HDAMA

User's Guide

RIOWORKS™

The Reliable Building Block

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Printed in Taiwan

Revision Version: 1.00

Release Date: May 2003

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Chapter 1

Overview

Thank you for choosing the RIOWORKSTM HDAMA high performance Server motherboard. The HDAMA is a dual AMD® Opteron micro-Socket 940 motherboard (M/B) based on the SSI form factor and is configured with the AMD® HyperTransport I/O Hub 8111 and PCI-X Tunnel 8131 chipsets. The board features a Hyper Transport speed of 1600 MT (Mega Transfer per second).

For memory support, the HDAMA provides eight sockets (four + four configuration) accommodating up to 16 GB of memory using registered PC2700/2100 ECC DDR memory modules.

Flexibility and expandability are provided by two 64-bit/100MHz PCI-X slots, two PCI 64-bit/66MHz PCI slots, and two 32-bit/33Mhz PCI slots. This array of PCI slots enables numerous add-on cards and provides Peer PCI transaction support to increase system performance.

Other features such as onboard Promise Serial ATA RAID interfaces, dual Broadcom Gigabit Ethernet controllers, and onboard ATI® RageXL video controller with 8MB memory provide high system capabilities that meet a wide range of demanding Sever applications.

1.1. Unpacking

Remove all items from the box and make sure you have these following items:

- ❒ One RIOWORKS HDAMA motherboard
- ❒ Two Serial ATA ribbon cable
- ❒ One Serial ATA Power cable
- ❒ One ATA-100 IDE ribbon cable
- ❒ One floppy ribbon cable
- ❒ One bag of spare jumpers
- ❒ One I/O shield
- ❒ One CD containing drivers and utilities
- ❒ One HDAMA User Guide
- ❒ One Serial ATA User Guide
- ❒ One Onboard LAN User's Guide

If you discover damaged or missing items, please contact your retailer.

1.2. Features Highlight

CPU	❒ Supports dual AMD® Opteron™ socket 940 CPUs at 1600 MT per second. ❒ Built-in Memory Controller Hub (MCH)
Chipset	❒ Uses the latest AMD® 8111™ HyperTransport™ I/O hub and 8131™ PCI-X Tunnel ❒ HDAMA supports the newest technologies: 32bit/33MHz PCI slots, 64-bit/66MHz and 64 bit/100MHz PCI-X slots, USB interface, Peer PCI Transaction and I^2C Bus support and more.
System Memory Support	❒ HDAMA provides 4+4 DIMM sockets and supports total system memory size up to 16GB. ❒ Select from DDR333 registered DDR DIMM
Expansion Slots	❒ Provides two PCI-32-bit/33MHz, two PCI 64-bit/66MHz, and two PCI-X-64bit/100Mhz expansion slots ❒ 64-bit/66MHz PCI technology enables

	bandwidth up to 528MB/s.
Onboard VGA Chip	❒ ATI® RageXL video controller with 8MB memory
Onboard Dual LAN	❒ Dual Broadcom BCM5702 Gigabit Ethernet controllers. ❒ Support Fault-tolerant and Fail-over
Super Multi-I/O	❒ NS super I/O (PC87360) ❒ One UART 16550 serial port ❒ One external serial port ❒ Dual onboard USB 1.1 connectors ❒ Four extendable USB 1.1 connectors by headers ❒ PS/2 mouse and keyboard connectors with Wake-up function
Floppy Drive	❒ Supports 3.5” (1.44MB or 2.88MB) floppy drive and Japanese standard “Floppy 3 mode” (3.5” disk drive: 1.44MB, 1.2MB, 720KB) and LS-120 floppy disk drives (3.5” disk drive: 120 MB). BIOS supports IDE CD-ROM boot-up.
Serial ATA RAID (optional)	❒ Four Integrated Promise PDC20319 Serial ATA ports ❒ Support RAID 0, 1, 10
System Management	❒ AMC connector for Arima Remote Management Controller card (ARMC) (optional) ❒ IPMI 1.5 (optional with ARMC) ❒ Rioworks SmartWatch™ to alert the event of hardware problem ❒ Prevent from abnormal system down/data loss ❒ Alert on LAN ready ❒ Remote system controller ready
PC99 Compliant	❒ The HDAMA is fully compliant with the Microsoft PC99 specification at both the hardware and BIOS levels.
Dimension	❒ Extended SSI form factor-12”x13”

1.3. About This User Guide

This manual explains how to build your system with HDAMA in detail. Please follow the procedures of this User Manual carefully and pay special attention to these icons.

IMPORTANT

This icon informs you for particularly important details regarding the setup or maintenance of your system. While we point out the most vital paragraphs in a chapter, you should always read every word carefully. Failing to do so can cause exasperation.

WARNING

This icon alerted you for potential dangers during setting up your system with HDAMA. These warnings should not be regarded as the whole of your safety regimen. Never forget that computer are electronic devices and are capable of delivering a shock. Prevent damage to yourself and to your board: always ensure that your system is turned off and unplugged the power cords whenever you are working with it, and that you are equipped

NOTE

This icon alerted you for notice during setting up your system. It provides you can useful alert during setting up a new system.

TIP

This icon will show you how to configure your system with HDAMA in an easy and simple ways. This icon always provides some useful description to help you configure your system.

1.4. Getting Help

If a problem arises with yours system during Installation or OS operating, you should ask your dealer for help first as your system has most likely be configured by them. They always have the best idea and quick response for your symptoms. If your dealer is near to your locations, you should bring your system to them to have it quickly serviced instead of attempting to solve the problem by yourself. Besides these, RIOWORKS also provides some helpful resources to help you.

1. Select RIOWORKS TM "s website at www.rioworks.com and navigate to this product page which contain links to product updates such as Jumper settings or BIOS updates.
2. FAQ sections on RIOWORKS Website are often helpful since other user's questions are often your own.
3. Email us at: sales@rioworks.com and we will try to answer your questions within 24 hours. Before you email your symptom to sales@rioworks.com, please fill in the symptom report in order to let our engineers solve your problem quickly.

1.5. HDAMA Motherboard Layout

Figure 1-1: Motherboard features

1.6. Motherboard Layout

Figure 1-2: Motherboard layout

NOTE

Refer to page 2-24 for the I/O port array layout.

Chapter 2

Hardware Installation

In this chapter, the Installation of the HDAMA with the processor and other hardware connected to your system is explained in detail.

Installation Procedures

Installation procedures will be broken up into six major parts.

Step 1: Set jumpers

Step 2: Install memory (DDR memory modules)

Step 3: Install AMD® Opteron CPU

Step 4: Attach cables to connectors

Step 5: Install expansion cards

Step 6: Connect power

WARNING

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

2.1. Jumper Settings

This section covers the HDAMA jumper settings. Refer to the following illustration for the location of the HDAMA jumpers.

Figure 2-1: HDAMA jumpers

2.1.1. Clear CMOS Header

The onboard button cell battery powers the CMOS RAM. It contains all the BIOS setup information. Normally, it is necessary to keep the jumper connected to pin2 and pin3 (Default) to retain the RTC data as shown below.

Figure 2-2: HDAMA clear COMS header

Follow these instructions to clear the CMOS RTC data:

1. Turn off your computer.
2. Short pin2 and pin3 with a jumper for a few seconds.
3. Replace the jumper on pin1 and pin2.
4. Turn on your computer by pressing the power-on button.
5. Hold down <Delete> during boot and select either the <Load Optimal Defaults> or <Load Failsafe Defaults> option in the selection "Exit". Then re-enter BIOS setup to re-enter user preferences. Refer to Chapter 2 BIOS SETUP for more information.

