



User's Manual

**VIA KT880 mainboard
for AMD Socket A processor**

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Section 1

INTRODUCTION

1-1 Package Contents

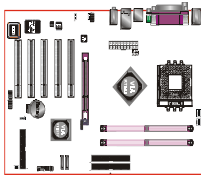
Contents

- A. Mainboard
- B. User's manual
- C. Floppy drive cable
- D. HDD drive cable
- E. CD (drivers and utilities)
- F. I/O Shield

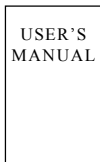
Optional Items

- G. S-ATA data and power cable
- H. Extra USB2.0 port cable
- I. S/PDIF Module

If you need the optional item, please contact your dealer for assistance.



A



B



C



D



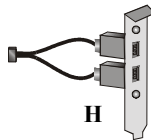
E



F



G



H



I

1-2 Mainboard Features

Brief Introduction

★ **Athlon™ Processor**

The AMD Athlon™ is a seventh-generation micro architecture with an integrated L2 cache, which is powerful enough to support the bandwidth requirements of a large range of applications, hardware, graphics, and memory technologies.

For more information about all the new features Athlon™ Processor deliver, check out the AMD website at <http://www.amd.com>

★ **Chipset**

The board is designed with VIA chipset, KT880 as North Bridge and VT8237 as South Bridge, providing a feature rich and scalable platform.

The North Bridge connects to the South Bridge through the fast Ultra V-Link connection at 1.06GB/s. With support for two Serial ATA channels at 150MB/s bandwidth, integrated RAID (0, 1 & JBOD) capability as well as up to eight USB 2.0 ports, the VT8237 offers the highest possible peripheral performance for professional users. Additional features include a VIA MAC for 10/100Mbps Fast Ethernet, integrated PCI support.

For more details about the VIA chipset features, please visit the VIA Web site at <http://www.via.com>.

★ **Accelerated Graphics Port (AGP)**

The AGP slot on the board is compliant with the new AGP 3.0 specification. This new specification enhances the functionality of the original AGP specification by allowing 8X data transfers (8 data samples per clock) resulting in maximum bandwidth of 2.1GB/s. Only 1.5V AGP cards are supported.

★ **Ultra ATA100/133**

The mainboard provides an Ultra ATA100/133 Bus Master IDE controller. This controller supports Ultra ATA100/133 protocols which are ideal to support demanding applications such as real-time video, multimedia, and a high performance operating system. A new IDE cable is required for Ultra ATA100/133.

★ **Hardware Monitoring**

Hardware monitoring enables you to monitor various aspects of the system operation and status. This includes CPU temperature, voltage and fan speed in RPMs.

★ 10/100 LAN

This mainboard is mounted with an ethernet LAN PHY. It allows the mainboard to connect to a local area network by means of a network hub.

★ Serial ATA

Support Serial ATA, an evolutionary replacement for Parallel ATA IDE storage interface. Increases the peak data transfer speed up to 150MB/sec and allows future enhancements to the computing platform.

★ USB2.0

A popular USB standard for plugging in peripherals with up to 480Mbps transfer speed while maintaining backward compatibility with older USB1.1 device.

★ 6ch

Delivers 6 channel audio to bring you the latest in audio realism from DVD movies and games. Perfect for your home theatre system.

★ QuickSPDIF

On board SPDIF-out connector for quick connection to multi-channel speakers. Not only removes cable cluttering but also delivers loss-free digital audio to let you enjoy DVD movies and games with crystal clear sound.

★ Magic Health

Reports your system hardware status for every boot-up to help detect faults early. Monitor hardware status including CPU temperature, CPU/Memory voltage, fan RPM speed for chassis fan, CPU fan & Power supply fan.

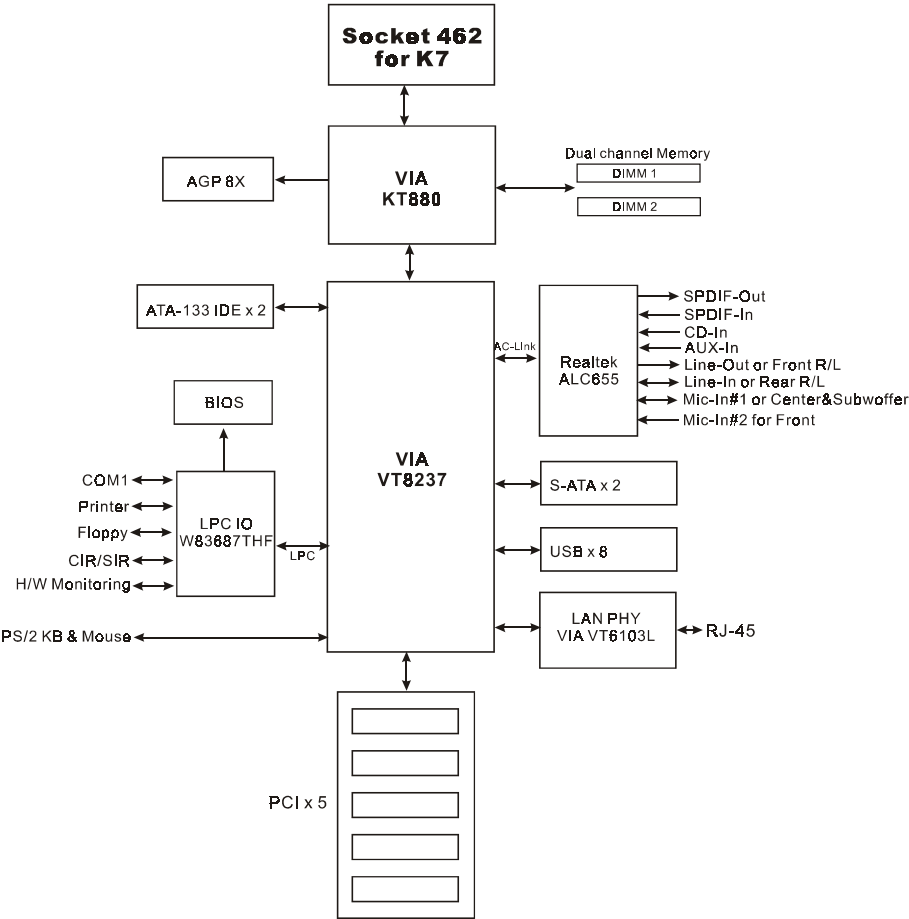
★ EZ-Boot

Simply press “ESC” to select your bootable device. No more hassle to search the BIOS menu, change and re-start.

★ PowerBIOS

Supporting a full range of overclocking setting via BIOS. Various adjustable feature include FSB/Memory voltage tweaking.

1-3 System Block Diagram



Section 2

SPECIFICATION

Mainboard Specification

● **Processor**

- ◆ Supports 462-pin Socket A for AMD Athlon XP processors with up to **400MHz** FSB Athlon XP (1500+ to **3200+**) @266/333/**400MHz** Front Side Bus

● **Chipset**

- ◆ VIA AGPset : VIA KT880 + VT8237

● **Main Memory**

- ◆ **Two** 184-pin DDR DIMM sockets
- ◆ Support single-sided or double-sided 2.5v DDR-266/333/400 DIMMs with **dual channel architecture** in 64/128/256/512Mb/1Gb technologies
- ◆ Supports up to **2GB** memory size

● **BIOS**

- ◆ Flash EEPROM with Award BIOS
 - ACPI v2.0 compliant
 - S3 (Suspend to DRAM) sleep-state support
 - SMBIOS (System Management BIOS) v2.2 compliant
 - Supports Power failure recovery
 - Able to wake the computer from specific states by LAN, Power switch, PME#, RTC alarm, USB, PS2 K/B, PS2 Mouse, Modem Ring-in COM port..

