCI SCSI ROM BIOS Version 7.07
.....
Press <Alt-Q> for Fast!UTIL
.....
<Alt-Q> Detected, Initialization in Progress, Please wait...
```

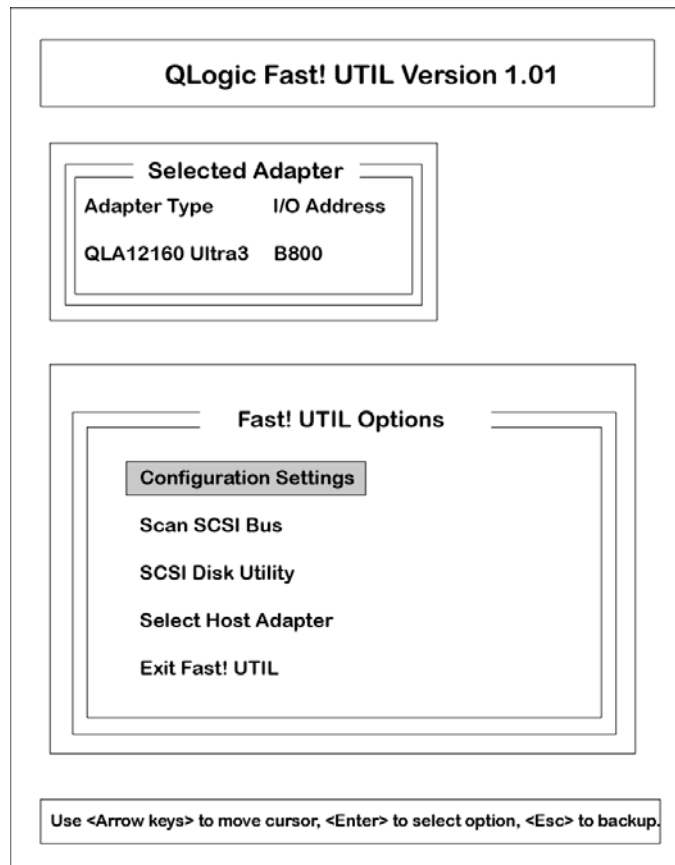
After you press <Alt> <Q> to access Fast!UTIL, the main menu screen displays. The screens and options are documented on the following pages.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Fast! UTIL Options Screen The selected adapter displays on the main menu screen, along with the I/O address, and Fast! UTIL options. The following pages take you through the options, beginning with Configuration Settings. The options to be selected are highlighted. The submenus for each option are documented.

On this screen, select Configuration Settings and press <Enter>. The submenu for Configuration Settings displays, as shown on the following page.



Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen This screen displays the list of configuration settings. You can select each item from the list to access a submenu and choose the options for that item.

Select Host Adapter Settings to set the configuration for the host adapter and press <Enter>. The Host Adapter Settings screen displays, as shown on the following page.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

Configuration Settings

- Host Adapter Settings
- SCSI Device Settings
- SCSI Bus Settings
- Autoconfigure SCSI Devices
- Selectable Boot Settings
- Restore Default Adapter Settings
- Raw NVRAM Data

Use <Arrow keys> to move cursor, <Enter> to select option, <Esc> to backup.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... This screen displays the list of host adapter settings. The system provides the BIOS address, BIOS revision number, and interrupt level. You can select the options for the other items, beginning at Host Adapter BIOS.

Select each item that you want to change and press <Enter>. A window displays the items. Use the arrow keys and press <Enter> to select the setting.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

Host Adapter Settings

BIOS Address:	C8000
BIOS Revision:	7.07
Interrupt Level:	10
Host Adapter BIOS:	Enabled
PCI Bus DMA Burst:	Enabled
CDROM Boot:	Disabled
Adapter Configuration:	Auto
Drivers Load RISC Code:	Enabled
>4 Gbyte Addressing:	Disabled
Fast Command Posting:	Enabled

Use <Arrow keys> and <Enter> to change settings, <Esc> to exit.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The Host Adapter Setting subscreen displays the list of host adapter settings. The system provides the BIOS address, BIOS revision number, and interrupt level.

You can select the options for the other items, beginning at Host Adapter BIOS. The definitions and settings for the other items are:

Item	Settings
Host Adapter BIOS	If you set this to <i>Disabled</i> , the ROM BIOS on the board is disabled, which frees space in upper memory. Do not disable this setting if you boot from a SCSI disk drive attached to the board. The settings are <i>Enabled</i> or <i>Disabled</i> . The default setting is <i>Enabled</i> .
PCI Bus DMA Burst	Set this to <i>Enabled</i> to perform burst transfers. The settings are <i>Enabled</i> or <i>Disabled</i> .
CDROM Boot	Set this to <i>Enabled</i> for the ROM BIOS to boot from the attached SCSI CD-ROM if a bootable compact disk is installed. The settings are <i>Enabled</i> or <i>Disabled</i> . The default setting is <i>Disabled</i> .
Adapter Configuration	<p>The settings are <i>Auto</i>, <i>Manual</i>, or <i>Safe</i>. The default is <i>Auto</i>.</p> <p>If set to <i>Auto</i>, the BIOS automatically configures the board to match any SCSI device that is attached to the board and select optimum performance.</p> <p>If set to <i>Manual</i>, you can select the configuration settings manually for any SCSI device.</p> <p>Note: If you change any values, performance problems for incorrect device operation can result.</p> <p>If set to <i>Safe</i>, the optimal configuration settings are not used and all attached devices work in minimal configuration (narrow, asynchronous mode.)</p> <p>Note: <i>Safe</i> mode is used primarily to troubleshoot SCSI devices that are not working properly during normal system operation.</p>
Drivers Load RISC Code	<p>Set this to <i>Enabled</i> for the board to use the RISC firmware that is embedded in the software driver. The settings are <i>Enabled</i> or <i>Disabled</i>. The default setting is <i>Enabled</i>.</p> <p>Note: The driver that you load must support this setting. If it does not, the result will be the same as <i>Disabled</i>.</p>
>4 Gbyte Addressing	The settings are <i>Enabled</i> or <i>Disabled</i> .
Fast Command Posting	Set this to <i>Enabled</i> to maximize bus transfer performance. The settings are <i>Enabled</i> or <i>Disabled</i> . The default is <i>Enabled</i> .

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The second item on the Configuration Settings screen is SCSI Device Settings. Select SCSI Device Settings and press <Enter>. A window displays, allowing you to select the SCSI device settings for SCSI Bus 0 or SCSI Bus 1. The SCSI Bus 0 Device Settings screen is shown below.

You can select a setting for each item for SCSI IDs 0 to 15. Press <Tab> to toggle between individual and group settings. Use the arrow keys and press <Enter> to change settings.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

Adapter Configuration Mode
Auto

SCSI Bus 0 Device Settings

SCSI ID	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disconnects OK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Check Parity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable LUNs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable PPR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable Device	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negotiate Wide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negotiate Sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tagged Queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sync Offset	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Sync Period	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Exec Throttle	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Use <Tab key> to toggle between individual or group settings
Use <Arrow key> and <Enter> to change settings, <Esc> to Exit

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The third item on the Configuration Settings screen is SCSI Bus Settings. Select SCSI Bus Settings and press <Enter>. A window displays, allowing you to select the SCSI bus settings for SCSI Bus 0 or SCSI Bus 1. The SCSI Bus 0 Settings screen is shown below. Use the arrow keys and press <Enter> to change settings.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

SCSI Bus 0 Settings

SCSI Bus SCSI ID	: <input style="width: 20px; text-align: center;" type="text" value="7"/>
SCSI Bus Reset	: Enabled
SCSI Bus Reset Delay	: 5
SCSI Bus Termination	: Auto

Use <Arrow keys> and <Enter> to change settings, <Esc> to exit.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The settings for the SCSI bus items are:

Item	Settings
SCSI Bus SCSI ID	The settings are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15. The default setting is 7.
SCSI Bus Reset	Set this to <i>Enabled</i> to reset the SCSI bus at system power up. Set this to <i>Disabled</i> to prevent unwanted SCSI bus resets when you have two or more host adapter boards on the SCSI bus. The settings are <i>Enabled</i> or <i>Disabled</i> . The default is <i>Enabled</i> .
SCSI Bus Reset Delay	After the SCSI bus is reset, the firmware does not initiate any SCSI activity for the number of seconds that you specify in this setting. The settings are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 seconds. The default setting is 5.
SCSI Bus Termination	<p>Select a setting for termination of the board. Termination is required for the last SCSI device on each end of the SCSI bus. The settings are <i>Auto</i>, <i>High only</i>, <i>Enabled</i> or <i>Disabled</i>.</p> <p>With <i>Auto</i> termination, the SCSI termination requirements are determined by the board and set automatically.</p> <p>The <i>Disabled</i> setting disables termination. Use this setting to override the termination requirements sensed by the board.</p> <p>The <i>High only</i> setting enable high termination, overriding termination requirements sensed by the board. Use this for port one on the board when there is a wide device connected to one connector and a narrow device connected to the other connector.</p> <p>Use this for port two on the board if the port two connector is not at one end of the SCSI bus and there are narrow devices at one end of the bus and wide devices at the other end.</p>

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The fourth item on the Configuration Settings screen is Autoconfigure SCSI Devices. Select Autoconfigure SCSI Devices and press <Enter>. A window displays, allowing you to select the Autoconfigure settings for SCSI Bus 0 or SCSI Bus 1. The Autoconfigure SCSI Devices screen is shown below.

You can select a setting for each item for SCSI IDs 0 to 15. Press <Tab> to toggle between individual and group settings. Use the arrow keys and press <Enter> to change settings.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

Adapter Configuration Mode
Auto

SCSI Bus 0 Device Settings

SCSI ID	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disconnects OK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Check Parity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable LUNs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable PPR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enable Device	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negotiate Wide	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Negotiate Sync	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tagged Queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sync Offset	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Sync Period	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Exec Throttle	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Use <Tab key> to toggle between individual or group settings
Use <Arrow key> and <Enter> to change settings, <Esc> to Exit

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The fifth item on the Configuration Settings screen is Selectable Boot Settings. Select Selectable Boot Settings and press <Enter>. The Selectable Boot Settings subscreen is shown below. Use the arrow keys and press <Enter> to change settings.

The screenshot displays the QLogic Fast! UTIL Version 1.01 Configuration Settings screen. It is divided into several sections:

- Qlogic Fast! UTIL Version 1.01**: The main title of the utility.
- Selected Adapter**: A table showing the current adapter configuration.
- Selectable Boot Settings**: A list of boot options that can be configured.
- Instructions**: A footer message about navigation keys.

Selected Adapter	
Adapter Type	I/O Address
QLA12160 Ultra3	B800

Selectable Boot Settings	
Selectable SCSI Boot	: Disabled
SCSI Bus	: 0
SCSI Boot ID	: 0
SCSI Boot LUN	: 0

Use <Arrow keys> and <Enter> to change settings, <Esc> to exit.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The settings for the selectable boot items are:

Item	Settings
Selectable SCSI Boot	Use this to select the SCSI ID from which you want to boot. The system boots from the selected SCSI drive. This option applies to disk devices, but not to CD-ROMs, tape drives, or other nondisk devices. The settings are <i>Enabled</i> or <i>Disabled</i> . If you select <i>Disabled</i> , the system looks for an IDE drive to boot from. If the system does not find an IDE drive, it looks for the first bootable SCSI drive. When this option is disabled, the SCSI Boot ID and SCSI Boot LUN parameters have no effect.
SCSI Bus	The settings are <i>0</i> , or <i>1</i> . The default setting is <i>0</i> .
SCSI Boot ID	The settings are <i>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15</i> . The default setting is <i>0</i> .
SCSI Boot LUN	The settings are <i>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15</i> . The default setting is <i>0</i> .

Configuration Settings Screen, cont'd... The sixth item on the Configuration Settings screen is Restore Default Adapter Settings. After you have changed any settings, you can use this option to restore the adapter settings to the defaults. Select Restore Default Adapter Settings and press <Enter>. The message