2.1.2. Enable Onboard VGA Header

If you are going to use the onboard VGA feature, you must enable the onboard VGA header. Refer to the following illustration:

Figure 2-3: Onboard VGA header

2.1.3. PCI-X Slot Speed Select Header

This header lets you determine the bus speed of the PCI-X slots. The speed can be set to either 133 MHz or 100 MHz (default). Refer to the following illustration:

Figure 2-4: PCI-X speed selection

2.1.4. PCI 64-bit Slot Speed Select Header

This header lets you determine the bus speed of the PCI 64-bit slots. The speed can be set to either 64 MHz (default) or 33 MHz. Refer to the following illustration:

Figure 2-5: PCI 64-bit speed selection

2.2. Install Memory

HDAMA uses Dual Inline Memory Modules (DIMM). Two 4-DIMM socket banks are available, each bank supporting one CPU socket. The DIMM sockets accommodate PC2100/PC2700 (DDR266/DDR333) and Double Data Rate Memory (DDR) memory modules in 128MB, 256MB, 512MB, 1GB, 2GB combinations. Total memory size is between 128MB and 16GB.

IMPORTANT

- **The HDAMA motherboard has strict memory type and timing requirements. Before you buying DDR DIMM (Double Data Rate) for use in the HDAMA, consult your local reseller to advise you of the best memory to use with the HDAMA.**
- **HDAMA only supports Registered PC2100/PC2700 (DDR266/DDR333) compliant modules.**
- **You must populate HO DIMM modules 0~3 before the H1 modules 0~3.**

2.2.1. Memory Installation Procedures

Follow these instructions to install the memory.

1. Locate the DIMM modules on the HDAMA.

Figure 2-6: Installing memory modules

2. Ensure that the DIMM module's pins face down and match the socket's size as shown in Figure 8.

Figure 2-7: Memory module pin arrangement

3. Insert the module down to the DIMM socket in with both hands and press down firmly until the DIMM module is securely in place.

The tabs of the socket will close-up to hold the DIMM in place when the DIMM touches the socket's bottom.

4. Repeat steps 1 to step 3 to add additional DIMM modules.

IMPORTANT

- ❒ **You have to insert two memory modules in DIMM 0/1 slots or DIMM 2/3 slots when you install modules; otherwise you will not be able to boot the system.**
- ❒ **Ensure that you populate HO DIMM slots before inserting memory modules in the H1 DIMM slot bank.**

2.3. Install CPU

HDAMA accommodates AMD® Opteron micro-PGA Socket 940 processors at 1600 MT (Mega Transfer per second). You must first insert a CPU into CPU socket 0 (CPU0) before installing one in CPU socket 1 (CPU1).

2.3.1. CPU Installation Procedures

Follow these instructions to install a CPU.

1. Locate the pin 1 of the CPU socket and pin 1 of the CPU.

Figure 2-8: CPU pin 1 location

2. Lift up the socket lever (A) and place the Socket 604 CPU with the correct orientation (B) as shown in the following illustrations.

3. Lower the socket-locking lever into place.
4. Apply thermal grease to the top of the CPU.
5. Mount the CPU heatsink to the top of the CPU and socket as shown in the following illustration.

Secure one side to the motherboard

Secure the opposite side

6. Plug the 3-wire fan power cable into connector FRONT_FAN1

7. Repeat these steps to install the CPU1.

2.4. Attach Cable to Connectors

This section covers connecting devices to the HDAMA. The following illustration shows the location of the connectors.

Figure 2-9: Connector location

2.4.1. ATX Power Supply

These 24-pin connectors connect the mainboard to the ATX power supply. Find the proper orientation and push down firmly to make sure that the pins are aligned. The 8-pin connector provides a dedicated power supply for the CPUs. For Wake on LAN support, 5-volt Stand-by lead (+5VSB) from ATX power supply must supply at least 2A.

IMPORTANT

RIOWORKS always recommends our customers use ATX Power that has more than 400W power capacity and is compatible with the Intel ATX 2.03 specification.

Hardware Installation

2.4.2. Floppy Disk Drive Connector

This 34-pin connector supports the provided floppy disk drive ribbon cable. After connecting the single end to the board, connect the plug on the other end to the floppy drive.

2.4.3. Primary IDE connectors

These two 40-pin IDE connectors support 40-wire IDE hard disk ribbon cables (provided). After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you connect two hard disks to the same cable, you must configure the second drive to Slave mode by setting its jumpers. Refer to the documentation of your hard disk for the jumper settings. BIOS now supports IDE HDD or IDE CD-ROM bootup (Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged in). Support for Ultra DMA 33/66/100 is also featured in the BIOS.

IMPORTANT

Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. IDE ribbon cables must be less than 46 cm (18 inches) long, with the second drive connector no more than 15 cm (6 inches) from the first connector.

2.4.4. Front Panel Switches

The front panel switches header connects the power button, front panel speaker, reset button, and power/HDD/SCSI LEDs to the motherboard.

The switches are described as follows.*

Reset Switch (2-pin RST) This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without turning off and on your power switch. This is a preferred method of rebooting to prolong the life of the system's power supply.

SCSI Hard disk Card Activity LED (4-pin SCSI_HD) The 4-pin connector can be connected to the 4-pin activity LED connector of SCSI card Read and Write activities by devices connected to the SCSI card will cause the front panel LED to light up.

Hard Disk Activity LED (2-pin HDD_LED) This connector supplies power to the cabinet's hard disk or IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connectors will cause the LED to light up.

Speaker Connector (4-pin SPEAKER) There is one jumper cap over pin1 and pin2 (default setting) for internal buzzer. If you want to use external case-mounted speaker instead of internal buzzer, remove jumper cap and connect speaker wire to the 4-pin connector.

ATX Power Switch / Soft Power Switch (2-pin PWR_SW) A momentary switch connected to these connector controls the system power. Pressing the button once will switch the system between ON and SLEEP. The system power LED shows the status of the system's power.

System Power LED (3-pin PWR_LED) This 3-pin connector connects the system power LED, which lights up when the system is powered on.

2.4.5. Front/Back/CPU/Aux Fan Connectors

There are nine 3-pin fan connectors in the HDAMA motherboard. Two fans are used for CPU0 and CPU1; seven are for auxiliary power. These connectors support cooling fans of 500mA (6W) or less. Depending on the fan manufacturer, the wiring and plug may be different. Connect the fan's plug to the board taking into consideration the polarity of this connector.

WARNING

The CPU and/or motherboard will overheat if there is not enough airflow across the CPU and onboard heatsink. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.

NOTE

❒ The "Rotation" signal has to be used with fan specially designed with rotation signal.

Hardware Installation

❒ Only the fan marked Front_Fan1, Front_Fan0, H0_Fan1, H0_Fan1, H1_Fan0 and H1_Fan1 can be monitored by BIOS.

2.4.6. Rear Panel I/O Ports

The following illustration displays the motherboard I/O port array.

Figure 2-10: I/O port array

These ports are described as follows.

PS/2 Mouse Connector (6-pin Female) The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards can use IRQ12.

PS/2 Keyboard Connector (6-pin Female) This connection is for a standard keyboard using a PS/2 plug (mini DIN). This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.

Universal Serial BUS Ports I & 2 (Two 4-pin Female) Two external USB 1.1 ports onboard are available for connecting 2 USB devices.

Serial Port 1 Connector (9-pin Male) The serial port COM1 can be used for pointing devices or other serial devices. See the BIOS Setup.