● **Onboard Devices**

- ◆ LAN --> 10/100Mbps Fast Ethernet with onboard **VIA VT6103L** LAN PHY

● **Legacy IO Controller**

- ◆ [Winbond W83687THF](#) LPC IO controller with floppy, printer, game, serial and SIR interface
- ◆ Supports Hardware Monitoring function

● **Audio**

- ◆ [Six](#) channel audio with analog and digital output using [Realtek ALC655](#) AC'97CODEC
 - AC'97 v2.3 compliant
 - Supports CD-In, AUX-IN and S/PDIF-in/out interface
 - Supports Line-out and Mic-In for front panel
 - Supports automatic “Jack-sensing”
 - Rear panel audio jacks configuration:

Audio Jack Color	2 channel	6 channel
Light Blue	Line-in	Rear stereo-out
Lime	Line-out	Front stereo-out
Pink	Mic-in	Center&Subwoofer

● **Peripheral Interfaces**

☞ **At Rear Panel**

- ◆ PS/2 keyboard and mouse ports
- ◆ [One](#) Parallel (printer) port
- ◆ [One](#) S/PDIF-Out Coaxial jack
- ◆ [One](#) Serial port
- ◆ [One](#) RJ45 LAN connector
- ◆ [Four](#) USB2.0 ports
- ◆ [Three](#) Audio jacks

☞ **Onboard connector and pin-header**

- ◆ [One](#) floppy drive connector
- ◆ [Two](#) ATA-133 IDE connectors
- ◆ [Four](#) extra USB2.0 ports

- ◆ **One** CD-IN and One AUX-IN connectors
- ◆ **One** S/PDIF in/out connector
- ◆ **One** IR connector
- ◆ **Two** S-ATA connectors
- ◆ **Three** Fan connectors

● **Front Panel Controller**

- ◆ Supports Reset & Soft-Off switches
- ◆ Supports HDD & Power LEDs
- ◆ Supports PC speaker
- ◆ Supports Front Panel Audio connector

● **Expansion Slots**

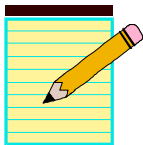
- ◆ **One** AGP slot supporting 1.5v **4X/8X** AGP card
 - AGP v3.0 compliant
- ◆ **Five** PCI slots with Bus Master support
 - PCI v2.2 compliant

● **Other Features**

- ◆ Magic Health – A quick “dashboard” display at POST to show hardware status. Helps to detect faults early.
- ◆ EZ Boot – An easy way let end-user can choose to boot from hard drive, CD-ROM, floppy, ...
- ◆ KBPO – Keyboard power on, turn on the computer from keyboard
- ◆ **PowerBIOS** for excellent Overclocking capabilities through
 - subtle voltage tuning for CPU, Memory
 - subtle frequency tuning on FSB with 1MHz increment
- ◆ Supports complete Asynchronous FSB/Memory scheme for overclocking

● **Form Factor**

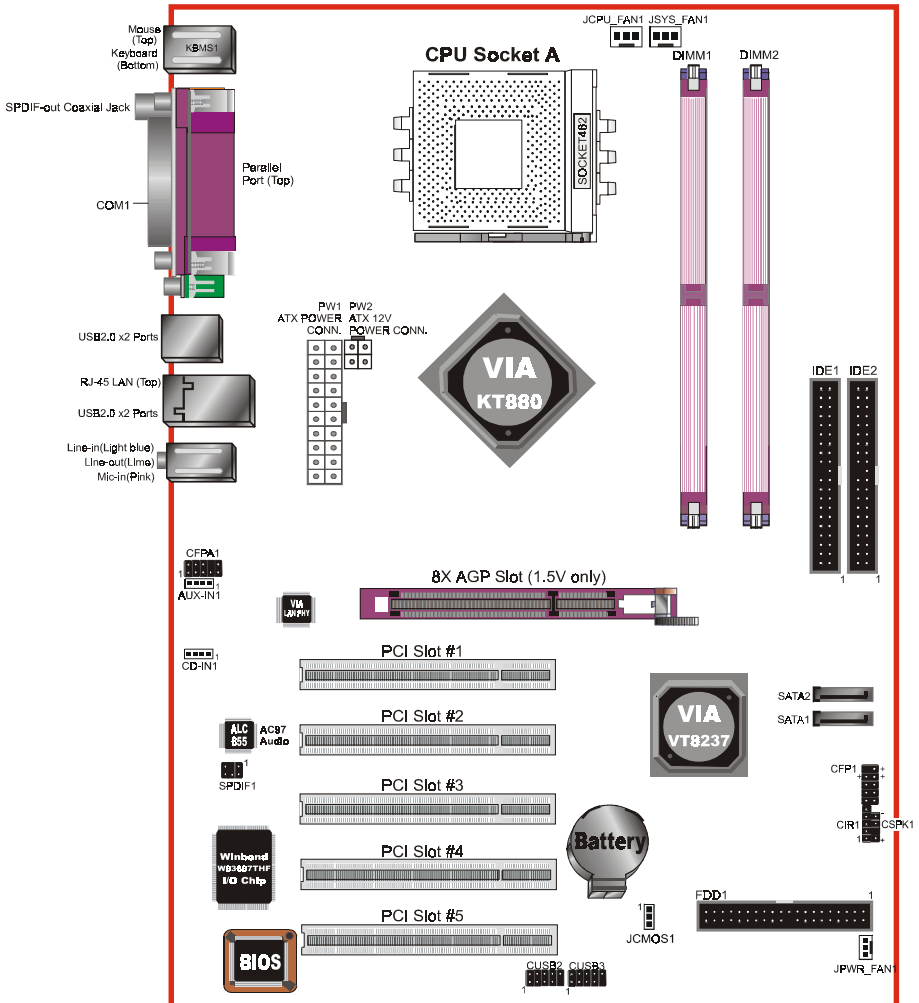
- ◆ 305mm x 210 mm ATX size



Section 3

INSTALLATION

Mainboard Layout



<Figure 1>

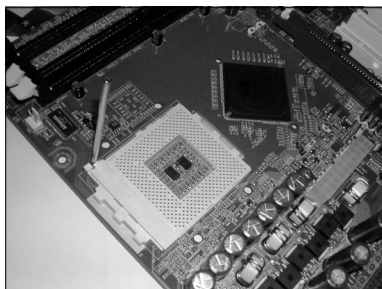
Easy Installation Procedure

The following must be completed before powering on your new system:

- 3-1. CPU Installation**
- 3-2. Jumper Settings**
- 3-3. System Memory Configuration**
- 3-4. Expansion Slots**
- 3-5. Device Connectors**

3-1 CPU Installation

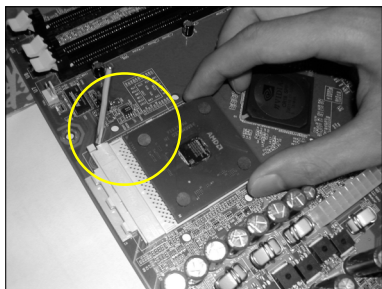
CPU Insertion: (use AMD Athlon™ as reference)



<Figure 2>

Step 1

Open the socket by raising the actuation lever.



<Figure 3>

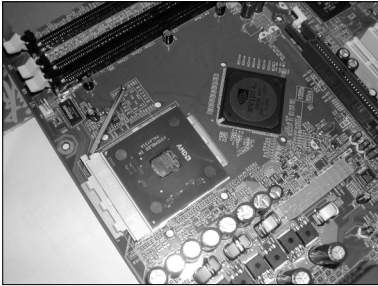
Step 2

Insert the processor.

Ensure proper pin 1 orientation by aligning the FC-PGA corner marking with the socket corner closest to the actuation arm tip. The pin field is keyed to prevent mis-oriented insertion.

Don't force processor into socket. If it does not go in easily, check for mis-orientation and debris.

Make sure the processor is fully inserted into the socket on all sides.



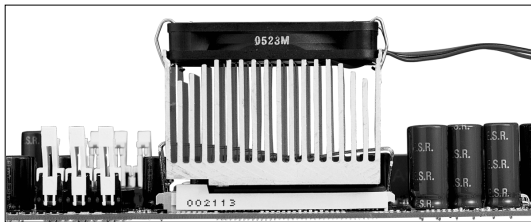
<Figure 4>

Step 3

Close the socket by lowering and locking the actuation lever.

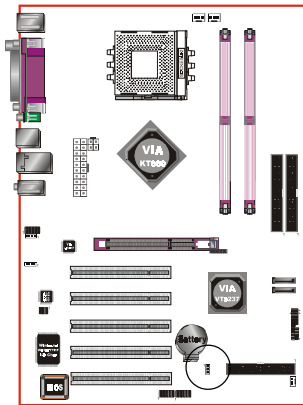
Step 4

Install the CPU heatsink as shown in Figure 5. Thermal compound and qualified heatsink recommended by AMD are a must to avoid CPU overheat damage. For more information about installing your CPU, please refer to the AMD website article “Socket A AMD processor and Heatsink Installation Guide” <http://www.amd.com/products/cpg/athlon/pdf/23986.pdf>.



<Figure 5>

3-2 Jumper Settings



JCMOS1: Clear CMOS data Jumper

If the CMOS data becomes corrupted or you forgot the supervisor or user password, clear the CMOS data to reconfigure the system back to the default values stored in the ROM BIOS.



Settings:

1-2: Normal (Default)

2-3: Clear CMOS

To CMOS Clear data, please follow the steps below.