```
Adapter Defaults Restored
```

appears.

Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Configuration Settings Screen, cont'd... The last item on the Configuration Settings screen is Raw NVRAM Data (Non-Volatile Random Access Memory.) The Raw NVRAM Data subscreen displays the NVRAM data and byte offset in hexadecimal format. This information is for troubleshooting; it cannot be modified.

Select Raw NVRAM Data and press <Enter>. The subscreen is shown below. Press <Esc> to return to the Configuration Settings screen.

Qlogic Fast! UTIL Version 1.01

Selected Adapter

Adapter Type	I/O Address
QLA12160 Ultra3	B800

Raw NVRAM Data 00 thru FF hex

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
Byte Offset 00	49	53	50	20	01	00	00	00	00	00	00	00	00	00	00	00
10	44	8F	00	00	41	00	00	00	27	05	00	00	38	00	FA	00
20	00	01	00	00	00	00	00	00	FD	10	09	38	92	00	FD	10
30	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38	92	00
40	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38
50	92	00	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10
60	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38	92	00
70	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38
80	92	00	FD	10	09	38	92	00	27	05	02	00	38	00	FA	00
90	00	01	00	00	00	00	00	00	FD	10	09	38	92	00	FD	10
A0	09	38	92	00	10	10	09	38	92	00	FD	10	09	38	92	00
B0	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38
C0	92	00	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10
D0	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38	92	00
E0	FD	10	09	38	92	00	FD	10	09	38	92	00	FD	10	09	38
F0	92	00	FD	10	09	38	92	00	00	00	77	10	07	00	FA	00

<Esc> to exit

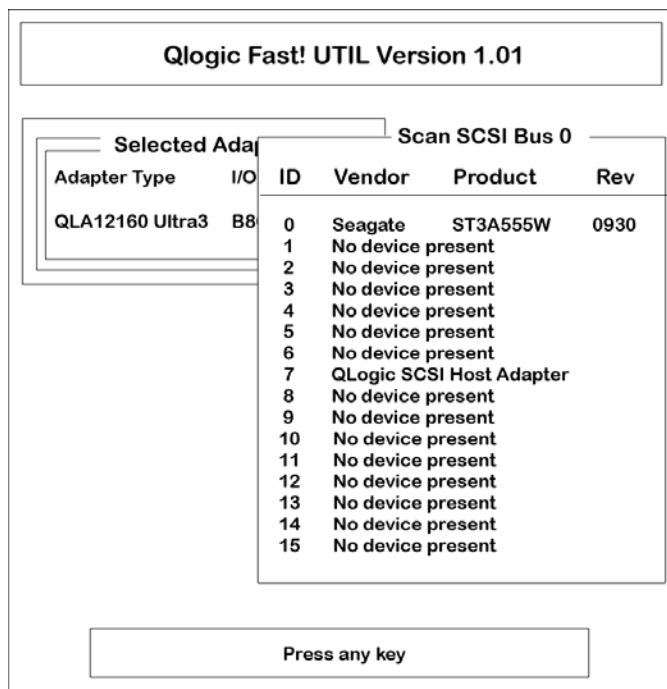
Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Scan SCSI Bus Screen You can use the Scan SCSI Bus screen to access the following information for the selected SCSI device:

- ID
- Vendor name
- Product name
- Revision

On the Fast! UTIL Options screen, select the second option, Scan SCSI Bus, and press <Enter>. A window displays for you to select a SCSI bus. After you select the SCSI bus and press <Enter>, the following screen displays. The default ID for the Qlogic SCSI host adapter is 7.



Cont'd

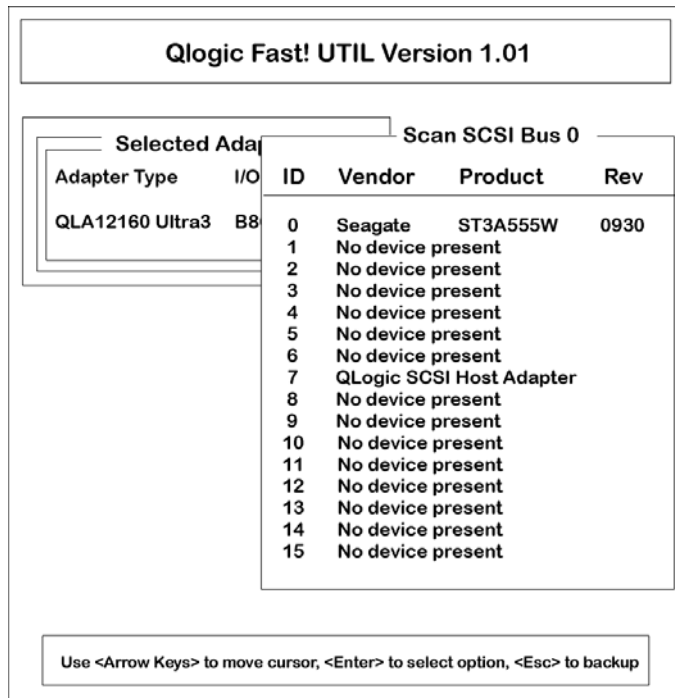
Step 10 Set Options on the QLogic Menu, Continued

Scan Disk Utility Screen You can use the Scan Disk Utility screen to perform a low-level format or verify the disk media for a disk device. The following information for the selected SCSI bus displays:

- ID
- Vendor
- Product
- Revision

On the Fast! UTIL Options screen, select the third option, Scan Disk Utility, and press <Enter>. A window displays for you to select the SCSI bus. After you select the SCSI bus and press <Enter>, the following screen displays. The default ID for the QLogic SCSI host adapter is 7.

Note: If there is no SCSI device connected to J16, when you select SCSI Bus 1, a message window displays to indicate that there are no SCSI devices present for that bus.

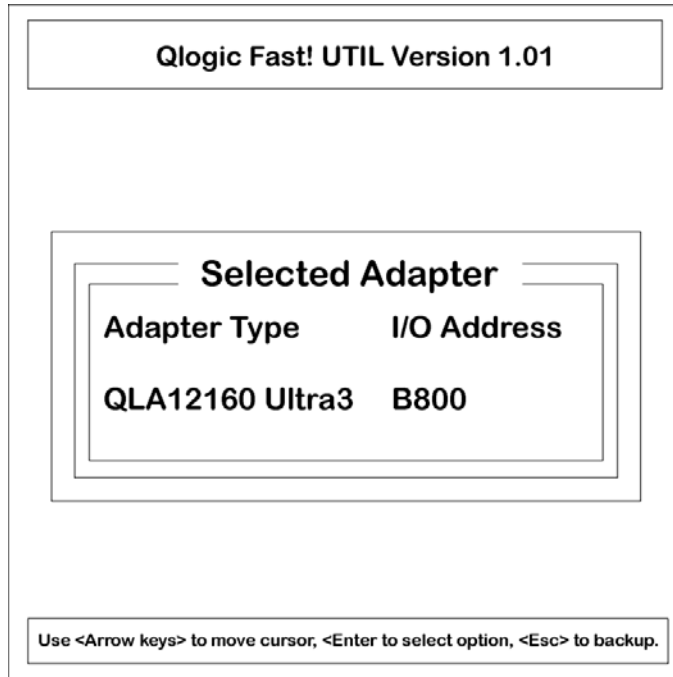


Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Select Host Adapter Screen You can use the Select Host Adapter screen to view the adapter type and I/O address for the host adapter.

On the Fast! UTIL Options screen, select the fourth option, Select Host Adapter, and press <Enter>. The following screen displays:

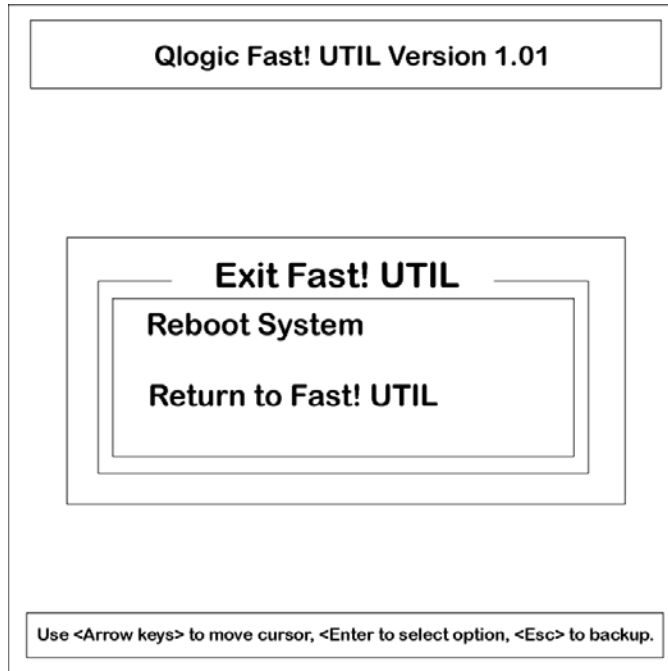


Cont'd

Step 10 Set Options on the QLogic Menu, Continued

Exit Fast! UTIL Screen You can use the Exit Fast! UTIL screen to exit the QLogic menu.

On the Fast! UTIL Options screen, select the fifth option, Exit Fast! UTIL, and press <Enter>. The following screen displays. You can reboot the system to activate the changed Qlogic settings or return to the Fast! UTIL program to change the settings.



Step 11 Connect SCSI I/O

SCSI Connectors J15 (SCSI channel 1) and J16 (SCSI channel 2) are 68-pin high density (Wide) SCSI connectors.

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

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

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

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

Cont'd

Step 11 Connect SCSI I/O, Continued

High-Density 68-Pin SCSI Connector Pinout

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

Cont'd

Step 11 Connect SCSI I/O, Continued

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

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

(3 meter-(SCSI signal length on AMI RAID)-(SCSI length in storage box)

= (3 meter - 0.305 meter - SCSI length in storage box)

= 2.695 - SCSI length in storage box

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

(1.5 meter-(SCSI signal length on AMI RAID)-(SCSI length in storage box)

= (1.5 meter - 0.305 meter - SCSI length in storage box)

= 1.195 - SCSI length in storage box

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

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

90 ohms +/- 6 ohms for the REQ and ACK signals

90 ohms +/- 10 ohms for all other signals

Cont'd

Step 11 Connect SCSI I/O, Continued

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

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

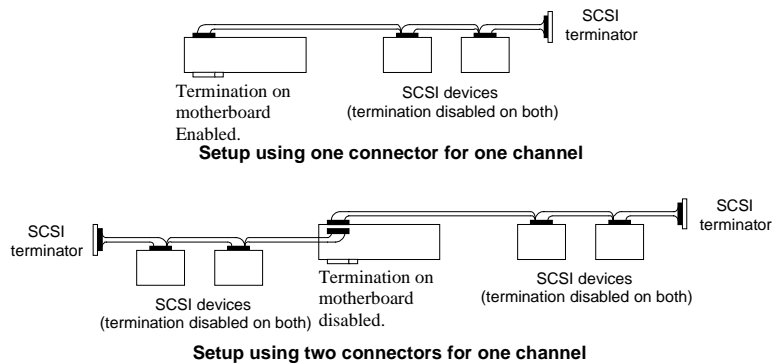
Stub length The stub length shall not exceed 0.1 meter. The spacing of devices on the SCSI bus should be at least three times the stub length to avoid stub clustering.

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

Cont'd

Step 11 Connect SCSI I/O, Continued

SCSI Termination Possibilities



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

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

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

Step 12 Install Drivers

The following drivers are provided with the MegaDual motherboard:

- one CD containing the American Megatrends ASM server management software
 - one CD with SCSI drivers
-

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

There are SCSI drivers for the following operating systems:

- Windows NT 4.0
- Windows 2000
- DOS
- Novell Netware 4.x
- Novell Netware 5.x
- UnixWare 7
- Linux

For more information about the QLogic QLA12160 SCSI driver, refer to the Tech Support Section of the QLogic web site: www.qlogic.com.

Installing LAN Drivers The LAN 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 LAN driver installation procedure.

There are LAN drivers for Intel 82559 for the following operating systems:

- Windows NT 4.0
- Novell Netware 4.x
- Novell Netware 5.x
- OS/2
- SCO Unix
- UnixWare
- Windows 9x

For more information about the Intel 82559 10/100 MBPS Fast Ethernet controller driver, refer to the Tech Support section of the Intel web site: www.Intel.com.

Step 13 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* guide. Make sure the affected part is properly seated and connected. An error message is displayed if the error is less serious. Recheck the system configuration or the connections.

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

2 AMIBIOS Setup

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

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

Starting AMIBIOS Setup As POST executes, the following appears:

Press Delete to run Setup.

After you press <Delete>, the main menu for the BIOS Setup Utility displays. From the main menu, you can access the other setup screens, such as the Chipset and Power menus.

AMIBIOS Setup Menu

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

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
System Board	:	MegaDUAL					
Version	:	Rev D					
Series	:	798					
AMIBIOS Version	:	07.00xx					
BIOS Release Date	:	xx/xx/xx					
BIOS Filename	:	S798P.ROM					
Processor Type	:	PentiumIII™				↔	Select Screen
Processor Speed	:	667MHz				↑↓	Select Item
System Memory	:	64MB				+ -	Change Field
System Time		11:31:17				Tab	Select Field
System Date		Thu 02/24/00				F1	General Help
						F8	Load FailSafe
						F9	Load Optimal
						F10	Save and Exit
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Section 1 Main Setup

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

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
System Board	:	MegaDUAL					
Version	:	Rev B					
Series	:	798					
AMIBIOS Version	:	07.00xx					
BIOS Release Date	:	xx/xx/xx					
BIOS Filename	:	S798P.ROM					
Processor Type	:	PentiumIII™				←→	Select Screen
Processor Speed	:	533MHz				↑↓	Select Item
System Memory	:	64MB				+ -	Change Field
System Time			11:31:17			Tab	Select Field
System Date			Thu 02/24/00			F1	General Help
						F8	Load FailSafe
						F9	Load Optimal
						F10	Save and Exit
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System Date/System Time Use this option to change the system date or 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/YY 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.

Section 2 Advanced CMOS Setup

Choose Advanced CMOS Setup from the AMIBIOS Setup Utility main menu. Select one of the items in the left frame of the screen, such as Standard Boot Settings, to go to the sub screen for that item. Advanced CMOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced CMOS Setup options are described in this section. The Advanced CMOS Setup screen is shown below. The sub screens are described on the following pages.

BIOS SETUP UTILITY	
Main Advanced Chipset PCIPnP Power Boot Security Exit	
Setup Warning Setting items on this screen to incorrect values may cause the system to malfunction! > Standard Boot Settings > Port Configuration > Floppy Configuration > IDE Configuration > Event Log Configuration > System Health Monitoring Hardware	Configure Settings during System Boot ←→ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Advanced CMOS Setup, Continued