VGA Connector (15-pin Female) The VGA port connects display device. See the BIOS Setup.

Parallel Printer Connector (25-pin Female) You can enable the parallel port and choose the IRQ through the BIOS Setup. *Only with Parallel SKU.*

Onboard LAN Ports (RJ-45) HDAMA uses Broadcom BCM5702 Gigabit Ethernet Controller. It consists of both the Media Access controller and Mbps Physical Layer (PHY) interface. Please refer to the "Onboard LAN User Guide" for further information.

USB pin assignment	
PIN	Description
1	VCC
2	DATA–
3	DATA+
4	GROUND
5	NC

2.5. Install Expansion Cards

WARNING

Power off your power supply completely when adding removing any expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

2.5.1. Expansion Card Installation Procedure

Read the documentation for your expansion card and make any necessary hardware or software setting changes, such as jumpers.

1. Remove the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
2. Carefully align the card's connectors and press firmly.
3. Secure the card on the slot with the screw you removed above.

4. Jump to step 6 to finish Installation, then set the IRQ and DMA as follows.

2.5.2. Assigning IRQs for PCI Expansion Cards

An IRQ number is automatically assigned to PCI expansion cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that contains a card requiring an IRQ. To install a PCI card, you need to set the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA #, set the jumpers on your PCI cards to INTA.

2.6. Powering on Your Computer

Follow these instructions to power on the computer after you have installed the motherboard.

1. Be sure that all switches are off (in some systems, marked with "O").
2. After finishing all jumper settings and connections, close the system case cover.
3. Connect the power supply cord in the power supply located on the back of your system case and connect the other end of the power cord into a power outlet that is equipped with a surge protector.
4. Turn on your devices in the following order:
   - Monitor
   - External SCSI devices (starting with the last device on the chain)
   - System power.

   For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the case.
5. The power LED on the front panel of the system case will light up. For ATX power supplies, the system LED will light up when the ATX power switch is pressed. The monitor LED may light up after the system's LED if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.
6. During power-on, hold down <Delete> to enter BIOS setup. Follow the instructions in the next chapter, BIOS Setup.

NOTE

Powering Off your computer. You have to first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system.

Chapter 3

BIOS Setup

This chapter discusses the PhoenixBIOS Setup program built into the ROM BIOS. The Setup program allows users modifying the basic system configurations according to their requirements. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The PhoenixBIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The PhoenixBIOS has been customized by adding important, but non-standard, features such as password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

3.1. Starting BIOS Setup

The PhoenixBIOS is immediately activated when you power on the computer every time. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. After finishing configuring the whole system, then BIOS will continue to seek an operating system on one of the disks, launch then turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in the way:

By pressing the <F2> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press F2 to enter SETUP.

3.2. Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow(↑) Key	Move to the previous item
Down Arrow(↓) Key	Move to the next item
Left Arrow(←) Key	Move to the previous item
Right Arrow(→) Key	Move to the next item
Esc key	In the Submenu: Exit the submenu. In the BIOS main category: Quit Without saving changes.
Enter Key	Select the item. A pop-up selection will display on the screen and allows to set the item value.
PgUp Key	Increase the numeric value or make change
PgDn Key	Decrease the numeric value or make change
+ Key	Increase the numeric value or make change
– Key	Decrease the numeric value or make change
F1 Key (Alt + H)	General Help on Setup navigation keys. Press <F1> key to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <ESC> key or <F1> key again.
F5 Key	Load Previous value for this page
F6 Key	Load Failsafe Defaults for this page
F7 Key	Load Optimal Defaults this page
F10 key	Save configurATI®on and exit the BIOS Setup Utility
<Tab> or <Shift-Tab>	Cycle cursor up and down.
<Home> or <End>	Move cursor to top or bottom of window.
<PgUp> or <PgDn>	Move cursor to next or previous page.
<Alt-R>	Refresh screen.

Navigating through the menu bar

Use the left and right arrow keys to navigate to the desired menu. Then use the plus-and-minus value keys to select a value for that field. The Save Values commands in the Exit Menu save the values currently displayed in all the menus.

To display a submenu

Use the arrow keys to move the cursor to the submenu you want and press <Enter>. A symbol ✖ marks all submenus.

3.2.1. The Field Help Window

The help window on the right side of each menu displays the help text for the currently selected field. It updates as you move the cursor to each field.

3.2.2. The General Help Window

Pressing <F1> or <Alt-H> on any menu brings up the General Help window that describes the legend keys and their alternates:

General Help
Setup changes system behavior by modifying the BIOS Configuration parameters. Selecting incorrect values may cause system boot failure; load Setup Default values to recover. <Up/Down> arrows select fields in current menu. <PgUp/PgDn> moves to previous/next page on scrollable menus. <Home/End> moves to top/bottom item of current menu. Within a field, <F5> or <-> selects next lower value and <F6>, <+>, or <Space> selects next higher value. <Left/Right> arrows select menus on menu bar. <Enter> displays more options for items marked with a ▶ , <Enter> also displays an option list on some fields. <F9> loads factory-installed Setup Default values. <F10> restores previous values from CMOS. <ESC> or <Alt-X> exits Setup: in submenus, pressing these keys returns to the previous menu. <F1> or <Alt-H> displays General Help (this screen). [Continue]

The scroll bar on the right of any window indicates that there is more than one page of information in the window. Use <PgUp> and <PgDn> to display all the pages. Pressing <Home> and <End> displays the first and last page. Pressing <Enter> displays each page and then exits the window.

Press <Esc> to exit the current window.

3.2.3. In Case of Problems

If after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the PhoenixBIOS supports an override to the CMOS setting, which resets your system to its defaults. The other way is clear the present CMOS information. (Refer to the jumper setting.)

The best advice is to only alter settings, which you thoroughly understand. In the end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both PhoenixBIOS to provide the maximum performance and reliability of the system. Even a slight change to the chipset setup may also cause potential and unpredictable failure to the system.

3.3. Main Menu

To start the PhoenixBIOS Setup utility:

1. Turn on or reboot your system. PhoenixBIOS displays this message:
2. Press <F2> to enter SETUP
3. Pressing <F2> displays the Main Menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Debug	Exit

		Item Specific Help
System Time:	[16:19:20]	
System Date:	[03/02/2003]	<Tab>, <Shift-Tab>, or <Enter> selects field
Legacy Diskette A:	[1.44/1.25 MB 3½"]	
Legacy Diskette B:	[Disabled]	
✖ Primary Master	6449 MB	
✖ Primary Slave	None	
✖ Secondary Master	CD-ROM	
✖ Secondary Slave	None	
HDD Post Write Buffer:	[Disabled]	
Large Disk Access Mode:	[DOS]	
Boot Summary Screen:	[Disabled]	
System Memory:	640 KB	
Extended Memory:	31744 KB	

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	←→Select Menu	Enter Select ✖ Submenu	F10 Save and Exit

BIOS Setup

3.3.1. Main Menu Selections

You can make the following selections on the Main Menu itself. Use the submenus for other selections.

Feature	Options	Description
System Time	HH:MM:SS	Set the system time.
System Date	MM/DD/YYYY	Set the system date.
Diskette 1 Diskette 2	360 KB, 5 ¼" 1.2 MB, 5 ¼" 720 KB, 3 ½" 1.44/1.25 MB, 3 ½" 2.88 MB, 3 ½" Not installed Disabled	Select the type of floppy-disk drive installed in your system. 1.25 MB is a Japanese media format that requires a 3½" 3-Mode Diskette drive.
HDD Post Write Buffer	Enabled Disabled	Enables and disables the HDD post write buffer. Enable this item for better performance.
Large Disk Access Mode	DOS Other	Select DOS if you have DOS. Select Other if you have another operating system such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector.
Boot Summary Screen	Enabled Disabled	Disable this item to speed the boot up process.
System Memory	N/A	Displays amount of conventional memory detected during boot up.
Extended Memory	N/A	Displays the amount of extended memory detected during boot up.