1. Turn off the system.
 2. Change the jumper from “1-2” to “2-3” position for a few seconds.
 3. Replace the jumper back to the “1-2” position.
 4. Turn on the system and hold down the key to enter BIOS setup.
-

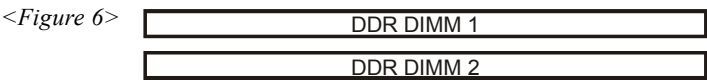
3-3 System Memory Configuration

Memory Layout

The mainboard accommodates two PC2100/PC2700/PC3200 184-pin DIMMs (Dual In-line Memory Modules):

- Supports up to 2.0GB of 266/333/400MHz DDR SDRAM
- Supports up to 2 DDR DIMMs (refer to Table 1)
- Supports 64/128/256/512Mb, 1Gb x8 & x16 DRAMs
- Supports 128-bit dual channel memory architecture
- Supports unbuffered and non-ECC DIMMs
- Supports configurations defined in the JEDEC DDR DIMM specification

Figure 6 and Table 1 show several possible memory configurations.



<Table 1>

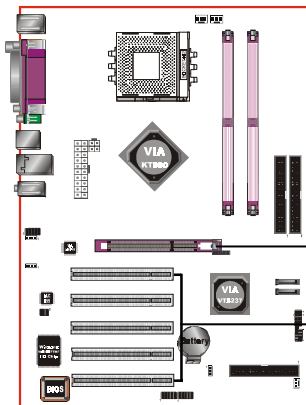
	1 DIMM (64-bit)		2 DIMM (128-bit)
DIMM#1	SS/DS		SS/DS
DIMM#2		SS/DS	SS/DS

* SS: Single-Sided DIMM, DS: Double-Sided DIMM

NOTES:

- For one DIMM memory configuration, the DIMM can be located on any of DIMM#1 to DIMM#2 in 64-bit mode.
- For two DIMMs memory configuration, the DIMMs can be located on all DIMM socket to enable 128-bit mode. It is preferable to use DRAM DIMM of the same type and size.
- Using non-compliant memory with higher bus speeds (overclocking) may severely compromise the integrity of the system.

3-4 Expansion Slots



AGP Slot

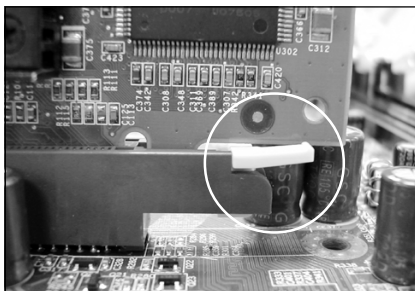
The mainboard is equipped with an AGP slot. Make sure you install a card that supports the 1.5V specification.

PCI Slots

The mainboard is equipped with 5 PCI slots.

AGP Card Installation Caution

When installing the AGP card make sure the AGP card edge connector is inserted fully into the slot and the slot clicker is locked.



3-5 Device Connectors

The I/O back panel for this mainboard is shown below. When installing the mainboard into the computer case, use the bundled I/O shield to protect this back panel.

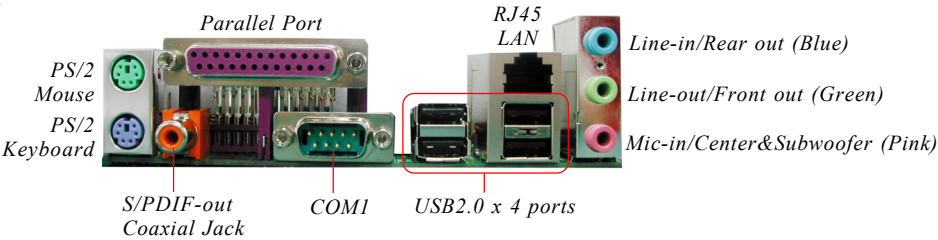
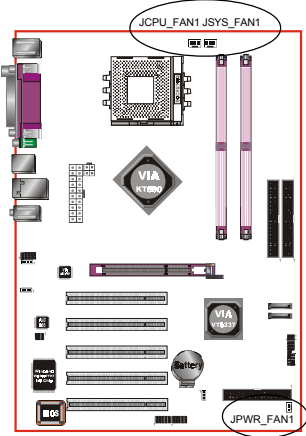


Figure 7 - I/O Ports



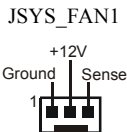
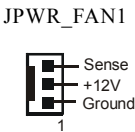
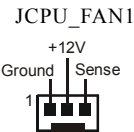
JCPU_FAN1 / JPWR_FAN1 / JSYS_FAN1:

CPU/Power/Chassis Fan Power Connectors

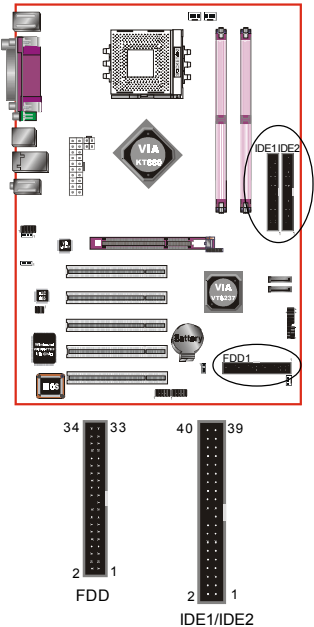
JCPU_FAN1: The CPU must be kept cool by using a heatsink with fan assembly.

JPWR_FAN1: If you are installing an additional fan in the unit, connect to this fan connector.

JSYS_FAN1: The chassis fan will provide adequate airflow throughout the chassis to prevent overheating the CPU.



The system is capable of monitoring the fan speed in RPM (Revolutions Per Minute). Refer to the PC Health Status submenu of the BIOS for the current speed of the CPU fan , power fan and chassis fan.



FDD1: Floppy Controller Connector

This connects to the floppy disk drive.

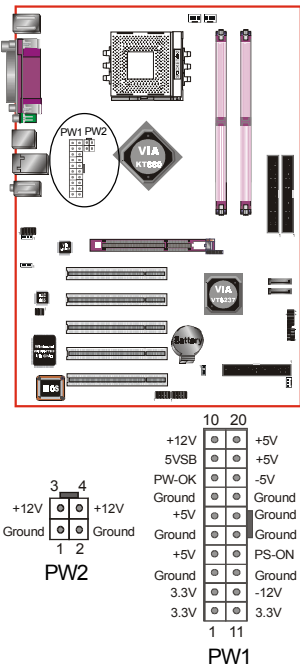
IDE1/IDE2: Ultra DMA-100/133 Primary/Secondary IDE Connector

This mainboard is equipped with 2 IDE connectors to support up to 4 ATA-133 IDE drives.

It supports PIO and DMA mode operations for maximum data transfer rate of 133MB/sec per channel.



When using two IDE drives, one must be set to Master mode and the other to Slave mode. Refer to your disk drive user's manual for information about selecting the proper drive switch settings.



PW1: 20-pin ATX Power Connector

PW2: 4-pin ATX12V Power Connector

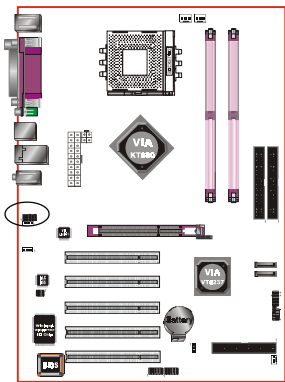
The mainboard is equipped with a standard 20-pin ATX main power connector and a 4-pin +12V power connector for connecting an ATX12V power supply. The plugs of the power cables are designed to fit in only one orientation. Insert the plugs into the connectors until they fit in place.

Caution:

The PW1 and PW2 Power Connector must be used simultaneously for the system to work safely.

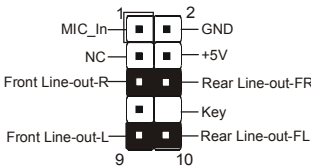


The board requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed this minimum power requirement. To ensure that adequate power, use a 300 Watt or greater power supply.



CFPA1: Front Panel Audio Connector

When the jumpers are removed this connector can be used for front panel audio. The front panel phone jack should have “normal close” switch. Without phone plug inserted, the rear panel audio is enabled. With phone plug inserted, the rear panel audio will be disabled.



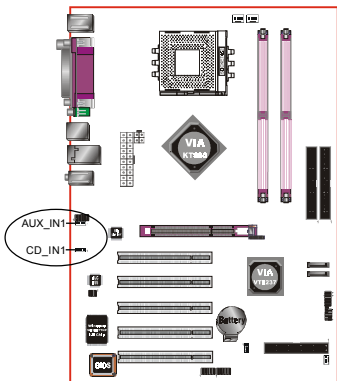
Settings:

Pins (5-6) & (9-10) Short (default): Only the onboard rear panel audio jack can be used.