STANDARD BOOT SETTINGS SCREEN

Standard Boot Settings You can use this screen to select options for the Standard Boot Settings. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY	
Advanced	
Standard Boot Settings	Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quick Boot	Enabled
Pause-On Configuration Display	5 sec
Boot With Minimum Memory	Disabled
Display BIOS POST Messages	Yes
Display Add-On ROM Messages	Yes

Typematic Rate	Fast
System Keyboard	Absent
Primary Display	VGA/EGA
PS/2 Mouse Support	Enabled
Bootup Num-Lock	On
Wait For 'F1' If Error	Enabled
Hit 'DEL' Message Display	Enabled
Boot To OS/2	No
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Quick Boot Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Pause-On Configuration Display Set this option to pause after the system configuration box appears and before control is given to an operating system. The settings are *Disabled*, *2 sec*, *5 sec*, or *10 sec*. The Optimal and Fail-Safe default settings are *5 sec*.

Cont'd

Advanced CMOS Setup, Continued

Boot with Minimum Memory Set this option to *Enabled* to boot with the minimum amount of memory. The actual amount of memory enabled depends on the type and number of DIMMs populated.

This is useful when the system is configured with 2 GB or more of memory and requires frequent reboots, for example, when installing an operating system. For normal operation, this option must be *Disabled*. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

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

Display Add-On ROM Messages Set this option to display display add-on ROM (read-only memory) messages, which are... The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Typematic Rate Set this option to select the rate at which the computer repeats a key that is held down. The settings are *Fast* or *Slow*. The Optimal and Fail-Safe default settings are *Yes*.

System Keyboard Set this option to select whether a system keyboard is available. The settings are *Present* or *Absent*. 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 *Absent*, *VGA/EGA*, *Color 40x25*, *Color 80x25*, or *Monochrome*. The Optimal and Fail-Safe default settings are *VGA/EGA*.

Cont'd

Advanced CMOS Setup, Continued

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

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

Wait for 'F1' If Error Set this option to *Enabled* to have the system BIOS wait for any error. At this line, you can press <F1> to enter Setup to attempt to fix the problem. If you disable this option, AMIBIOS will not wait on an error. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Hit 'DEL' Message Display Normally, AMIBIOS displays

Hit Del to enter Setup

while the system is doing memory initialization. If this option is disabled, this message does not display. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

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

Cont'd

Advanced CMOS Setup, Continued

PORT CONFIGURATION SCREEN

Port Configuration Settings You can use this screen to select options for the Port Configuration Settings. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY	
Advanced	
Configure Serial Port(s) and Parallel Port	

Serial Port1 Address	3F8
Serial Port1 IRQ	5
Serial Port2 Address	2F8
Serial Port2 IRQ	3
Parallel Port Address	Disabled
Parallel Port Mode	Normal
Parallel Port IRQ	7
	↔ Select Screen
	↑↓ Select Item
	+ - Change Option
	F1 General Help
	F8 Load FailSafe
	F9 Load Optimal
	F10 Save and Exit
	ESC Exit
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Serial Port1 Address This option specifies the base I/O port address of serial port 1. The settings are *Disabled*, *3F8*, *3E8* or *2E8*. The Optimal setting is *3F8*. The Fail-Safe default setting is *Disabled*.

Serial Port1 IRQ This option specifies the IRQ used by serial port 1. The settings are *Disabled*, *3* or *4*. The Optimal setting is *4*. The Fail-Safe setting is *Disabled*.

Cont'd

Advanced CMOS Setup, Continued

Onboard Serial Port2 This option specifies the base I/O port address of serial port 2. The settings are *Disabled*, *3F8*, *3E8*, or *2E8*. The Optimal setting is *2F8*. The Fail-Safe setting is *Disabled*.

Onboard Serial Port2 IRQ This option specifies the IRQ used by serial port 2. The settings are *Disabled*, or 3 or 4. The Optimal setting is 3. The Fail-Safe setting is *Disabled*.

Parallel Port Address This option specifies the address used by the parallel port. The settings are *Disabled*, *378*, *278*, or *3BC*. The Optimal setting is *378*. The Failsafe setting is *Disabled*.

Parallel Port Mode This option specifies the parallel port mode. The settings are:

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

The Optimal setting is *Normal*. The Failsafe setting is *Disabled*.

Parallel Port IRQ This option specifies the IRQ used by the parallel port. The settings are 7, or 5. The Optimal and Fail-Safe default settings are 7.

Cont'd

Advanced CMOS Setup, Continued

FLOPPY CONFIGURATION SCREEN

Floppy Configuration Settings You can use this screen to select options for the Floppy Configuration Settings. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY	
Advanced	
Floppy Configuration	

OnBoard Floppy Controller	Enabled
Floppy A	1.44 MB 3 1/2"
Floppy B	Disabled
Diskette Write Protect	Disabled
Floppy Drive Seek	Disabled
Floppy Drive Swap	Disabled
↔ Select Screen	
↑↓ Select Item	
+- Change Option	
F1 General Help	
F8 Load FailSafe	
F9 Load Optimal	
F10 Save and Exit	
ESC Exit	
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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*.

Cont'd

Advanced CMOS Setup, Continued

Floppy Drive A: and B: Move the cursor to these fields via ↑ and ↓ and select the floppy type. The settings are *Disabled*, *360 KB 5¼ inch*, *1.2 MB 5¼ inch*, *720 KB 3½ inch*, *1.44 MB 3½ inch* or *2.88 MB 3½ inch*.

The Optimal setting for floppy drive A: is *1.44 MB 3½*. The Failsafe setting for floppy drive A: is *1.44 MB 3½*.

The Optimal setting for floppy drive B: is *Disabled*. The Failsafe setting for floppy drive B: is *Disabled*.

Diskette Write Protect Set this option to write protect the floppy diskette. The settings are *Enabled*, or *Disabled*. The Optimal and Failsafe settings are *Disabled*.

Floppy Drive Seek Set this option to *Enabled* for the motherboard to seek the floppy drive controller. The settings are *Enabled*, or *Disabled*. The Optimal and Failsafe settings are *Disabled*.

Floppy Drive Swap If you have two floppy drives in a system, the BIOS assumes the drives are A: and B:, based on the cable position of the drive. Set this option to *Enabled* to have the drives logically swapped (A: becomes B:, and B: becomes A:.) The settings are *Enabled*, or *Disabled*. The Optimal and Failsafe settings are *Disabled*.

Cont'd

Advanced CMOS Setup, Continued

IDE CONFIGURATION SCREEN

IDE Configuration Settings You can use this screen to select options for the IDE Configuration Settings. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY		
Advanced		
IDE Configuration	Disabled, disables the integrated IDE Controller.	

OnBoard IDE Controller	Both	Primary, enables only the Primary IDE Controller.
IDE BusMaster	Enabled	Secondary, enables only the Secondary IDE Controller.
Ultra DMA-66 Detect Override	Disabled	Both, enables both IDE Controllers.

> Primary IDE Master	: Hard Disk	
> Primary IDE Slave	: Not Detected	
> Secondary IDE Master	: ATAPI CDROM	
> Secondary IDE Slave	: Not Detected	

Hard Disk Write Protect	Disabled	
ATAPI Detect Time Out (Seconds)	35	
		↔ Select Screen
		↑↓ Select Item
		Enter Go to Sub Screen
		F1 General Help
		F8 Load Failsafe
		F9 Load Optimal
		F10 Save and Exit
		ESC Exit
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Onboard IDE Controller This option specifies the IDE channels used by the onboard IDE controller. The settings are *Disabled*, *Primary*, *Secondary*, or *Both*. The Optimal and Fail-Safe default settings are *Both*.

Cont'd

Advanced CMOS Setup, Continued

IDE BusMaster Set this option to *Enabled* to allow the IDE controller to work in busmastering mode. If you disable this option, the IDE controller will work in PIO mode. When IDE busmaster is enabled, the IDE busmastering drivers must be used for the operating systems. The settings are *Disabled, Primary, Secondary, or Both*. The Optimal and Fail-Safe default settings are *Both*.

Ultra DMA-66 Detect Override AMIBIOS detects and programs UDMA-66 automatically.

This option provides a way to override UDMA-66 detection. If you select *Primary*, BIOS will not enable UDMA-4 mode, regardless of the type of cable or drive. The settings are *Disabled, Primary, Secondary, or Both*. The Optimal and Fail-Safe default settings are *Both*.

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 access the sub screen. The options on the sub screen are described beginning on page 68.

Hard Disk Write Protect Set this option to protect the hard disk from being overwritten. The settings are *Enabled or Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

ATAPI Detect Time Out (Seconds) Set this option to stop the system search for ATAPI devices after the specified number of seconds. The settings are *0, 5, 10, 15, 20, 25, 30, or 35*. The Optimal and Fail-Safe default settings are *35*.

Cont'd

Advanced CMOS Setup, Continued

PRIMARY AND SECONDARY IDE MASTER AND SLAVE SUB SCREEN

Primary and Secondary IDE Master and Slave Settings From the IDE Configuration screen, press <Enter> to access the sub screen for the primary and secondary IDE master and slave drives. Use this screen to select options for the Primary and Secondary IDE drives. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen for the Primary IDE Master is shown below.