3.3.2. Master and Slave Submenus

The Master and Slave submenus accessed from the Main Menu control these types of devices:

- Hard-disk drives
- Removable-disk drives such as Zip drives
- CD-ROM drives

PhoenixBIOS 4.0 supports up to two IDE disk adapters, called primary and secondary adapters. Each adapter supports one master drive and one optional slave drive in these possible combinations:

- 1 Master
- 1 Master, 1 Slave
- 2 Masters
- 2 Masters, 1 Slave
- 2 Masters, 2 Slaves

There is one IDE connector for each adapter on your machine, usually labeled "Primary IDE" and "Secondary IDE." There are usually two connectors on each ribbon cable attached to each IDE connector. When you have connected two drives to these connectors, the one on the end of the cable is the Master.

If you need to change your drive settings, selecting one of the Master or Slave drives and pressing <Enter> displays the following submenu:

PhoenixBIOS Setup Utility **Main**		
Primary Master		Item Specific Help
Type:	[Auto]	Select the drive type of the fixed disk installed in your system. If type User is selected, Cylinders, Heads, and Sectors can be edited directly. Auto attempts to automatically detect the drive type for drives that comply with ANSI specifications.
CHS Format		
Cylinders:	[13328]	
Heads:	[15]	
Sectors:	[63]	
Maximum Capacity:	6449 MB	
LBA Format		
Total Sectors:	[0]	
Maximum Capacity:	[0MB]	
Multi Sector Transfer:	[16 Sectors]	
LBA Mode Control:	[Enabled]	
32-bit I/O:	[Enabled]	
Transfer Mode:	[Fast PIO 4]	
Ultra DMA Mode:	[Enabled]	
F1 Help ↕ Select Item	–/+ Change Values	F9 Setup Defaults

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ESC Exit	←→Select Menu	Enter Select ▲▼ Submenu	F10 Save and Exit

Use the legend keys listed on the bottom to make your selections and exit to the Main Menu. Use the following chart to configure the hard disk.

Feature	Options	Description
Type	None 1 to 39 User Auto IDE Removable CD-ROM ATAPI Removable	None = Autotyping is not able to supply the drive type or end user has selected None, disabling any drive that may be installed. User = You supply the hard-disk drive information in the following fields. Auto = Autotyping, the drive itself supplies the correct drive information. IDE Removable = Removable read-and-write media (e.g., IDE Zip drive). CD-ROM = Readable CD-ROM drive. ATAPI Removable = Read-and-write a media (e.g., LS120, USB Floppy, USB Zip).
CHS Format		
Cylinders	1 to 65,536	Number of cylinders.
Heads	1 to 16	Number of read/write heads.
Sectors	1 to 63	Number of sectors per track.
Maximum Capacity	0 ~ current limit	Total disk capacity
LBA Format		
Total Sectors*	1 to 63	Number of sectors per track.
Maximum Capacity	0 ~ current limit	Total disk capacity

Feature	Options	Description
Multi-Sector Transfers	Disabled Standard 2 sectors 4 sectors 8 sectors 16 sectors	Any selection except Disabled determines the number of sectors transferred per block. Standard is 1 sector per block.
LBA Mode Control	Enabled Disabled	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads, & Sectors.
32-Bit I/O	Enabled Disabled	Enables 32-bit communication between CPU and IDE card. Requires PCI or local bus.
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4	Selects the method for transferring the data between the hard disk and system memory. The Setup menu only lists those options supported by the drive and platform.
Ultra DMA Mode	Disabled Mode 0 ~ 6	If you install a device that supports UltraDMA, change the appropriate item on this list to the value listed in the device's documentation. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

**IDE drives do not require you to set Landing Zone and Write Precomp.*

When you enter Setup, the Main Menu usually displays the results of Autotyping—information each drive provides about its own parameters (e.g., cylinders, heads, and sectors)—and how the drives are arranged as Masters or Slaves on your machine.

Some older drives, however, do not use Autotyping and require selecting type User and entering a pre-defined fixed-disk type value or specifying the drive parameters separately with the User

type selected. You can find the correct parameters for hard-disk drives in the drive manual or written on the casing of the drive itself.

WARNING

Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the Setup Defaults with <F9> and re-enter the correct drive parameters.

NOTE

Before changing the contents of this menu, write them down. Once you have established correct parameters for your drive, write them down and store them in a safe place (e.g., tape them to the disk drive) for use in case these values are lost in CMOS or if autotyping fails. If these hard-disk parameters are not correctly entered in CMOS, you cannot access the data on your drive.

3.4. Advanced Menu

Selecting "Advanced" from menu bar on the Main Menu displays the following menu:

PhoenixBIOS Setup Utility						
Main	**Advanced**	Security	Power	Boot	Debug	Exit

		Item Specific Help
Installed O/S:	[Other]	Select the operating system installed on you system that you use most often.
Reset Configuration Data:	[No]	
USB Host Controller:	[Enabled]	
USB BIOS Legacy Support:	[Enabled]	
Multiprocessor Specification:	[1.4]	Note: An incorrect setting can cause unexpected behavior in some operating systems.
Use PCI Interrupt Entries in MP Table:	[Yes]	
▸ Chipset Configuration		
▸ Keyboard Configuration		
▸ I/O Device Configuration		
QuickBoot Mode:	[Enabled]	
Boot Diagnostic Screen:	[Enabled]	
▸ PCI Configuration		

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	←→Select Menu	Enter Select ▸ Submenu	F10 Save and Exit

Use the legend keys to make your selections and exit to the Main Menu.

Feature	Options	Description
Installed Operating System	Other Win95 Win98 Win2000 WinMe	Select the operating system you use most often.
Reset Configuration Data	Yes No	Yes erases all configuration data in a section of memory for ESCD (Extended System Configuration Data) which stores the configuration settings for non-PnP plug-in devices. Select Yes when required to restore the manufacturer's defaults.
USB Host Controller	Enabled Disabled	Enables and disables the onboard USB host controller. When enabled, the following item becomes available.
USB BIOS Legacy Support	Enabled Disabled	Enables support for legacy USB bus.
Multiprocessor Specification	1.4 1.1	Select DOS if you have DOS. Select Other if you have another operating system such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector.
Use PCI Interrupt Entries in MP Table	Yes No	NEED INFORMATION
QuickBoot Mode	Enabled Disabled	When enabled, the POST is disabled speeding up the system boot up.

Feature	Options	Description
Boot Diagnostic Screen	Enabled Disabled	Enable this item if you are having trouble with the system and you want to diagnose the problem. Add this item is use only when all memory banks are the same size/type.

WARNING

Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the Setup Defaults with <F9>.

3.4.1. Chipset Configuration

In a system with no PCI, selecting "Advanced Chipset Control" from menu bar on the Advanced menu displays the following submenu:

```
                    PhoenixBIOS Setup Utility
 Advanced
 Chipset Configuration                          Item Specific Help

                Setup Warning
        Setting items on this menu to incorrect
      values may cause your system to malfunction.

 Dram Bank Interleave:          [Disabled]       Controls system
 Note Memory Interleave:        [Disabled]       memory parity through
 ECC:                           [Disabled]       the chipset.

 F1  Help   ↕ Select Item   –/+ Change Values      F9  Setup Defaults
 ESC Exit   ↔ Select Menu   Enter Select ► Submenu F10 Save and Exit
```

The chipset consists of one or more integrated circuits that act as an interface between the CPU and much of the system's hardware. You can use this menu to change the values in the chipset registers and optimize your system's performance..