Pins (5-6) & (9-10) Open: Only front panel audio jack can be used.



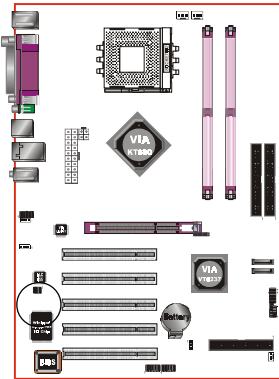
In 2-Channel audio mode, Mic-In is shared for both front panel and rear panel. In 6-Channel audio mode, the Mic-In is dedicated for front panel use, and rear panel Mic-In function will switch to Center and Subwoofer support.



CD_IN1/AUX_IN1: CD Audio_IN Connector

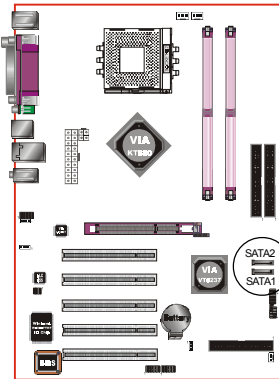
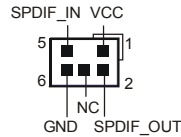
These connectors are used to receive audio form a CD-ROM drive, TV tuner or MPEG card.





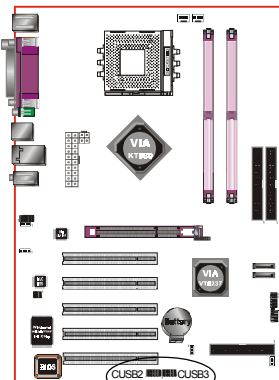
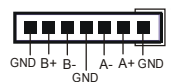
SPDIF1: Sony/Philips Digital InterFace connector

This connector links digital audio between the mainboard and your audio devices, such as CD player, sampler or DAT recorder. It allows the digital transmission of audio data in S/PDIF format.



SATA1 / SATA2: Serial ATA Connectors

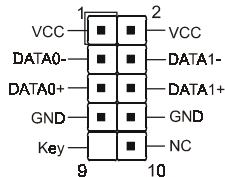
These connectors enable you to connect Serial ATA devices that conform to the Serial ATA specification.



CUSB2/CUSB3: Four USB 2.0 ports

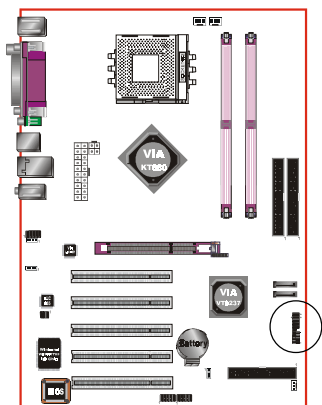
This mainboard includes 2 additional USB 2.0 ports, identified by two 10-pin connector.

If you wish to use the additional USB ports, install the card-edge bracket to the system chassis then insert its cables to this 10-pin connector.



CAUTION!

Please make sure the USB cable has the same pin assignment. A different pin assignment may cause damage to the system. If you need the USB cable, please contact our retailer.



CFP1: Front Panel Connector

◆ HD_LED

This LED will light up whenever the hard drive is being accessed.

◆ PWR_LED

This connects to the power button of the system chassis

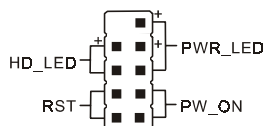
◆ RST

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

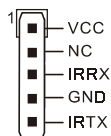
◆ PW_ON

This is connected to the power button on the case. To use the Soft-Off by PWR-BTTN feature, refer to the Power Management Setup in the BIOS setup section of this manual.

CFP1



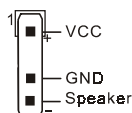
CIR1



CIR1: IR connector

Connect the IrDA cable (if available) to this IR connector.

CSPK1



CSPK1: Speaker

Connect to the case speaker.

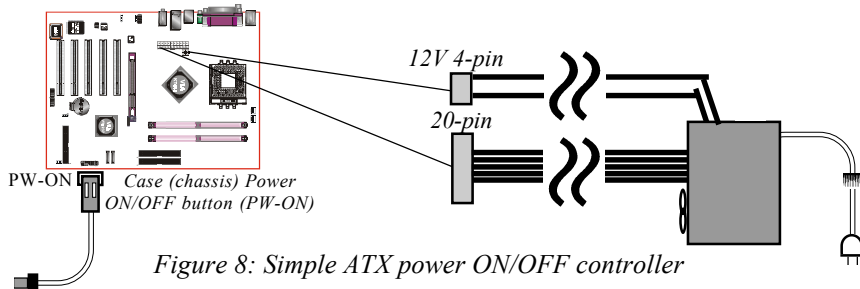
3-6 Power-On/Off (Remote)

This board has a 20-pin ATX and a 4-pin ATX12V power supply connector to support power supplies with **Remote On/Off** feature. The 4-pin ATX12V connector must be plugged in for the system to operate safely. The chassis power button should be connected to the mainboard front panel PW_ON header (Figure 8).

You can turn off the system in two ways: by pressing the front panel power On/Off button or using the "Soft Off" function that can be controlled by an operating system such as Windows®XP/ME/2000/98.

Note: For maintaining the DDR SDRAM power during STR (ACPI S3) function, it is strongly recommended to use power supplies that have a +5VSB current of (\geq) 2A. Please check the 5VSB's specification printed on the power supply's outer case.

Note: The board requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed this minimum power requirement. To ensure that adequate power, use a 300 Watt (or higher) power supply.



3-7 External Modem Ring-in Power ON and Keyboard Power ON Functions (KBPO)

Modem-Ring Power ON Function

The mainboard supports External Modem Ring-in Power ON function. Once you connect an external modem to COM port, you can turn on the system through remote and host dial-up control.


Keyboard Power ON Function

The mainboard features a keyboard power on function to turn on the power supply using a keypress. Refer to the Power Management Setup in the BIOS setup section for details. To enable this feature, the BIOS default setting is Keyboard Hot Key ($\langle \text{Ctrl} \rangle + \langle \text{F1} \rangle$). To power off the system, use the Soft-OFF function under Windows XP/ME/2000/98. (refer to Windows online help).

3-8 ACPI S3 (Suspend To RAM) Function

This mainboard supports the STR (Suspend To RAM) power management scheme by maintaining the appropriate power states in the DDR SDRAM interface signals. The power source to the DDR SDRAM is kept active during STR (ACPI S3). Advanced Configuration Power Interface (ACPI) provides many Energy Saving Features for operating systems that support Instant ON and QuickStart™ function.

1. To enable STR functionality to save system power :
 - a. Install ACPI certified add-on cards (such as AGP, LAN, and modem cards).
 - b. In BIOS, under Power Management Setup (refer to Section 4), select “ACPI Suspend Type: S3(STR)”. If you have a USB mouse or keyboard, set “USB Wake-Up from S3” to “Enabled”.
 - c. When in Windows, open the Control Panel Power Management application, and click the Advanced tab. In the Power buttons section, select “Stand By” from the drop-down lists.
2. To activate the STR function:
 - a. Click the START button and choose Shut Down.
 - b. In the Shut Down Windows dialog box, select the Stand By option to enter STR mode.

 The following are the differences between STR power saving mode and Suspend (Power On Suspend) mode:

- a. STR is the most advanced Power Management mode.
 - b. STR cuts all the power supplied to peripherals except to memory - max. power saving.
 - c. STR saves and keeps all on-screen data including any executed applications to DDR SDRAM.
 - d. In STR mode, you must push the power button (connected to the onboard PW-On of CFP pin), click your USB mouse buttons, or press your USB keyboard keys to wake up your system to the last display.
-

Installation

[illegible]


Section 4

BIOS SETUP

Main Menu

The ROM BIOS contains a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data is stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail causing CMOS data loss. If this happens you will need install a new CMOS battery and reconfigure your BIOS settings.

 The BIOS setup screen and description are for reference only, and may not exactly match what you see on your screen. The contents of BIOS are subject to change without notice. Please visit our website for updates.