BIOS SETUP UTILITY		
Advanced		
Primary IDE Master		

Device	:	Hard Disk
Vendor	:	Maxtor 7850 AV
Size	:	854MB
LBA Mode	:	Supported
Block Mode	:	8Sectors
PIO Mode	:	3
Async DMA	:	SingleWord DMA-2
Ultra DMA	:	Not Supported
S.M.A.R.T.	:	Not Supported

Type	:	Auto
LBA/Large Mode	:	Auto
Block (Multi-Sector Transfer) Mode	:	Auto
PIO Mode	:	Auto
DMA Mode	:	Auto
S.M.A.R.T.	:	Auto
32Bit Data Transfer	:	Enabled
ARMD Emulation Type	:	Auto
		↔ Select Screen
		↑↓ Select Item
		+ - Change Option
		F1 General Help
		F8 Load Failsafe
		F9 Load Optimal
		F10 Save and Exit
		ESC Exit
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Cont'd

Advanced CMOS Setup, Continued

Drive Parameters The first list in the left frame is for the drive parameters. The drive parameters are:

Parameter	Description
Device	Type of device, such as Hard Disk.
Vendor	Manufacturer of the device.
Size	The size of the device.
LBA Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.
Block Mode	Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
PIO Mode	IDE PIO mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.
Async DMA	This indicates the highest Async DMA Mode that is supported.
Ultra DMA	This indicates the highest Sync DMA Mode that is supported.
S.M.A.R.T.	Self-Monitoring Analysis and Reporting Technology protocol used by IDE drives of some manufacturers to predict drive failures.

Type This option sets the type of device that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings are *Not Installed*, *Auto*, *CDROM*, or *ARMD*. The default setting is *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

LBA/Large Mode LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. The settings are *Not Installed*, or *Auto*. The default setting is *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

Advanced CMOS Setup, Continued

Block (Multi-Sector Transfer) Mode Set this option to *Auto* to allow block mode data transfers. The settings are *Disabled*, or *Auto*. The Optimal and Fail-Safe default settings are *Auto*.

PIO Mode Set this option to *Auto* to allow AMIBIOS to determine the PIO mode. IDE PIO mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The settings are *Auto*, *1*, *2*, *3* or *4*. The Optimal and Fail-Safe default settings are *Auto*.

DMA Mode Set the DMA mode to *Auto* to allow AMIBIOS to determine the DMA mode. DMA mode... The settings are *Auto*, *SWDMA0*, *SWDMA1*, *SWDMA2*, *MWDMA0*, *MWDMA1*, *MWDMA2*, *UDMA0*, *UDMA1*, *UDMA2*, *UDMA3* or *UDMA4*. The Optimal and Fail-Safe default settings are *Auto*.

S.M.A.R.T. for Hard Disks Set this option to *Enabled* to the SMART (Self Monitoring Analysis and Reporting Technology) feature built into some IDE drivers. This feature can help predict impending drive failures. The settings are *Auto*, *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Auto*.

32Bit Data Transfer Set this option to *Enabled* to allow 32-bit data transfer. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

ARMD Emulation Type Select this setting if you are configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive. The settings are *Auto*, *Floppy*, or *Hard Disk*. The Optimal and Fail-Safe default settings are *Auto*.

Cont'd

Advanced CMOS Setup, Continued

EVENT LOG CONFIGURATION

Event Log Configuration Settings You can use this screen to select options for the Event Log Configuration Settings. You can access sub screens to view the event log and mark all events as read. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY	
Advanced	
Event Log Configuration	Enabled: Allows logging events.
Event Log Area : Space Available Event Log Data : Valid	
Event Logging Enabled	
Clear All Event Logs No	
> View Event Log	↔ Select Screen
> Mark All Events As Read	↑↓ Select Item
	+ - Change Option
	F1 General Help
	F8 Load FailSafe
	F9 Load Optimal
	F10 Save and Exit
	ESC Exit
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Event Logging Set this option to *Enabled* to allow the system to log events. The events logged by AMIBIOS are post errors, such as a bad CMOS, floppy error, or hard drive error. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Clear All Event Logs Set this option to *Yes* to clear all event logs. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

Cont'd

Advanced CMOS Setup, Continued

VIEW EVENT LOG SCREEN

View Event Log Screen You can use this screen to view the event log. On the Event Log Configuration screen, select View Event Log and press <Enter>.

MARK ALL EVENTS AS READ SCREEN

View All Events As Read Screen You can use this screen to mark all events as read. On the Event Log Configuration screen, select View All Events As Read Log and press <Enter>. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages.

Cont'd

Advanced CMOS Setup, Continued

SYSTEM HEALTH MONITORING HARDWARE

System Health Monitoring Hardware Configuration Settings You can use this screen to select options for the System Health Monitoring Hardware Configuration Settings. You can access sub screens to view individual system health items for temperature, voltage, and fan speed information. Select an item and press <Enter> to access a sub screen for detailed information.

Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

BIOS SETUP UTILITY	
Advanced	
System Health Monitoring	Select CPU Temperature Alert/Warning levels
> Configure CPU-0 Ambient Temperature	
> Configure CPU-1 Ambient Temperature	
> Configure CPU-0 Plate Temperature	
> Configure CPU-1 Plate Temperature	

> Configure CPU-0 Core Voltage	
> Configure CPU-1 Core Voltage	
> Configure VCC 1.8 Voltage	
> Configure VCC 2.5 Voltage	
> Configure VCC 3.3 Voltage	
> Configure VCC Standby Voltage	
> Configure VCC 5 Voltage	
> Configure VCC +12 Voltage	
> Configure VCC -12 Voltage	

> Configure CPU-0 Fan Speed	
> Configure CPU-1 Fan Speed	
> Configure Chassis Fan Speed	
	↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen
	F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Cont'd

Advanced CMOS Setup, Continued

TEMPERATURE MONITORING

TEMPERATURE MONITORING You can use this screen to monitor the CPU temperature. To access this screen, select the desired CPU on the System Health Monitoring screen and press <Enter>. The following screen displays:

BIOS SETUP UTILITY	
Advanced	
CPU Temperature (Celsius)	Lowest allowed value of High Alert is the current value of the High Warning. Highest allowed value of High Alert is the value of the Physical High Limit.
Current CPU0 Ambient Temperature : 17	
CPU Temperature Physical High Limit : 70	
CPU Temperature Physical Low Limit : 00	
CPU Temperature High Alert 70	
CPU Temperature High Warning 70	
CPU Temperature Low Warning 00	
CPU Temperature Low Alert 00	
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Cont'd

Advanced CMOS Setup, Continued

VOLTAGE MONITORING

VOLTAGE MONITORING You can use this screen to monitor the voltage of the CPU, VCC, and board. To access this screen, select a voltage item on the System Health Monitoring screen and press <Enter>. The following screen displays:

BIOS SETUP UTILITY	
Advanced	
CPU Voltage	Lowest allowed value of High Alert is the current value of the High Warning. Highest allowed value of High Alert is the value of the Physical High Limit.
Current CPU0 Core : 1.98	
CPU Voltage Physical High Limit : 2.00	
CPU Voltage Physical Low Limit : 2.00	
CPU Voltage High Alert 2.10	
CPU Voltage High Warning 2.15	
CPU Voltage Low Warning 1.95	
CPU Voltage Low Alert 1.90	
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Cont'd

Advanced CMOS Setup, Continued

FAN SPEED MONITORING

FAN SPEED MONITORING You can use this screen to monitor the fan speed for the CPU and chassis. To access this screen, select the CPU or chassis fan speed item on the System Health Monitoring screen and press <Enter>. The following screen displays:

BIOS SETUP UTILITY	
Advanced	
CPU-1 Fan Speed (rpm)	Lowest allowed value of High Alert is the current value of the High Warning. Highest allowed value of High Alert is the value of the Physical High Limit.
Current CPU Fan Speed : 4658	
CPU-0 Fan Speed Physical High Limit : 7500	
CPU-0 Fan Speed Physical Low Limit : 0000	
CPU-0 Fan Speed High Alert 7500	
CPU-0 Fan Speed High Warning 7500	
CPU-0 Fan Speed Low Warning 00	
CPU-0 Fan Speed Low Alert 00	
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Section 3 Chipset Setup

Choose Chipset Setup from the AMIBIOS Setup Utility main menu. The screen is shown below. All Chipset Setup options are described following the screen.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
Processor Serial Number		Disabled					
CPU Frequency		Ratio 1:2					
Watch Dog Timer		Disabled					
Graphics Aperture Size		64MB					
Memory ECC Mode		Disabled					
						↔	Select Screen
						↑↓	Select Item
						+ -	Change Option
						F1	General Help
						F8	Load Failsafe
						F9	Load Optimal
						F10	Save and Exit
						ESC	Exit
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Processor Serial Number Set this option to *Enabled* to allow the operating system and applications to be able to read the CPU serial number from your CPUs. The Optimal and Failsafe settings are *Disabled*.

CPU Frequency The CPU frequency setting is the ratio between the external clock bus, and the CPU core frequency. CPUs are marked with core frequency. For example, a 400 MHz/133 FSB CPU has a core frequency of 400 MHz, and an external bus frequency of 133 MHz. In this case, you would select a ratio of 1:3 ($133.33 \times 3 = 400$). The settings are 1:2, 1:4, 1:3, 1:5, 2:5, 2:9, 2:7, 2:11, 1:6, 1:8, 1:7, 2:13, 2:3, 2:15, or 1:2.