Use the following chart in configuring the chipset:

Feature	Options	Description
Dram Bank Interleave	Enabled Disabled	Enable this item to increase memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed.
Node Memory Interleave	Enabled Disabled	NEED INFORMATION
ECC	Enabled Disabled	Enable this item to allow BIOS to perform a parity/ECC check to the POST memory tests. Enable only if the system DRAM supports parity/ECC checking.

NOTE

The contents of this menu depend on the chipset installed on your motherboard, and chipsets vary widely. Consult your dealer or the chipset manual before changing the items on this menu. Incorrect settings can cause your system to malfunction.

3.4.2. Keyboard Configuration

If the system has a PCI chipset, selecting "Advanced Chipset Control" from the Advanced menu displays the following submenu:

PhoenixBIOS Setup Utility **Advanced**		
Keyboard Configuration		Item Specific Help
NumLock:	[Auto]	Selects Power-on state for NumLock
Keyboard auto-repeat rate:	[30/sec]	
Keyboard auto-repeat delay:	[1/2 second]	

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	← Select Menu	Enter Select ➡ Submenu	F10 Save and Exit

This menu enables you to configure keyboard behavior on boot.

Use the following chart in configuring the keyboard:

Feature	Options	Description
Numlock	Auto On Off	On or Off turns NumLock on or off at boot up. Auto turns NumLock on if it finds a numeric key pad.
Keyboard auto-repeat rate	2/sec 6/sec 10/sec 13.3/sec 21.8/sec 26.7/sec 30/sec	Sets the number of times a second to repeat a keystroke when you hold the key down.
Keyboard auto-repeat delay	¼ sec ½ sec ¾ sec 1 sec	Sets the delay time after the key is held down before it begins to repeat the keystroke.

3.4.3. I/O Device Configuration Menu

The CPU communicates with external devices such as printers through devices called Input/Output (I/O) ports such as serial and parallel ports. These I/O devices require the use of system resources such as I/O addresses and interrupt lines. If these devices are Plug and Play, either the BIOS can allocate the devices during POST, or the operating system can do it. If the I/O devices are not Plug and Play, they may require manually setting them in Setup.

On some systems, the chipset manages the communication devices. Other systems have, instead, a separate I/O chip on the motherboard for configuring and managing these devices.

Many systems allow you to control the configuration settings for the I/O ports. Select "I/O Device Configuration" on the Advanced Menu to display this menu and specify how you want to configure these I/O Devices:

PhoenixBIOS Setup Utility **Advanced**		
I/O Device Configuration		Item Specific Help
PS/2 Mouse:	[Enabled]	'Disabled' prevents any installed PS/2 mouse from functioning, but frees up IRQ 12. 'Enabled' forces the PS/2 mouse port to be enabled regardless if a mouse is present. 'Auto Detect' will enable the PS/2 mouse only if present. 'OS Controlled' only displayed if the OS controls the mouse.
Floppy disk controller:	[Enabled]	
Onboard PCI IDE:	[Both]	
Serial Port A:	[Enabled]	
Base I/O address:	[3F8]	
Interrupt:	[IRQ4]	
Serial Port B:	[Enabled]	
Base I/O address:	[2F8]	
Interrupt:	[IRQ3]	
Parallel Port:	[Enable]	
Mode:	[ECP]	
Base I/O address:	[378]	
Interrupt:	[IRQ5]	
DMA channel:	[DMA 1]	
F1 Help ↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit ←→Select Menu	Enter Select ► Submenu	F10 Save and Exit

Use the following chart to configure the Input/Output settings:

Feature	Options	Description
PS/2 Mouse	Disabled Enabled	Enables and disables support for a PS/2 mouse.
Floppy disk controller	Disabled Enabled	Enables the on-board legacy diskette controller. Disabled turns off all legacy diskette drives.
Onboard PCI IDE	Both Primary Secondary Disabled	Use these items to enable or disable the internal PCI IDE channels that are integrated on the mainboard.

Feature	Options	Description
Serial port A: Serial port B:	Disabled Enabled Auto OS Controlled	Disabled turns off the port. Enabled requires you to enter the base Input/Output address and the Interrupt number on the next line. Auto makes the BIOS configure the port automatically during POST. OS Controlled lets the PnP Operating System (such as Windows 95) configure the port after POST.
Base I/O Address IRQ	3F8, IRQ 4 2F8, IRQ 3	If you select Enabled, choose one of these combinations.
Parallel Port:	Disabled Enabled Auto OS Controlled	Disabled turns off the port. Enabled requires you to enter the base Input/Output address and the Interrupt number below. Auto makes the BIOS auto configure the port during POST. OS Controlled lets the PnP Operating System (such as Windows 95) configure the port after POST.
Mode	Output only Bi-directional	Output only is standard one-way protocol for a parallel device. Bi-directional uses two-way protocol of an Extended Capabilities Port (ECP).
Base I/O Address	378 278 3BC	If you select Enabled for the Parallel Port, choose one of these I/O addresses.
Interrupts	IRQ5 IRQ7	If you select Enabled for the Parallel Port, choose one of these interrupt options.

Feature	Options	Description
DMA Channel	DMA 1 DMA 3	Select which DMA (Direct Memory Access) channel to be used by the parallel port.

WARNING

If you choose the same I/O address or Interrupt for more than one port, the menu displays an asterisk (*) at the conflicting settings. It also displays this message at the bottom of the menu:

> * Indicates a DMA, Interrupt, I/O, or memory resource conflict with another device. Resolve the conflict by selecting another settings for the devices.

3.4.4. PCI Devices Menu

If the system has a PCI bus, selecting "PCI Devices" from menu bar on the Advanced menu displays the following submenu:

PhoenixBIOS Setup Utility **Advanced**	
PCI Configuration	Item Specific Help
▪ PCI Device Slot #1: ▪ PCI Device Slot #2: ▪ PCI Device Slot #3: ▪ PCI Device Slot #4: ▪ PCI Device Slot #5: ▪ PCI Device Slot #6: ▪ Onboard Device Control ▪ PCI/PNP IRQ Exclusion ▪ PCI/PNP UMB Exclusion	Setup items for configuring the specific PCI device

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	← Select Menu	Enter Select ▪ Submenu	F10 Save and Exit

PCI Devices are devices equipped for operation with a PCI (Peripheral Component Interconnect) bus, a standardized Plug-and-Play hardware communication system that connects the CPU with other devices. Use this menu to configure the PCI devices installed on your system.

Use the following chart in configuring the PCI devices:

PCI Device Slots 1-n		
Feature	**Options**	**Description**
Option ROM Scan	Disabled Enabled	Initialize device expansion ROM.
Enable Master	Disabled Enabled	Enables selected device as a PCI bus master. Not every device can function as a master. Check your device documentation.

Onboard Device Control		
Feature	**Options**	**Description**
Onboard LAN1/2	Disabled Enabled	Enables the onboard LAN function and LAN ports one and two..
Option ROM Scan	Disabled Enabled	Initialize device expansion ROM.
Onboard SATA	Disabled Enabled	Enables the onboard SATA RAID function.