To enter the Setup Program :

Power on the computer and press the key during the POST (Power On Self Test). The BIOS CMOS SETUP UTILITY opens. (Figure 1)

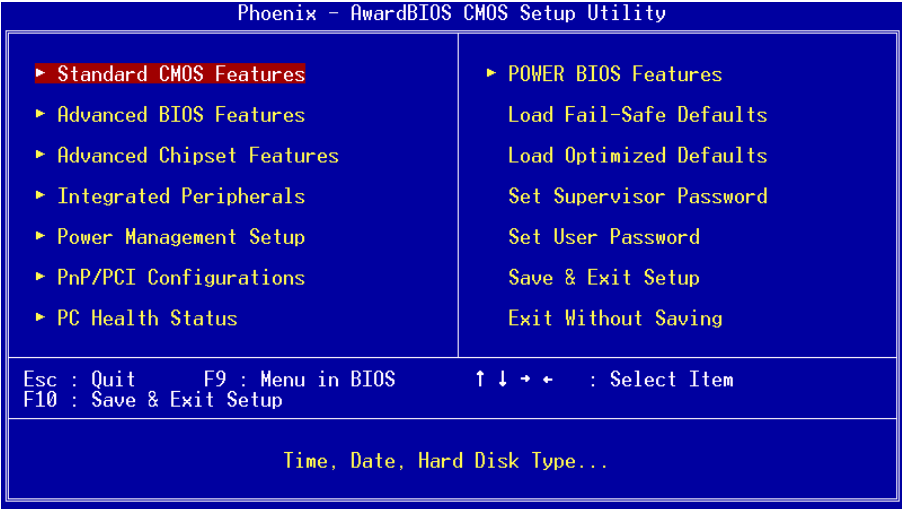


Figure 1: CMOS Setup Utility

The main menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction (arrow key)) to the item and pressing the ‘Enter’ key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose “STANDARD CMOS FEATURES” in the CMOS SETUP UTILITY Menu (Figure 2). Standard CMOS Features Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select), the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

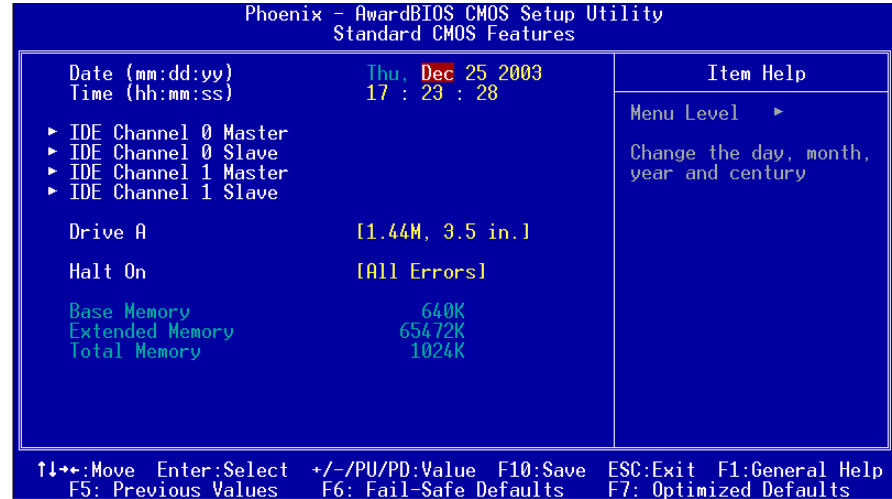


Figure 2: Standard CMOS Setup

Notes:

- If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, the hard disk size and model will be auto-detected.
- The “Halt On:” field is used to determine when the BIOS will halt the system if an error occurs.

4-2 Advanced BIOS Features

Selecting the “ADVANCED BIOS FEATURES” option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer’s default values for the board.

Pressing the [F1] key displays a help message for the selected item.

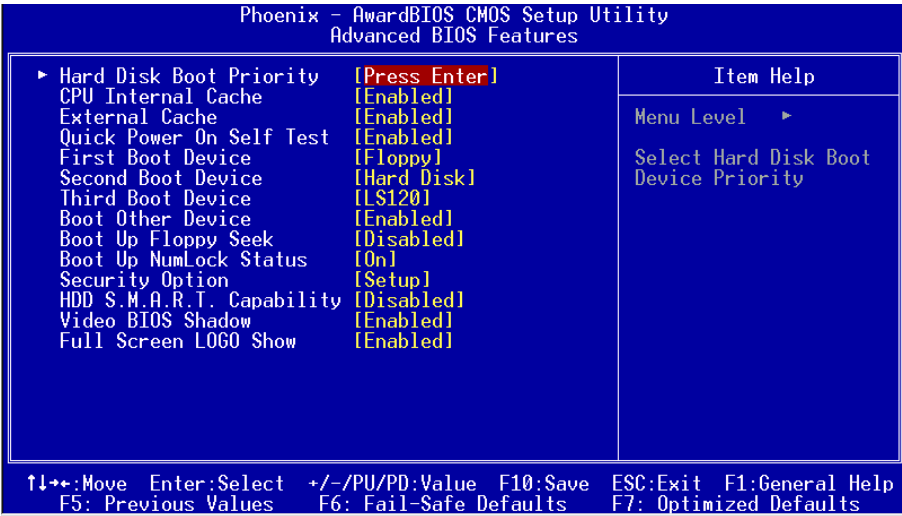


Figure 3: BIOS Features Setup

▶ Hard Disk Boot Priority

This item allows you to select the hard disk boot priority.



CPU Internal Cache

This controls the status of the processor’s internal cache area.

Options: Enabled, Disabled.

External Cache

This controls the status of the external (L2) cache area.

Options: Enabled, Disabled.

Quick Power On Self Test

This category speeds up the Power On Self Test (POST), select “Enabled” will shorten or skip of the items checked during POST.

Options: Enabled, Disabled.

First /Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

Options: Floppy, LS120, Hard Disk, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, LAN, Disabled.

Boot Other Device

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the first, second, and third boot devices.

Options: Enabled, Disabled.

Boot Up Floppy Seek

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don’t need to enable this item unless you have a legacy diskette drive with 360K capacity.

Options: Enabled, Disabled.

Boot Up NumLock Status

This controls the state of the NumLock key when the system boots.

On: The keypad acts as a 10-key pad.

Off: The keypad acts like cursor keys.

Security Option

This category allows you to limit access to the System and Setup, or just to Setup. The default is Setup.

System: The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup: The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

HDD S.M.A.R.T. Capability

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T.

Software resides on both the disk drive and the host computer.
Options: Enabled, Disabled.

Video BIOS Shadow

This option allows video BIOS to be copied into RAM. Video Shadowing will increase the video performance of your system.
Options: Enabled, Disabled.

Full Screen LOGO Show

This item allows you determine Full Screen LOGO display during POST.
Options: Enabled, Disabled.

4-3 Advanced Chipset Features

Choose the “ADVANCED CHIPSET FEATURES” option in the CMOS SETUP UTILITY menu to display following menu.

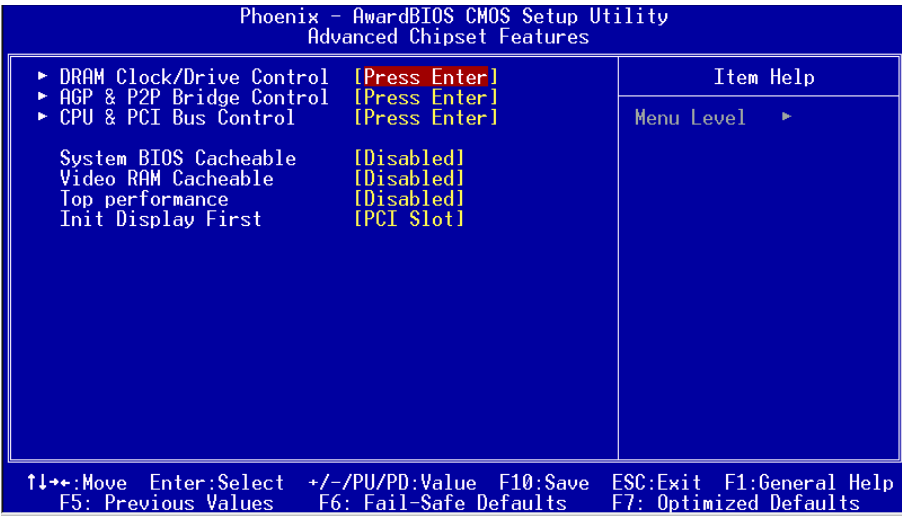


Figure 4: Chipset Features Setup

System BIOS Cacheable

This item allows the system to be cached in memory for faster execution.
Options: Disabled, Enabled.

BIOS

Video RAM Cacheable

This option allows the CPU to cache read/writes of the video RAM.

Options: Disabled, Enabled.

Top Performance

This item will enhance the memory performance. We recommend you leave “Disabled” at the default value. Selecting “Enabled” may cause instability.

Options: Disabled, Enabled.

Init Display First

This item allows you to select whether to initialize the AGP or PCI first when the system boots.