Caution

Do not overclock CPUs.

Some CPUs have a fixed clock ratio that cannot be changed. For these CPUs, this option does not appear on the screen.

Cont'd

Chipset Setup, Continued

Watch Dog Timer Set this option to *Enabled* to use the MegaDual Watch Dog Timer. If the system locks up, this timer will reset it. System lock is assumed if there is no PCI bus cycle for about 1.2 seconds. This option is useful in cases where the system must always be on. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Graphics Aperture Size This option specifies the amount of memory aperture, or addressing, requested by the Accelerated Graphics Port (AGP). In most cases, the 64 MB default setting should not be changed unless specified in your AGP card manual.

This option has no relation to physical memory. A 64 MB aperture, for example, means that the AGP card will be assigned a 64 MB address slot below 4 GB. This is regardless of physical memory installed.

The settings are *4 MB*, *8 MB*, *16 MB*, *32 MB*, *64 MB*, *128 MB*, or *256 MB*. The Optimal and Fail-Safe default settings are *64 MB*.

Memory ECC Mode Set this option to *H/W ECC* to allow automatic detection and correction of single-bit ECC errors. Set this option to *S/W ECC* to allow the chipset to correct ECC errors, and AMIBIOS to log the ECC errors. The settings are *Disabled*, *S/W ECC*, or *H/W ECC*. The Optimal and Fail-Safe default settings are *Disabled*.

Section 4 PCI/PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP Setup options are described in this section. The PCI/PnP Setup screen is shown below:

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCI/PnP	Power	Boot	Security	Exit
Plug & Play O/S			No				
Reset Config Data			Yes				
Allocate IRQ to VGA			Yes				
USB Controller			Disabled				
Legacy USB Support			Disabled				
Onboard LAN Controller			Enabled				
Onboard SCSI Controller			Enabled				
> PCI Latency Timers							
							No, lets the BIOS configure all the devices in the system. Yes, lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
							← Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Plug and Play-Aware OS Set this option to *Yes* if the operating system in this computer follows the Plug and Play specification. Windows 95® is PnP-aware. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*.

Reset Config Data Set this option to *Yes* to have PnP data rebuilt by AMIBIOS at every boot. If it is set to *No*, then the PnP data is preserved. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Cont'd

PCI/PnP Setup, Continued

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

USB Controller This option enables or disables the onboard USB controller. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Legacy USB Controller Set this option to *Enabled* to use the USB devices during boot and while using DOS. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Onboard LAN Controller This option enables or disables the onboard LAN controller. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Onboard SCSI Controller This option enables or disables the onboard SCSI controller. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

PCI Latency Timers Press <Enter> to access the sub screen to view the PCI latency timing information.

Cont'd

PCI/PnP Setup, Continued

PCI LATENCY TIMERS

PCI LATENCY TIMERS You can use this screen to specify the latency timings (in PCI clocks) for PCI devices installed in the expansion slots. To access this screen, select PCI Latency Timers on the PCP/PnP Setup screen and press <Enter>. The following screen displays:

BIOS SETUP UTILITY	
PCI/PnP	
Device Latency Timers	Specifies in units of PCI bus clocks the maximum bus access latency.
Slot-1 Latency Time	64
Slot-2 Latency Time	64
Slot-3 Latency Time	64
Slot-4 Latency Time	64
Slot-5 Latency Time	64
Slot-6 Latency Time	64
Onboard USB Latency Time	64
Onboard LAN Latency Time	64
Onboard SCSI Latency Time	64
Default Latency Time	64
↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit	
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Slot-1 Latency Time

Slot-2 Latency Time

Slot-3 Latency Time

Slot-4 Latency Time This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-1, 2, 3, and 4 expansion slots. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

Slot-5 Latency Time

Slot-6 Latency Time This option specifies the latency timings (in PCI clocks) for PCI devices installed in the Slot-5, and 6 expansion slots. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

Cont'd

PCI/PnP Setup, Continued

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

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

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

Default Latency Time This option specifies the default latency timings for PCI devices. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

Section 5 Power Management Setup

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

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
ACPI Aware O/S				No			
Power Management/APM				Enabled			
Power Button Mode				On/Off			
Power-Up Mode After Power Loss				Power On			
Green PC Monitor Power State				Suspend			
Video Power Down Mode				Suspend			
Hard Disk Power Down				Suspend			
Hard Disk Time Out (Minute)				Disabled			
Standby Time Out				Disabled			
Suspend Time Out				Disabled			
Suspend Power Saving Type				S1		←→	Select Screen
Display Activity				Ignore		↑↓	Select Item
Manual Throttle Ratio				50%		+ -	Change Option
RTC Resume				Disabled		F1	General Help
USB Controller Resume				Disabled		F8	Load Failsafe
PME Resume				Disabled		F9	Load Optimal
						F10	Save and Exit
						ESC	Exit
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ACPI Aware O/S Set this option to *Yes* if the operating system you are running under complies with the Intel ACPI (Advanced Configuration and Power Interface) specification. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No*. Windows 2000 is an example of an ACPI-aware operating system.

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

Note: The options below this one display only when the **Power Management/APM** option is enabled.

Power Management

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

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

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

Power Button Mode After Power Loss This option specifies the mode of operation after a loss of power. The settings are *Power On* (the system boots after power is restored) or *Stay Off* (the system remains off after power is restored.) The Optimal and Failsafe settings are *Power On*.

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

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

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

Cont'd

Power Management, Continued

Hard Disk Time Out (Minute) This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the **Hard Disk Power Down Mode** option. The settings are *Disabled, 1 min. (minute), 2 min, 3 min., 4 min., 5 min., 6 min, 7 min., 8 min., 9 min., 10 min., 11 min., 12 min., 13 min, 14 min, or 15 min.* The Optimal and Fail-Safe default settings are *Disabled.*

Standby Time Out (Minute) This option specifies the length of time the length of time the system needs to be inactive before it enters standby mode. The settings are *Disabled, 1 min., 5 min., or 10 min.* The Optimal and Fail-Safe default settings are *Disabled.*

Suspend Time Out (Minute) This option specifies the length of time the length of time the system needs to be inactive before it enters suspend mode. The settings are *Disabled, 1 min., 5 min., or 10 min.* The Optimal and Fail-Safe default settings are *Disabled.*

Suspend Power Saving Type The settings are *C2, or S1.* The Optimal and Fail-Safe default settings are *S1.*

Display Activity Set this option to *Monitor* to use display activity to wake up the system from power management state. The settings are *Ignore, or Monitor.* The Optimal and Fail-Safe default settings are *Ignore.*

Cont'd

Power Management, Continued

Manual Throttle Ratio In power management state, BIOS can throttle the CPU clock to reduce power consumption. For example, a throttle ratio of 50% means the clock is turned off 50% of the time. The settings are *12.50%*, *25%*, *37.50%*, *50%*, *62.50%*, *75%*, or *87.50%*. The Optimal and Fail-Safe default settings are *50%*.

RTC Resume Set this option to *Enabled* to wake the system up from suspend if there is an RTC (Real Time Clock) alarm. The settings are *Disabled*, or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

USB Controller Resume Set this option to *Enabled* to wake the system up from suspend if there is USB device/controller activity. The settings are *Disabled*, or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

PME Controller Resume Set this option to *Enabled* to wake the system from suspend if there is PME activity. PME can be generated by software or PCI cards. The settings are *Disabled*, or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

RI Resume Set this option to *Enabled* to wake the system up from suspend if there is an incoming modem ring. For this feature to work, the modem **must** be connected to the onboard serial ports. The settings are *Disabled*, or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Section 6 Boot Setup

Choose Boot Setup from the AMIBIOS Setup main menu. All Boot Setup options are described in this section. Select an item on the Boot Setup screen to access the sub screen for:

- Boot Device Priority
- Hard Disk Drives
- Removable Devices

The Boot Setup screen is shown below:

```
BIOS SETUP UTILITY
Main  Advanced  Chipset  PCIPnP  Power  Boot  Security  Exit
>  Boot Device Priority
>  Hard Disk Drives
>  Removable Devices

<-> Select Screen
↑↓ Select Item
Enter Go to Sub
    Screen
F1 General Help
F8 Load Failsafe
F9 Load Optimal
F10 Save and Exit
ESC Exit

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```

Cont'd

BOOT DEVICE PRIORITY

Boot Device Priority You can use this screen to specify the order in the system checks for the device to boot from. To access this screen, select Boot Device Priority on the Boot Setup screen and press <Enter>. The following screen displays:

BIOS SETUP UTILITY	
Boot	
1 st Boot Device	Removable Dev.
2 nd Boot Device	ATAPI CDROM
3 rd Boot Device	Hard Drive
Specifies the boot sequence from the available devices.	
↔ Select Screen	
↑↓ Select Item	
+- Change Option	
F1 General Help	
F8 Load Failsafe	
F9 Load Optimal	
F10 Save and Exit	
ESC Exit	
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1st Boot Device

2nd Boot Device

3rd Boot Device Set the boot device options to determine the sequence in which the computer checks which device to boot from. The settings are *Removable Dev*, *Hard Drive*, *ATAPI*, or *CDROM*. The Optimal and Failsafe settings are:

- 1st boot device – *Removable Device*
- 2nd boot device – *ATAPI CDROM*
- 3rd boot device – *Hard Drive*

Cont'd

Boot Setup, Continued

HARD DISK DRIVES

Hard Disk Drives You can use this screen to view the hard disk drives in the system. To access this screen, select Hard Disk Drives on the Boot Setup screen and press <Enter>. The following screen displays examples of hard disk drives:

BIOS SETUP UTILITY	
Boot	
1 st Hard Disk Drive Maxtor 7850 AV.	Specifies the boot sequence from the available devices.
2 nd Hard Disk Device QLogic HA 0 SCS	
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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Cont'd

Boot Setup, Continued

REMOVABLE DEVICES

Removable Devices You can use this screen to view the removable drives in the system. To access this screen, select Removable Devices on the Boot Setup screen and press <Enter>. The following screen displays examples of removable devices:

BIOS SETUP UTILITY	
Boot	
1 st Removable Device	Floppy
2 nd Removable Device	LS120
Specifies the boot sequence from the available devices.	
↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit	
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Section 7 Security Setup

AMIBIOS Password Support

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

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

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

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. See Chapter 4 Deleting a Password for information about erasing system configuration information.