PCI/PNP IRQ Exclusion		
Feature	**Options**	**Description**
IRQ 3/4/5/7/10/11	Available Reserved	Enables you to reserve these IRQs for devices.
*Items marked with an asterisk indicate a DMA, IRQ, I/O, or memory resource conflict.		

PCI/PNP UMB Exclusion		
Feature	**Options**	**Description**
C800 – CBFF ~ DC00 - DFFF	Available Reserved	Enables you to reserve these upper memory blocks for devices.
*Items marked with an asterisk indicate a DMA, IRQ, I/O, or memory resource conflict.		

NOTE

The contents of this menu depend on the devices installed on your system. Incorrect settings can cause your system to malfunction. To correct mistakes, return to Setup and restore the System Defaults (F9).

3.5. Security Menu

Selecting "Security" from menu bar on the Main Menu displays the following menu:

PhoenixBIOS Setup Utility						
Main	Advanced	**Security**	Power	Boot	Debug	Exit

		Item Specific Help
Supervisor Password is:	Clear	Supervisor Password controls access to the setup utility.
User Password is:	Clear	
Set Supervisor Password:	[Enter]	
Set User Password:	[Enter]	
Password on boot:	[Disabled]	
Fixed disk boot sector:	[Normal]	
Diskette access:	[Supervisor]	

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	←→Select Menu	Enter Select ► Submenu	F10 Save and Exit

Use this menu to specify your security settings. The settings here determine who has access to the BIOS setup utility program and to the system.

3.5.1. About Passwords

The Setup Utility allows you to specify passwords in the Security menu. The passwords control access to the BIOS and certain Security menu options during system startup.

The passwords are not case sensitive. In other words, a password can be entered using either upper or lower case letters.

3.5.2. Set Supervisor Password

This field allows you to set the Supervisor password. To set the Supervisor password, highlight this field and press the [Enter] key. The following dialog box appears:

Set Supervisor Password		
Enter New Password	[	]
Confirm New Password	[	]

BIOS Setup

Type the password and press the [Enter] key. You can type up to seven alphanumeric characters. Symbols and other keys are ignored. To confirm the password, type the password again and press the [Enter] key. The Supervisor password is now set. This password allows full access to the BIOS Setup menus.

To clear a password, highlight the Set Supervisor Password field and press the [Enter] key. The following dialog box appears:

Set Supervisor Password		
Enter Current Password	[	]
Enter New Password	[	]
Confirm New Password	[	]

Enter the current password. Leave the Enter New Password field blank and press [Enter] twice. The password is now cleared.

3.5.3. Set User Password

This field allows you to set the User password. (The Supervisor password must be set before the User password.) To set the User password, follow the instructions for setting the Supervisor password. The User password allows restricted access to the Setup menus.

The following table explains other security settings.

Feature	Options	Description
Password on boot	Disabled Enabled	This option requires prior setting of the Supervisor password to function. When enabled, the system will then require either the Supervisor or User password before the system can bootup.

Feature	Options	Description
Fixed Disk Boot Sector	Normal Write Protect	This option requires prior setting of the Supervisor password to function. When set to Normal, the system will allow normal access to the HDD boot sector. When set to Write Protect, the BIOS blocks all access to the boot sector.
Diskette Access	User Supervisor	This option requires prior setting of the supervisor or user password to function. When set to Supervisor or User, the system will prompt the user for the supervisor or user password before allowing access to the floppy diskette drive.

NOTE

Write protecting the HDD boot sector will protect the HDD against boot sector viruses However, this option may interfere with the normal operATI®on of certain operATI®ng systems or anti-virus programs, which would normally need access to the boot sector area.

3.6. The Power Menu

Selecting "Power" from the menu bar displays the following menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	**Power**	Boot	Debug	Exit

		Item Specific Help
ACPI Enabled:	[Yes]	Select Power Management Mode. Choosing modes changes system power management settings. Maximum Power Savings conserves the greatest amount of system power while Maximum Performance conserves power but allows greatest system performance. To alter these settings, choose Customize. To turn off power management, choose Disable.
ACPI SRAT Table:	[Disabled]	
Spread Spectrum Modulation	[No]	
Suppress Unused PCI Slot Clocks	[Yes]	
Power Savings:	[Customize]	
Standby Timeout:	[15 sec]	
Auto Suspend Timeout:	[15 sec]	
Resume On Time:	[Off]	
Resume Time:	[00:00:00]	
Resume Date:	[00/00/0000]	
After Power Failure:	[Last State]	

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Select ► Submenu	F10 Save and Exit

Use this menu to specify your settings for Power Management. Remember that the options available depend upon the hardware installed in your system. Those shown here are from a typical system.

A power-management system reduces the amount of energy used after specified periods of inactivity. The Setup menu pictured here supports a Full On state, a Standby state with partial power reduction, and a Suspend state with full power reduction.

Use the Advanced Options on this menu to specify whether or not the activity of interrupts can terminate a Standby or Suspend state and restore Full On. Do not change these settings without knowing which devices use the interrupts.

Use the following table in making your selections:

Feature	Options	Description
ACPI Enabled	Yes No	This mainboard supports ACPI (Advanced Configuration and Power management Interface). Use this item to enable or disable the ACPI feature. ACPI is a power management specification that makes hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on and off for improved power management especially in portables. It also allows the PC to be turned on and off by external devices, so that the touch of a mouse or the press of a key will "wake up" the machine.
ACPI SRAT Table	Disabled Enabled	Enables and disables the ACPI SRAT (Static Resource Affinity Table).
Spread Spectrum Modulation	No 0.10% 0.40% 0.70% 1.0% 1.3% 1.6% 2.0%	If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.
Suppress Unused PCI Slot Clocks	Yes No	When this item is enabled, BIOS will disable the clock signal of free PCI slots, which frees resources.
Power Savings	Disabled Customize Maximum Power Savings Maximum Performance	Maximum options: pre-defined values. Select Customize to make your own selections from the following fields. Disabled turns off all power management.

Feature	Options	Description
Standby Timeout	Off 1 min 2 min 4 min 6 min 8 min 12 min 16 min	Inactivity period required to put system in Standby (partial power shutdown).
Auto Suspend Timeout	Disabled 5 min 10 min 15 min 20 min 30 min 40 min 60 min	Inactivity period required after Standby to Suspend (maximum power shutdown).
Resume On Time	Off On	Wakes up system at predetermined time.
Resume Time	HH/MM/SS	Enter the time that you want the system to wake up.
Resume Date	MM/DD/YYYY	Enter the date that you want the system to wake up.
After Power Failure	Last State Stay Off Power On	Enables you to set the system's behavior after a power failure.

3.7. Boot Menu

After you turn on your computer, it will attempt to load the operating system (such as Windows 98) from the device of your choice. If it cannot find the operating system on that device, it will attempt to load it from one or more other devices in the order specified in the Boot Menu. Boot devices (i.e., with access to an operating system) can include: hard drives, floppy drives, CD ROMs, removable devices (e.g., Iomega Zip drives), and network cards.

NOTE

Specifying any device as a boot device on the Boot Menu requires the availability of an operating system on that device. Most PCs come with an operating system already installed on hard-drive C:\.

Selecting "Boot" from the Menu Bar displays the Boot menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	**Boot**	Debug	Exit

	Item Specific Help
–Removable Devices Legacy Floppy Drives –Hard Drive Primary Master Bootable Add-in Cards CD-ROM Drive Network Boot	Use these keys to set the boot order in which the BIOS attempts to boot the OS: <+> or <-> moves device up or down. <Enter> expands or collapses devices marked with + or -. <Ctrl+Enter> expands all <Shift+1> enables or disables a device.