Options: PCI Slot, AGP.

► DRAM Clock/Drive Control

Scroll to DRAM Clock/Drive Control and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility		
DRAM Clock/Drive Control		
DRAM Clock	[By SPD]	Item Help Menu Level ►►
DRAM Timing	[Auto By SPD]	
× DRAM CAS Latency	2.5	
× Bank Interleave	Disabled	
× Precharge to Active(Trp)	4T	
× Active to Precharge(Tras)	9T	
× Active to CMD(Trcd)	4T	
× REF to ACT/REF to REF(Trfc)	15T	
× ACT(0) to ACT(1) (Trrd)	2T	
DRAM BUS Selection	[Auto]	
DRAM Command Rate	[2T Command]	

DRAM Clock

This item sets the memory clock. By placing an artificial memory clock limit on the system, memory is prevented from running faster than this frequency. Example, “200” will set to DDR400 speed.

Options: By SPD, 133MHz, 166MHz, 200MHz.

DRAM Timing

This option sets DRAM access timing parameters. Select “Auto By SPD” to follow SPD (Serial Presence Detect) information on DRAM module or set to “Manual” to set by next item selection.

Options: Manual, Auto By SPD, Turbo, Ultra.

DRAM CAS Latency

This item specifies the number of clock cycles needed after a Column Address Strobe (CAS) signal before data can be read.

Options: 1.5, 2.0, 2.5, 3.

Bank Interleave

This item allows you to set how many banks of DRAM support in your mainboard.
Options: Disabled, 2 Bank, 4 Bank.

Precharge to Active (Trp)

This item refers to the number of cycles required to return data to its original location to close the bank or the number of cycles required to page memory before the next bank activate command can be issued.

Options: 2T, 3T, 4T, 5T.

Active to Precharge (Tras)

This item specifies the number of clock cycles needed after a bank active command before a precharge can occur (sets the minimum RAS pulse width.).

Options: 6T, 7T, 8T, 9T.

Active to CMD (Trcd)

This item sets the timing parameters for the system memory such as the CAS (Column Address Strobe) and RAS (Row Address Strobe).

Options: 2T, 3T, 4T, 5T.

REF to ACT/REF to REF (Trfc)

This field specifies the Row Refresh Cycle Time. Auto-refresh active to RAS# or RAS# to auto refresh.

Options: 12T, 13T, 14T, 15T.

ACT(0) to ACT(1) (Trrd)

This field specifies the Row to Row delay of different banks.

Options: 2T, 3T.

DRAM Bus Selection

This item select the DRAM Bus channel.

Options: Auto, Single channel, Dual channel.

DRAM Command Rate

This item select the DRAM Command Rate.

Options: 1T command, 2T command.

►AGP & P2P Bridge Control

Scroll to AGP & P2P Bridge Control and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility		
AGP & P2P Bridge Control		
AGP Aperture Size	[128M]	Item Help
AGP 2.0 Mode	[4X]	
AGP Driving Control	[Auto]	Menu Level ►►
× AGP Driving Value	DA	
AGP Fast Write	[Disabled]	
AGP Master 1 WS Write	[Disabled]	
AGP Master 1 WS Read	[Disabled]	
AGP 3.0 Calibration cycle	[Disabled]	

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. It refers to a section of the PCI memory address range used for graphics memory.

Options: 32MB, 64MB, 128MB, 256MB, 512 MB, 1GB.

AGP 2.0 Mode or AGP 3.0 Mode

This item allows you to select the AGP mode. Select 8X only if your AGP card supported it.

Options: 4X, 2X, 1X.

AGP Driving Control

This item allows you to adjust the AGP driving force. Choose “Manual” to key in a AGP Driving Value in the next selection. This field is recommended to set in “Auto” to avoid any error to your system.

Options: Auto, Manual.

AGP Fast Write

This item allows you to use Fast Write transfer for CPU write to graphics adapter’s memory.

Options: Auto, Disabled.

AGP Master 1 WS Write / AGP Master 1 WS Read

When Enabled, Writes/Reads to the AGP (Accelerated Graphics Port) are executed with one wait states.

Options: Enabled, Disabled.

AGP 3.0 Calibration cycle

This item allows you to select AGP 3.0 Calibration cycle function.

Options: Enabled, Disabled.

►CPU & PCI Bus Control

Scroll to CPU & PCI Bus Control and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility		
CPU & PCI Bus Control		
PCI1 Master 0 WS Write	[Enabled]	Item Help
PCI2 Master 0 WS Write	[Enabled]	Menu Level ►►
PCI1 Post Write	[Enabled]	
PCI2 Post Write	[Enabled]	
PCI Delay Transaction	[Enabled]	
VLink 8X Support	[Enabled]	

PCI1/2 Master 0 WS Write

When Enabled, Writes to the PCI bus are commanded with zero wait states.

Options: Enabled, Disabled.

PCI1/2 Post Write

Enables CPU to PCI bus POST write.

Options: Enabled, Disabled.

PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.2.

Options: Enabled, Disabled.

VLink 8X Support

Enables VLink 8X support.

Options: Enabled, Disabled.

4-4 Integrated Peripherals

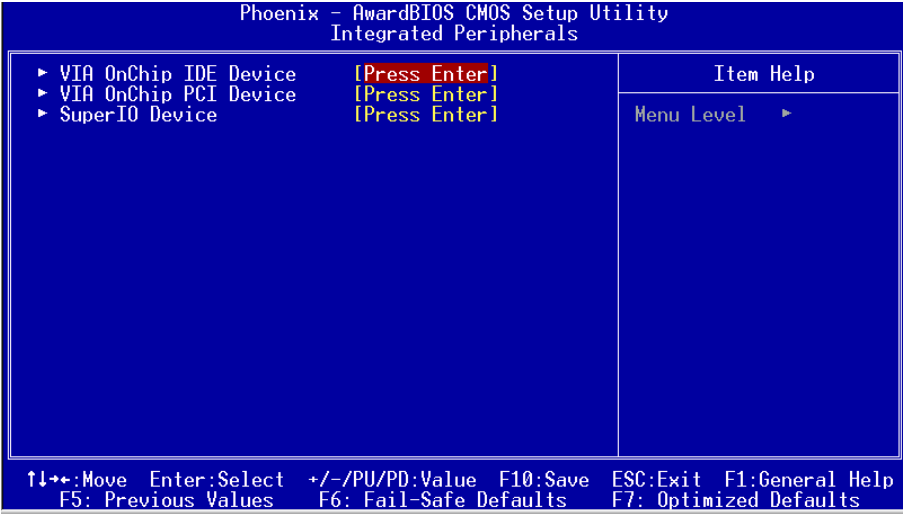
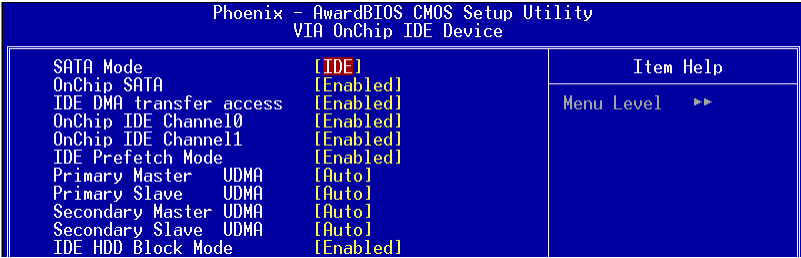


Figure 5: Integrated Peripherals

► VIA OnChip IDE Device

Scroll to VIA OnChip IDE Device and press <Enter>. The following screen appears:



SATA Mode

This item allows you to set RAID mode for Serial ATA devices.

Options: RAID, IDE.

OnChip SATA

Enables the onboard SATA feature.

Options: RAID, IDE.

IDE DMA transfer access

Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.

Options: Enabled, Disabled.

OnChip IDE Channel 0/1

The mainboard supports two channel of ordinary IDE interface and one channel of serial ATA interface. Select “Enabled” to activate each channel separately.

Note: If you do not use the onboard IDE connector, set the Onboard Primary (Secondary) PCI IDE to “Disabled”.

IDE Prefetch Mode

Selecting “Enabled” reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to Disabled. This field does not appear when the Internal PCI/IDE field, above, is Disabled.

Options: Enabled, Disabled.

Primary/Secondary Master/Slave UDMA

Select the mode of operation for the IDE drive. Ultra DMA-100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support Ultra DMA-100/133, select Auto to enable UDMA mode by BIOS.

Options: Auto, Disabled.

IDE HDD Block Mode

IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time. The default is Enabled.

Options: Enabled, Disabled.