Security Setup

Choose Security Setup from the AMIBIOS Setup main menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub screen for the following items, select the item and press <Enter>:

- Change Supervisor Password
- Change User Password
- Clear User Password

The Security Setup screen is shown below. The sub screens are documented on the following pages.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
Supervisor Password : Not Installed User Password : Not Installed						Immediately clears the User password.	
> Change Supervisor Password							
> Change User Password							
> Clear User Password							
Boot Sector Virus Protection Disabled							
						↔ Select Screen ↑↓ Select Item Enter Change F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit	
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Supervisor Password Indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

User Password Indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Cont'd

Security Setup, Continued

Change Supervisor Password Select this option and press <Enter> to access the sub screen. You can use the sub screen to change the supervisor password.

Change User Password Select this option and press <Enter> to access the sub screen. You can use the sub screen to change the user password.

Clear User Password Select this option and press <Enter> to access the sub screen. You can use the sub screen to clear the user password.

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

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

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

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

Cont'd

Security Setup, Continued

CHANGE SUPERVISOR PASSWORD

Change Supervisor Password Select Change Supervisor Password from the Security Setup menu and press <Enter>.

Enter New Password:

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes.

Change User Password Select Change User Password from the Security Setup menu and press <Enter>.

Enter New Password:

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes.

Clear User Password Select Clear User Password from the Security Setup menu and press <Enter>.

Clear New Password

[Ok] [Cancel]

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes.

Section 8 Exit Menu

Choose Exit from the AMIBIOS Setup main menu. All Exit options display. Click on the desired option and press <Enter>.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
>	Exit Saving Changes						Exit system setup with saving the changes.
>	Exit Discarding Changes						
>	Load Optimal Defaults						
>	Load Failsafe Defaults						
>	Discard Changes						
							↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F8 Load Failsafe F9 Load Optimal F10 Save and Exit ESC Exit
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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. Select Exit Saving Changes from the Exit menu and press <Enter>.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Click on Ok to save changes and exit.

Exit Discarding Changes Choose this option to quit AMIBIOS Setup without making any permanent changes to the system configuration. Select Exit Discarding Changes from the Exit menu and press <Enter>.

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Click on Ok to discard changes and exit.

Cont'd

Exit Menu, Continued

Load Optimal Defaults AMIBIOS automatically sets 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.

Select Load Optimal Defaults from the Exit menu and press <Enter>.

Load Optimal Defaults?

[Ok] [Cancel]

appears in the window. Click on Ok to load optimal defaults.

Load Failsafe Defaults AMIBIOS automatically sets all AMIBIOS Setup options to a complete set of default settings when you choose this option. The Failsafe settings are designed for maximum system stability, but not maximum performance. Choose the Failsafe AMIBIOS Setup options if your computer is experiencing system configuration problems.

Select Load Failsafe Defaults from the Exit menu and press <Enter>.

Load Failsafe Defaults?

[Ok] [Cancel]

appears in the window. Click on Ok to load failsafe defaults.

Discard Changes Select Discard Changes from the Exit menu and press <Enter>.

Discard Changes?

[Ok] [Cancel]

appears in the window. Click on Ok to discard changes.

3 Programming Flash ROM

All versions of the MegaDual 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.

This chapter contains two procedures for programming Flash ROM:

- A) Using the <Ctrl> <Home> keys
 - B) Using the AMIFlash utility
-

A) Programming the Flash EPROM Using <Ctrl> <Home>

Step	Action
1	Turn power off. Make sure the computer has a working speaker.
2	Insert the floppy disk with the S798P.ROM file in the root directory into 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 MegaDual uses a 4 megabit BIOS, the flashing process may take up to 3 minutes.
4	Release the <Ctrl> and <Home> keys. AMIBIOS issues a series of beep codes that indicate that the system BIOS ROM file is being updated.
5	When the flash ROM has successfully been programmed, the computer will reboot.
6	When the computer reboots, check the BIOS Release text at the bottom of the first boot screen to make sure that the correct BIOS has been used.
7	The error message NVRAM checksum bad, NVRAM cleared will appear during the first boot after a successful BIOS ROM update. This message indicates that the NVRAM area in the system BIOS has been cleared. AMIBIOS will reconstruct the NVRAM area before the computer boots completely, so you can safely ignore this message.
8	<u>Load</u> the optional default and save.

Cont'd

Programming the Flash ROM, Continued

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

Step	Action
1	Reads S798P.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.

S798P.ROM S798P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the AMIBIOS for the MegaDual PCI motherboard must be updated.

S798P.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 S798P.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 S798P.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	S798P.ROM file size error.

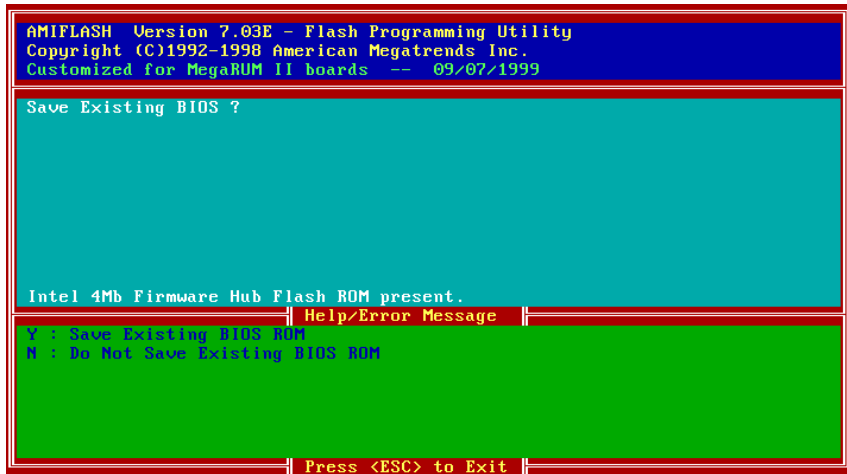
Cont'd

Programming the Flash ROM, Continued

B) Programming the Flash EPROM Using the AMIFlash Utility

AMIFlash utility runs in DOS only.

The main menu screen is shown below. You are prompted to save or delete the existing BIOS. Enter *Y* if you want to save the existing BIOS ROM, or *N* if you do not.



```
AMIFLASH Version 7.03E - Flash Programming Utility
Copyright (C)1992-1998 American Megatrends Inc.
Customized for MegaRUM II boards -- 09/07/1999

Save Existing BIOS ?

Intel 4Mb Firmware Hub Flash ROM present.
Help/Error Message
Y : Save Existing BIOS ROM
N : Do Not Save Existing BIOS ROM

Press <ESC> to Exit
```

Cont'd

Programming the Flash ROM, Continued

B) Programming the Flash EPROM Using the AMIFlash Utility, cont'd

Enter the filename, s798p.rom, that you want to save the existing BIOS to and press <Enter>.

```
AMIFLASH Version 7.03E - Flash Programming Utility
Copyright (C)1992-1998 American Megatrends Inc.
Customized for MegaRUM II boards -- 09/07/1999

Save Existing BIOS ? y
Enter Filename      : s798p.rom

Intel 4Mb Firmware Hub Flash ROM present.
Help/Error Message
Enter the Filename to which Existing BIOS will be saved.
The Format:- (Drv:\Pathname\Filename.Ext)
The Filename must end with a <ENTER>.

Press <ESC> to Exit
```

Enter the BIOS filename from which the Flash ROM will be programmed and press <Enter>.

```
AMIFLASH Version 7.03E - Flash Programming Utility
Copyright (C)1992-1998 American Megatrends Inc.
Customized for MegaRUM II boards -- 09/07/1999

Save Existing BIOS ? y
Enter Filename      : s798p.rom

Enter BIOS Filename:

Intel 4Mb Firmware Hub Flash ROM present.
Help/Error Message
Enter the BIOS Filename from which Flash ROM will be programmed.
The Format:- (Drv:\Pathname\Filename.Ext)
The Filename must end with a <ENTER>.

Press <ESC> to Exit
```

Cont'd

Programming the Flash ROM, Continued

B) Programming the Flash EPROM Using the AMIFlash Utility, cont'd

To enable this program to update bootblock code, make sure that a jumper is installed on JP5 before the system is turned on. To do so, perform the following procedure:

Step	Action
1	Turn the system off.
2	Install a jumper on JP5.
3	Turn the system on.
4	Boot to DOS.
5	Run AMIFlash.
6	At the prompt "Program Boot Block?", type Y and press <Enter>.
7	After the boot block is programmed, reboot the system.
8	Turn the power off.
9	Remove the jumper on JP5.