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Select ► Submenu	F10 Save and Exit

Use this menu to arrange to specify the priority of the devices from which the BIOS will attempt to boot the Operating System. In the example above, the BIOS will attempt first to boot from the CD-ROM drive (the only Removable Device listed). Failing that, it will attempt to boot from the Primary Master hard disk, and so on down the list.

Removable Devices, Hard Drive, and Network Boot are the generic types of devices on your system from which you can boot an operating system. You may have more than one device of each type. If so, the generic type is marked with a plus or minus sign. Use the <Enter> key to expand or collapse the devices marked with <+> or <->. Press <Ctrl+Enter> to expand all such devices.

NOTE

Floppy drives are not managed on this menu as part of Removable Devices.

To change a device's priority on the list, first select it with the up-or-down arrows, and move it up or down using the <+> and <-> keys. Pressing <n> moves a device between the Removable Devices and Hard Drive. Pressing <Shift+1> enables or disables a device.

Feature	Options	Description
Hard Drive	Primary Master	The primary master is booted first.
	Bootable Add-in Cards	Bootable cards (such as LAN cards) are booted first.
Removable Devices	Legacy Floppy Drive	The computer attempts to boot from the floppy disk drive.
CD-ROM Drive		The computer attempts to boot from the CD-ROM drive.
Network Boot		The computer attempts to boot from the network through the LAN connection.

3.8. The Exit Menu

Selecting "Exit" from the menu bar displays this menu:

PhoenixBIOS Setup Utility						
Main	Advanced	Security	Power	Boot	Debug	**Exit**

	Item Specific Help
Exit Saving Changes Exit Discarding Changes Load Setup Defaults Discard Changes Save Changes	Exit System Setup and save your changes to CMOS.

F1 Help	↕ Select Item	–/+ Change Values	F9 Setup Defaults
ESC Exit	↔ Select Menu	Enter Select ► Submenu	F10 Save and Exit

The following sections describe each of the options on this menu. Note that <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

3.8.1. Saving Changes

After making your selections on the Setup menus, select “Exit Saving Changes" or "Save Changes" to see a screen similar to the following:

Setup Confirmation	
Save configuration changes and exit now?	
[Yes]	[No]

Select Yes and press <Enter> to save the changes.

Both procedures store the selections displayed in the menus in CMOS (short for "battery-backed CMOS RAM") a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS.

During boot up, PhoenixBIOS attempts to load the values saved in CMOS. If those values cause the system boot to fail, reboot and press <F2> to enter Setup. In Setup, you can get the Default Values (as described below) or try to change the selections that caused the boot to fail.

3.8.2. Exit Discarding Changes

Use this option to exit Setup without storing in CMOS any new selections you may have made. The selections previously in effect remain in effect.

3.8.3. Load Setup Defaults

To display the default values for all the Setup menus, select "Load Setup Defaults" from the Main Menu. The program displays this message:

Setup Confirmation	
Load default configuration now?	
[Yes]	[No]

Select Yes and press <Enter> to load the default configuration.

If, during boot up, the BIOS program detects a problem in the integrity of values stored in CMOS, it displays these messages:

```
System CMOS checksum bad - run SETUP
Press <F1> to resume,  <F2> to Setup
```

The CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS.

Press <F1> to resume the boot or <F2> to run Setup with the ROM default values already loaded into the menus. You can make other changes before saving the values to CMOS.

3.8.4. Discard Changes

If, during a Setup Session, you change your mind about changes you have made and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS.

Selecting “Discard Changes” on the Exit menu updates all the selections and displays this message:

Setup Confirmation	
Load previous configuration now?	
[Yes]	[No]

Select Yes and press <Enter> to load the previous configuration.

3.8.5. Save Changes

Selecting “Save Changes” saves all the selections without exiting Setup.

Setup Confirmation	
Save configuration changes now?	
[Yes]	[No]

Select Yes and press <Enter> to save configuration changes and continue working in BIOS Setup.

You can return to the other menus if you want to review and change your selections.

3.9. About the Boot Utilities

The HDAMA comes with the following boot utilities:

- **Phoenix QuietBoot™:** Phoenix QuietBoot displays a graphic illustration rather than the traditional POST messages while keeping you informed of diagnostic problems.
- **Phoenix MultiBoot™:** Phoenix MultiBoot is a boot screen that displays a selection of boot devices from which you can boot your operATI®ng system.

3.9.1. Using Phoenix QuietBoot

Right after you turn on or reset the computer, Phoenix QuietBoot displays the QuietBoot Screen, a graphic illustration created by the computer manufacturer instead of the text-based POST screen, which displays a number of PC diagnostic messages.

To exit the QuietBoot screen and run Setup, display the MultiBoot menu, or simply display the PC diagnostic messages, you can simply press one of the hot keys described below.

The QuietBoot Screen stays up until just before the operating system loads unless one of the following actions occurs:

- Press <Esc> to display the POST screen
- Press <F2> to enter Setup
- POST issues an error message
- The BIOS or an option ROM requests keyboard input

The following explains each of these situations.

When Escape is pressed	Pressing <Esc> switches to the POST screen and takes one of two actions: 1. If MultiBoot is installed, the boot process continues with the POST screen until the end of POST, and then displays the Boot First Menu, text-based with these options: A: Load the operating system from a boot device of your choice. B: Enter Setup. C: Exit the Boot First Menu (with <Esc>) and load the operating system from the boot devices in the order specified in Setup. 2. If MultiBoot is not installed, the boot process continues as usual.
Press <F2> to enter Setup	Pressing <F2> at any time during POST switches to the POST screen (if not already displayed) and enters Setup.

POST issues an error message	Whenever POST detects a non-fatal error, QuietBoot switches to the POST screen and displays the errors. It then displays this message:
	`Press <F1> to resume, <F2> to Setup`
	`Press <F1> to continue with the boot. Press <F2> if you want to correct the error in Setup.`

The BIOS or an option ROM requests keyboard input	If the BIOS or an Option ROM (add-on card) requests keyboard input, QuietBoot switches over to the POST screen and the Option ROM displays prompts for entering the information. POST continues from there with the regular POST screen.

3.9.2. Phoenix MultiBoot

Phoenix MultiBoot expands your boot options by letting you choose your boot device, which could be a hard disk, floppy disk, or CD ROM. You can select your boot device in Setup, or you can choose a different device each time you boot during POST by selecting your boot device in The Boot First Menu.

MultiBoot consists of:

- The Setup Boot Menu
- The Boot First Menu

See the Setup Boot menu on page 3-55. The following describes the Boot First Menu.

The Boot First Menu

Display the Boot First Menu by pressing <Esc> during the POST. In response, the BIOS first displays the message, "Entering Boot Menu ..." and then displays the Boot Menu at the end of POST. Use the menu to select any of these options:

- Override the existing boot sequence (for this boot only) by selecting another boot device. If the specified device does not load the operating system, the BIOS reverts to the previous boot sequence.
- Enter Setup.
- Press <Esc> to continue with the existing boot sequence.

Boot Menu
Select boot device or Setup. Use the Up and Down arrows to select the Boot First device, then press <Enter> or <Esc> to exit. 1. Hard Drive 2. ATAPI CD-ROM 3. Diskette Drive 4. Removable Devices 5. Network Boot <Setup>

If there is more than one bootable hard drive, the first one in the Setup Boot menu is the one represented here.