► **VIA OnChip PCI Device**

Scroll to VIA OnChip PCI Device and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility		
VIA OnChip PCI Device		
AC97 Audio	[Auto]	Item Help
OnChip LAN	[Auto]	
MAC Address Input	[Press Enter]	Menu Level >>
Onboard Lan Boot ROM	[Disabled]	
OnChip USB Controller	[All Enabled]	
OnChip EHCI Controller	[Enabled]	
USB Emulation	[OFF]	
× USB Keyboard Support	Disabled	
× USB Mouse Support	Disabled	

AC97 Audio

This item allows you disable the chipset on-chip AC97 Audio.

Options: Auto, Disabled.

OnChip Lan

Enables the onboard LAN feature.

Options: Auto, Disabled.

MAC Address Input

Allows you to input the MAC address.

OnChip Lan Boot ROM

Enable/disable the onboard LAN Boot ROM.

Options: Enabled, Disabled.

Onchip USB Controller

Enables the USB controller.

Options: Enabled, Disabled.

Onchip EHCI Controller

Enables the EHCI (USB2.0) controller.

Options: Enabled, Disabled.

USB Emulation

Support settings for USB device under DOS.

Options: OFF, KB/MS (Keyboard/Mouse) only, ON.

USB Keyboard/ Mouse Support

Enable/disable support for USB keyboard/mouse under DOS.

Options: Enabled, Disabled.

► Super IO Device

Scroll to Super IO Device and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility		
SuperIO Device		
Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Infrared Port Select	[Disabled]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
EPP Mode Select	[EPP1.7]	
ECP Mode Use DMA	[3]	
		Menu Level >>

Onboard FDC Controller

Select “Enabled” if you wish to use onboard floppy disk controller (FDC). If you install an external FDC or the system has no floppy drive, select “Disabled” in this field.

Options: Enabled, Disabled.

Onboard Serial Port 1

Select an address and corresponding interrupt for the first serial port.

Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

Infrared Port Select

Select an address and corresponding interrupt for Infrared port.

Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

Onboard Parallel Port

This field allows the user to configure the LPT port.

Options: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

This field allows the user to select the parallel port mode.

Options: SPP, EPP, ECP, ECP+EPP, Normal.

EPP Mode Select

This field allows the user to select the EPP mode for parallel port mode.

Options: EPP1.9, EPP1.7.

ECP Mode USE DMA

This field allows the user to select DMA1 or DMA3 for the ECP mode.

Options: DMA1, DMA3.

4-5 Power Management Setup

Choose the “POWER MANAGEMENT SETUP” in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it’s absolutely necessary.

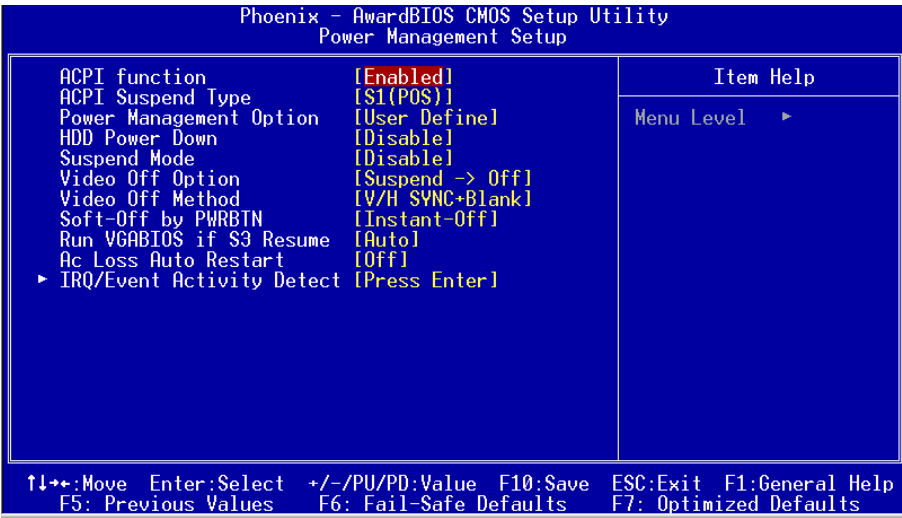


Figure 6: Power Management

ACPIFunction

Enables the ACPI Function.

Options: Enabled, Disabled.

ACPI Suspend Type

This item allows you to select S1(Power-On-Suspend) or S3(Suspend-To-RAM) function.

Options: S1(POS), S3(STR), S1&S3.

Power Management Option

Use this to select your Power Management selection. The default is User define.

Max. saving: Maximum power savings. Inactivity period is 1 minute in each mode.

Min. saving: Minimum power savings. Inactivity period is 1 hour in each mode.

User define: Allows user to define PM Timers parameters to control power saving mode.

HDD Power Down

Powers down the hard disk drive after a preset period of system inactivity.

Options: Disabled, 1min ~ 15min.

Suspend Mode

Automatically, shuts off all devices except the CPU after a preset period of system inactivity.

Options: Disabled, 1 , 2, 4 ,6, 8, 10, 20, 30, 40 min and 1 hour .

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On: Monitor will remain on during power saving modes.

Suspend->Off: Monitor blanked when the systems enters the suspend mode.

Video Off Method

This option allows you to select how the video will be disabled by the power management. The default is V/H Sync + Blank

V/H Sync + Blank: System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.

DPMS Support: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied by your video subsystem to select video power management values.

Blank Screen: System only writes blanks to the video buffer.

Soft-Off by PWRBTN

Use this to select your soft-off function. The default is Instant Off.

Instant Off: Turns off the system instantly.

Delay 4 Second : Turns off the system after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press the power button again to make system back to work.

Run VGABIOS if S3 Resume

This determines whether or not to enable the system to run the VGA BIOS when resuming from S3(STR) or S1&S3.

Options: Auto, Yes, No.

BIOS

AC Loss Auto Restart

This item enables your computer to automatically restart or return to its last operating status after power returns from a power failure.

Off: The system stays off after a power failure.

Former-Sts: The system returns to the state it was in just prior to the power failure.

► IRQ/Event Activity Detect

Scroll to IRQ/Event Activity Detect and press <Enter>. The following screen appears:

Phoenix - AwardBIOS CMOS Setup Utility	
IRQ/Event Activity Detect	
	Item Help
PS2KB Wakeup Select [Hot key]	
PS2KB Wakeup from S3/S4/S5 [Ctrl+F1]	
PS2MS Wakeup from S3/S4/S5 [Disabled]	
USB Resume from S3 [Disabled]	
PowerOn by PCI Card [Disabled]	
PowerOn by OnBoard LAN [Disabled]	
Modem Ring Resume [Disabled]	
RTC Alarm Resume [Disabled]	
x Date (of Month) 0	
x Resume Time (hh:mm:ss) 0 : 0 : 0	
	Menu Level ►►
	When Select Password, Please press ENTER key to change Password Max 8 numbers.

PS2KB Wakeup Select

This item allows you to select Hot Key or Password to wake-up the system by PS2 Keyboard. If Password is selected, press <Enter> key to change a password with max 8 numbers.

Options: Hot key, Password.

PS2KB Wakeup form S3/S4/S5

This item allows you to set a Hot Key to wake-up the system by PS2 Keyboard.

Options: Disabled, Ctrl+F1, Ctrl+F2, Ctrl+F3, Ctrl+F4, Ctrl+F5, Ctrl+F6, Ctrl+F7, Ctrl+F8, Ctrl+F9, Ctrl+F10, Ctrl+F11, Ctrl+F12, Power, Wake, Any key.

Note: Power and Wake are Windows98 Keyboard button.

PS2MS Wakeup form S3/S4/S5

This item allows you to wake-up the system by PS2 Mouse.

Options: Enabled, Disabled.

USB Resume from S3

This item allows a USB device to wake-up the system from S3 suspend state.

Options: Enabled, Disabled.

PowerOn by PCI Card

An input signal from PME on the PCI card awakens the system from soft-off state.

Options: Enabled, Disabled.

PowerOn by OnBoard LAN

This item allows you to power on the system by onboard LAN from soft-off state.
Options: Enabled, Disabled.

Modem Ring Resume

When set to “Enabled”, any event occurring to the Modem Ring will awaken the system from suspend state.
Options: Enabled, Disabled.

RTC Alarm Resume

When set to Enable rtc alarm resume, you can set the date (of month) and time (hh:mm:ss), that will awaken a system which has been powered down.
Options: Enabled, Disabled.

4-6 PNP/PCI Configuration

This page lets the user to modify the PCI IRQ signals when various PCI cards are inserted.

WARNING: Conflicting IRQ’s may cause system unable to locate certain devices.