Enter *Y* if you want to program the boot block or *N* if you do not want to program the boot block.

```
AMIFLASH Version 7.03E - Flash Programming Utility
Copyright (C)1992-1998 American Megatrends Inc.
Customized for MegaRUM II boards -- 09/07/1999

Save Existing BIOS ? y
Enter Filename      : s798p.rom

Enter BIOS Filename: a:s798p.rom
Program Boot Block ? n

Intel 4Mb Firmware Hub Flash ROM present.
Help/Error Message

Reading BIOS File from Disk

Please Wait..

Press <ESC> to Exit
```

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 S798P.ROM in the root directory of the floppy diskette in drive A:.
F1h	The S798P.ROM file is not in the root directory.
F2h	Read the FAT table. Analyze the FAT to find the clusters occupied by the S798P.ROM.
F3h	Start reading the S798P.ROM file, cluster by cluster.
F4h	The S798P.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 JP3 on the motherboard. JP3 is a 3-pin berg with a default setting of pins 1 and 2 shorted by a jumper. 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	Remove the jumper from pins 1-2 of JP3 and place a shorting bridge on pins 2-3 of JP3.
3	Turn on computer power for about 10 seconds.
4	Turn the computer off again.
5	Remove the shorting bridge from pins 2-3 of JP3 and put it back on pins 1-2 of JP3.
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.

A Specifications

Engineering Specifications

Temperature Ranges The following values are ambient temperatures inside the computer case. The board temperatures reflect the dual Pentium II/Pentium III 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.

B Cable Information

The following table contains cable manufacturer and part number information for IDE, SCSI, floppy, parallel ports, serial ports, LAN, and MegaRAC.

	Manufacturer	Part Number
IDE cable	Y.C. Cable, USA	CBL-ATA66 IDE w/o #20
SCSI cable	McCALTEK Computer Associates	168-LVD-3M020 (Ultra 2 LVD SCSI 68 with three connectors, LVD, Terminator, 20") OR 168-3M024 (Ultra Wide SCSI cable, dual drive, Ultra Wide 68 M with three connectors, 24")
Floppy cable	McCALTEK Computer Associates	IDE-UDL (IDC 34 with three connectors, 24")
Parallel cable	McCALTEK Computer Associates	IDC26-25AM
Serial cable	McCALTEK Computer Associates	ADC10-09AM
LAN cable (LAN cable might not be necessary.)	McCALTEK Computer Associates	RJ45 UTP CAT 5
MegaRAC cable (MegaRAC cable might not be necessary.)		IDE20-1

Index

1

1st Boot Device, 71

A

ACPI Aware O/S, 83
Active termination, 51
Advanced Chipset Setup, 77
Advanced CMOS Setup, 58
AGP Multi-Trans Timer (AGP Clocks), 78
Allocate IRQ to PCI VGA, 80
AMIBIOS Password Support, 91
AMIBIOS Setup, 55
AMIBIOS Setup Menu, 56
AMIFlash
 Beep Codes, 99
Avoid Static Electricity, 4

B

BIOS
 Password Support, 91
BIOS Errors, 54
BIOS P.O.S.T Messages, 60, 61
Block Mode, 69
Boot Sector Virus Protection, 93
Boot To OS/2, 61
Boot Up Num Lock, 61
Bootblock Code Checkpoint Codes, 103

C

Cable Information, 109
Cables
 Attaching, 12
 Connecting, 13
Chassis Door Open, 16
CMOS Drain, 15
Configure CPU, 5
Configuring System, 54
Conflicts, 19
Connectors, 12
 DIMM, 10
 Floppy disk, 22
 IDE Hard Disk Drive, 25
 Keyboard, 16
 Reset Switch, 17
 Serial ports, 21
 Speaker, 17
CPU Fan, 7
CPU speed, 5

D

Date/Time, 57
Deleting a Password, 105
DIMMs
 Installing, 10

E

Engineering Specifications, 107
Enhanced Parallel Port, 20
Extended Capabilities Port, 20
External battery connector JP4, 13

F

Features, 1
Figures
 Floppy drive cable, 22
 Floppy drive connector, 22
Flash EPROM
 Programming, 97
Floppy cable, 109
Floppy Disk Connector
 Pinout, 22
Floppy Drive A: and B, 65
Floppy Drive connector
 Pinout, 23

G

Green PC Monitor Power State, 84

H

Hard Disk Drive Capacity, 69
Hard Disk Drive Parameters, 69
Hard Disk Drive Type D:, 67
Hard Disk Power Down Mode, 84
Hard Disk Timeout (Minute), 85
Hardware Installation, 1
High Density Connectors, 48
High-Density 68-Pin SCSI Connector Pinout, 49

I

IDE cable, 109
IDE Hard Disk Connector, 25
Install Memory, 9
Install the Motherboard, 11
Install Voltage Regulator, 6

J

- J1 Keyboard Connector, 16
- J1 PS/2 Mouse Connector, 16
- J10 Pinout, 30
- J12 Keyboard Lock connector, 17
- J15 Wide SCSI channel 1 connector, 48
- J16 Wide SCSI channel 2 connector, 48
- J2 USB Connectors**, 18
- J3A Parallel Port connector, 20
- J3B (S1) Serial Port 1 (COM1), 21
- J3B (S2) Serial Port 2 (COM2), 21
- J4 Power connector, 14
- J5 Power connector, 14
- JP10 IDE LED, 16
- JP11 Floppy Connector, 22
- JP12 Chassis Door Open, 16
- JP13 CPU0 Fan, 7
- JP14 CPU1 Fan, 7
- JP15 System Fan, 7
- JP2 Power-on Switch, 18
- JP3 Drain CMOS RAM power, 15
- JP3 Erase Password, 105
- JP6 Reset Switch Connector, 17
- JP7 IDE Connector
 - Primary, 25
- JP7 Pinout, 27
- JP8 Secondary IDE Controller, 28
- JP9 Pinout, 29
- JP9 Speaker Connector, 17

K

- Keyboard connector, 16

L

- LAN cable, 109
- LBA Mode, 69

M

- MegaRAC cable, 109
- MegaRAC PCI adapter, 30
- Monitor, 60
- Motherboard layout, 3
- Mouse Cable, 16
- Mouse Support, 61

N

- NVRAM (Non-Volatile Random Access Memory), 91

O

- Onboard Adapters, 19
- Onboard Floppy Controller, 64
- Onboard I/O, 2
- Onboard Parallel Port IRQ, 63

- Onboard Primary/Secondary IDE, 66, 67
- Onboard Serial Port1, 62
- Onboard Serial Port2, 63
- Onboard Serial Port2 IRQ, 63
- Overview, 1

P

- Parallel cable, 109
- Parallel Port, 20
- Parallel Port Mode, 63
- Password Support
 - Levels of, 91
- Pause-On-Configuration Screen, 59
- PCI Bus Speed, 2
- PCI Slot-1 Latency, 81
- PCI VGA Palette Snoop**, 79
- PCI/PnP Setup, 79
- Pinout
 - Parallel Port, 20
 - Primary IDE connector, 27
 - Serial ports, 21
- Pinouts
 - Keyboard lock, 17
 - Reset Switch, 17
- PIO Mode, 69
- Plug and Play-Aware OS, 79
- Power Button Function, 84
- Power Management Setup, 83
- Power Management/APM, 83
- Power Saving Type, 85
- Power Supply, 14
 - Connecting, 14
- Pri Master, Pri Slave, Sec Master, Sec Slave, 67
- Primary Display, 60
- PS/2 mouse support, 61
- PS/2Mouse Support, 61

Q

- Quick Boot, 59

R

- Reset Switch Connector, 17
- Resource conflicts, 19

S

- S.M.A.R.T. for Hard Disks, 70
- S798P.ROM, 98
- S798P.ROM file, 97
- SCSI cable, 109
- SCSI Cable Considerations, 50
- SCSI Cables, 51
- SCSI Connectors, 48
- SCSI Drivers
 - Installing, 53
- SCSI Signal Path, 50
- SCSI Termination, 51

- SCSI Termination Possibilities, 52
- SDRAM DIMM Sockets, 9
- SDRAM Speed (ns), 9
- Secondary IDE Controller, 28
- Serial cable, 109
- Serial port
 - Pinout, 21
- Speaker Cable Connector, 17
- Standard CMOS Setup Screen, 57
- Standard Setup, 57
- Standby/Suspend Timer Unit, 85, 86
- Stub length, 51
- System memory, 9

T

Tables

- Floppy pinout, 23
- I/O conflicts, 19
- Twist in floppy cable, 23

Termination card, 8

Testing System, 54

U

Unpack the Motherboard, 4

USB Connectors, 18

V

Video Power Down Mode, 84

Voltage Regulator Module (VRM), 6