3.10. BIOS Flash Upgrade Utility

Phoenix Phlash gives you the ability to update your BIOS from a floppy disk without having to install a new ROM BIOS chip.

Phoenix Phlash is a utility for "flashing" (copying) a BIOS to the Flash ROM installed on your computer from a floppy disk. A Flash ROM is a Read-Only Memory chip that you can write to using a special method called "flashing." Use Phoenix Phlash for the following tasks:

Update the current BIOS with a new version.

Restore a BIOS when it has become corrupted.

Installation

Phoenix Phlash is shipped on a floppy disk with your computer as a compressed file called CRISDISK.ZIP that contains the following files:

CRISDISK.BAT	Executable file for creating the Crisis Recovery Diskette.
PHLASH.EXE	Programs the flash ROM.
PHLASH16.EXE	Performs platform-dependent functions.
BIOS.ROM	Actual BIOS image to be programmed into flash ROM.
MINIDOS.SYS	Allows the system to boot in Crisis Recovery Mode.
MAKEBOOT.EXE	Creates the custom boot sector on the Crisis Recovery Diskette.

To install Phoenix Phlash on your hard disk, follow this simple procedure:

1. Insert the distribution diskette into drive A:
2. Unzip the contents of CRISDISK.ZIP into a local directory, presumably C:\PHLASH.
3. Store the distribution diskette in a safe place.

3.10.1. Create the Crisis Recovery Diskette

If the OEM or dealer from whom you purchased your system has not provided you with one, then you should create a Crisis Recovery Diskette before you use the Phlash utility. If you are unable to boot your system and successfully load the Operating System, the BIOS may have been corrupted, in which case you will have to use the Crisis Recovery Diskette to reboot your system. There are several methods that you can use to create the Crisis Recovery Diskette. Below is one recommended procedure.

1. Be sure you have successfully installed the Phlash Utility onto your hard disk.
2. Insert a clean diskette into drive A: or B:
3. From the local directory, enter the following: CRISDISK [drive]: where [drive] is the letter of the drive into which you inserted the diskette. For help, type /? or /h. CRISDISK.BAT formats the diskette, then copies MINIDOS.SYS, VGABIOS.EXE (if available), PHLASH.EXE, PLATFORM.BIN and BIOS.ROM to the diskette, and creates the Required custom boot sector.
4. Write protect and label the Crisis Recovery Diskette.

NOTE

You can only supply a volume label after the Crisis Recovery Diskette has been formatted and the necessary files copied because MINIDOS.SYS must occupy the first directory entry for the diskette to boot properly.

3.10.2. Updating the Crisis Recovery Diskette

If the BIOS image (BIOS.ROM) changes due to an update or bug fix, you can easily update the Crisis Recovery Diskette. Simply copy the new BIOS.ROM image onto the Crisis Recovery Diskette. No further action is necessary.

3.10.3. Executing Phoenix Phlash

You can run Phoenix Phlash in one of two modes:

1. Command Line Mode
2. Crisis Recovery Mode

WARNING

For your own protection, be sure your have a Crisis Recovery Diskette ready to use before executing Phlash.

Command Line Mode

Use this mode to update or replace your current BIOS. To execute Phlash in this mode, move to the directory into which you have installed Phoenix Phlash and type “Phlash” at the prompt:

```
C:\Phlash
```

Phoenix Phlash automatically updates or replaces the current BIOS with the one which your OEM or dealer supplies you.

Phlash may fail if your system is using memory managers, in which case the utility displays the following message:

```
Cannot flash when memory managers are present.
```

If you see this message after you execute Phlash, you must disable the memory manager on your system. To do so, follow the instructions in the following sections.

Disabling Memory Managers

To avoid failure when flashing, you must disable the memory managers that load from CONFIG.SYS and AUTOEXEC.BAT. There are two recommended procedures for disabling the memory managers. One consists of pressing the <F5> key (only if you are using DOS 5.0 or above), and the other requires the creation of a boot diskette.

DOS 5.0 (or later version)

For DOS 5.0 and later, follow the two steps below to disable any memory managers on your system. If you are not using at least DOS 5.0, then you must create a boot diskette to bypass any memory managers (See Create a Boot Diskette, below).

1. Boot DOS 5.0 or later version. (In Windows 95, at the boot option screen, choose Option 8, "Boot to a previous version of DOS.")
2. When DOS displays the “Starting MS-DOS” message, press <F5>.

After you press <F5>, DOS bypasses the CONFIG.SYS and AUTOEXEC.BAT files, and therefore does not load any memory managers.

You can now execute Phlash.

Create a Boot Diskette

To bypass memory managers in DOS versions previous to 5.0, follow this recommended procedure:

1. Insert a diskette into your A: drive.
2. Enter the following from the command line: Format A: /S
3. Reboot your system from the A: drive.

Your system will now boot without loading the memory managers, and you can then execute Phlash.

Commend:

A:\> PHLASH16 HDAMA120.ROM

Where:

PHLASH16	command name
HDAMA120.ROM	the BIOS ROM download from the web

Appendix

Troubleshooting

Troubleshooting Flowcharts

The following is a checking procedure for common problems encountered during system assembly.

WARNING

Before you insert any add-on card or hardware component in the HDAMA, always disconnect the power cord first.

Troubleshooting

Symptom checking List

Symptom	Check point
No Power (FAN is not rotating)	• Make sure no short circuit exist between the motherboard and chassis • Check if all jumpers are set to the default position. • Check if the 115V/230V switch on the power supply is properly set. • Check the CPU is inserted properly into CPU socket. • Check the power cord of the CPU fan is plugged into the correct position. • Turn the power switch on and off to test the system • Check the power of the battery on the M/B. In general, the battery voltage is around 3VDC.
Can power on the system (FAN is rotating), but no screen display.	• Remove all the add-on card exclusive CPU, and memory modules. • Check if the memory is Registered ECC DIMM. Please check your reseller for qualified memory available vendor list (AVL). • Check if all jumpers are set to the default position. • Clear CMOS by using CLRTC jumper. Please refer to the page 1-2 in this manual. • Check if the connection is connected properly between onboard VGA port and monitor. • Check if using 400 FSB CPU and PC1600/PC2100/PC2700 (DDR200/DDR266/DDR333) Memory module in the HDAMA. If yes, Chang CPU to 400 FSB or memory to PC1600/PC2100/PC2700 (DDR200/DDR266/DDR333). • Use speaker to determine the symptom.
Memory Error	Check if the memory DIMM module is inserted into DIMM socket properly. Check if different speed memory modules are mixed and used in the HDAMA. Verify the BIOS setup is configuration for the fastest speed of RAM used. RIOWORKS recommend always use the same speed RAM in the system. Make sure your memory module(s) is compliant with PC1600/PC2100/PC2700 (DDR200/DDR266/DDR333) Spec in the HDAMA.

Symptom Report Form

M/B	HDAMA	Serial Number		BIOS version		
CPU 1						
CPU 2						
DIMM 0						
	Size	MB	Brand		Component Model	
DIMM 1						
	Size	MB	Brand		Component Model	
DIMM 2						
	Size	MB	Brand		Component Model	
DIMM 3						
	Size	MB	Brand		Component Model	
FDD						
PCI64-1						
PCI64-2						
PCI64-3						
PCI 1						
PCI 2						
PCI 3						
Onboard IDE 0	Master					
	Slave					
Onboard SCSI CH 0						
Onboard SCSI CH 1						

Troubleshooting

Power Supply		Watt	Model Number	
Other Devices				
OperATI®ng system				
Symptom Description:				
Name:				
Contact email address:				

Troubleshooting