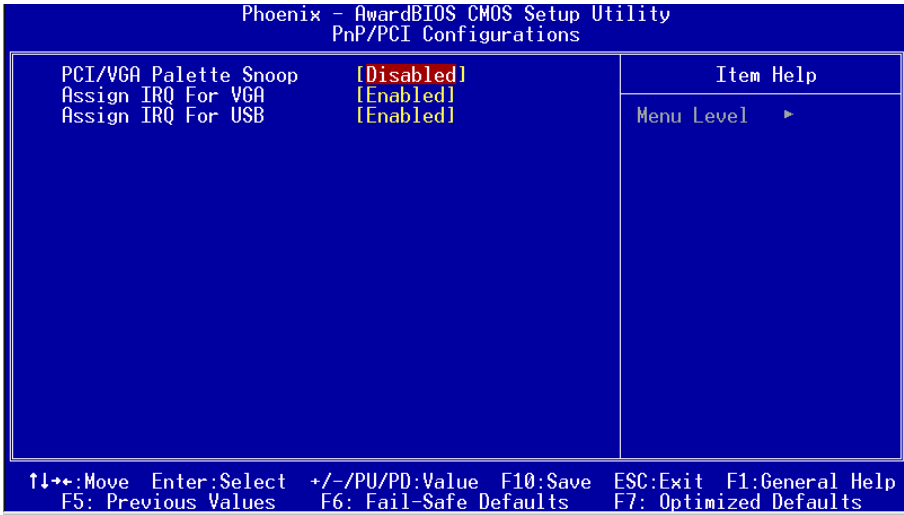


Figure 7: PNP/PCI Configuration Setup

BIOS

PCI/VGA Palette Snoop

This item is designed to overcome problems that may be caused by some nonstandard VGA cards.

Options: Enabled, Disabled.

Assign IRQ For VGA

This item requests BIOS to assign an IRQ for the VGA. Selecting “Disabled” will free the IRQ for use by other devices.

Options: Enabled, Disabled.

Assign IRQ For USB

This item requests BIOS to assign an IRQ for the USB port. If you have not connected any USB device, selecting “Disabled” will free the IRQ for use by other devices.

Options: Enabled, Disabled.

Interrupt requests are shared as shown below:

	INT A	INT B	INT C	INT D
AGP Slot	V			
AC97			V	
Slot 1		V		
Slot 2			V	
Slot 3				V
Slot 4	V			
Slot 5		V		
Onboard LAN	V			
Onboard USB	V			
Onboard USB		V		
USB 2.0			V	

IMPORTANT!

When using PCI cards on shared IRQ slots, make sure its drivers support “Shared IRQ”, or that the cards do not need IRQ assignments. IRQ conflicts between the two PCI groups will make the system unstable or cards inoperable.

4-7 PC Health Status

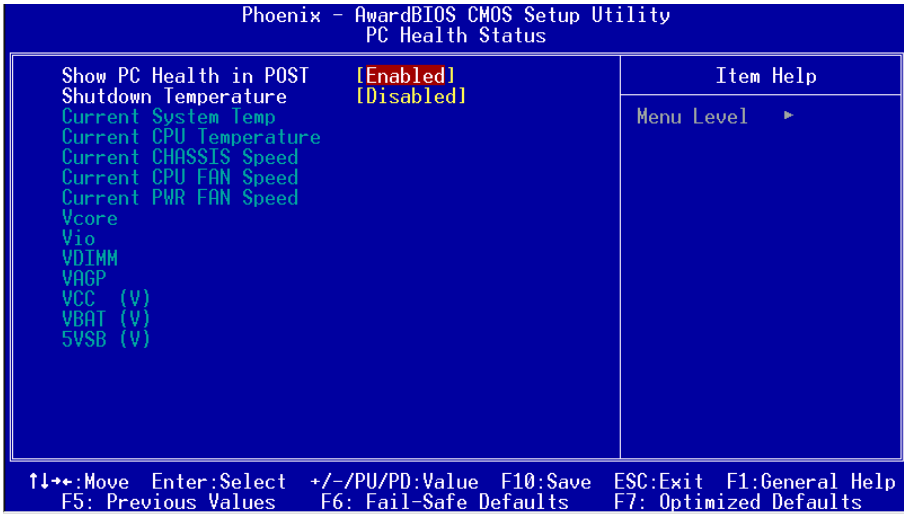


Figure 8: PC Health Status

Show PC Health in POST

When this function is enabled the PC Health information is displayed during the POST (Power On Self Test).

Options: Enabled, Disabled.

Shutdown Temperature

This is the temperature that the computer will turn off the power to combat the effects of an overheating system. (requires ACPI to be enabled in Power Management BIOS and ACPI compliant operating system.) The default is Disabled.

Options available are 60°C/140°F to 70°C/158°F in increments of 5°C.

Current System/CPU Temperature

Displays the current System/CPU temperature.

Current CPU/Chassis/Power FAN Speed

Displays the current speed of the CPU, chassis, and power fan speed in RPMs.

Vcore

The voltage level of the CPU(Vcore).

VDIMM

The voltage level of the DRAM.

BIOS

VAGP

The voltage level of power supplied to AGP card.

VBAT

The voltage level of the battery.

VCC, Vio, 5VSB (V)

The voltage level of the switching power supply.

4-8 POWER BIOS Features

This page lets you adjust various parameters to obtain improved performance for overclocking.

Warning:

Overclocking requires expert knowledge and risks permanent damage to system components. We recommend you leave these parameters at their default values for proper operation.

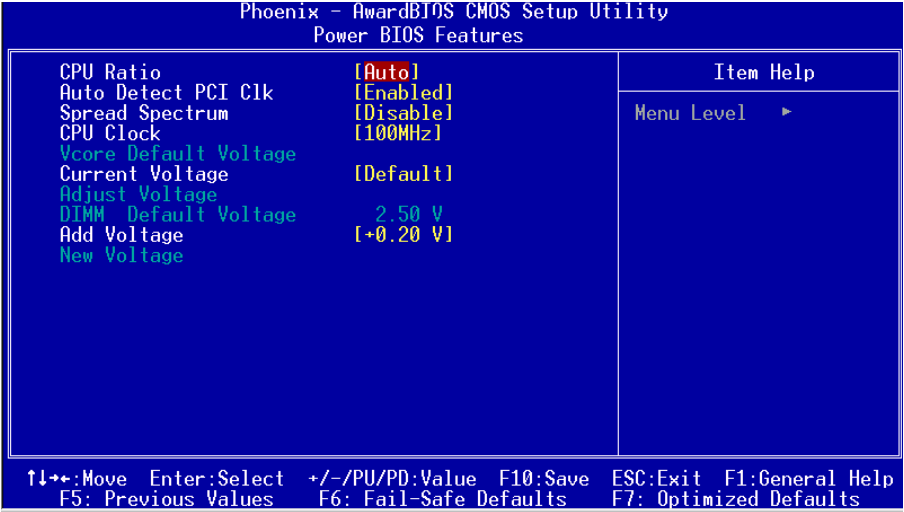


Figure 9: Frequency/Voltage Control

CPU Ratio

Use this item to select a multiplier to set the CPU frequency. See CPU Clock item below for explanation.

Options: Auto, x6 ~ x13.

Auto Detect PCI Clk

When enabled the mainboard automatically disables the clock source for a PCI slot which does not have a module in it, reducing EMI (ElectroMagnetic Interference).

Options: Enabled, Disabled.

Spread Spectrum

If you enable spread spectrum, it can significantly reduce the EMI (ElectroMagnetic Interference) generated by the system.

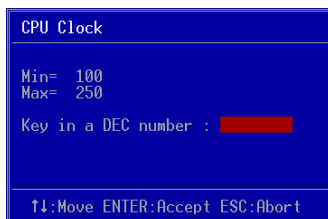
Options: Disabled, -0.35%, -0.50%, -0.75%, -1.00%.

CPU Clock

Enables you to increment the CPU's clock generator at 1 MHz step. This works together with CPU Clock Ratio (above) to set the CPU operating frequency.

$\text{CPU Clock Generator} \times \text{CPU Clock Ratio} = \text{CPU Frequency}$

For example, if you have a processor that is rated at 2.4GHz and the clock generator is 200MHz, then $200\text{MHz} \times 12 = 2.4\text{GHz}$



Key in the DEC (decimal) number for the CPU Clock Ratio.

Note: Overclocking failure will cause no display on the monitor. To overcome this switch off the power supply and switch on again. Restart the system, press and hold **<Insert>** key. This will revert the BIOS to default or initial setting.

CPU Vcore Voltage

This item allows you to set the CPU Vcore voltage.

Options: Default, 1.400V to 1.850V in 0.025V increment and 1.900V to 2.000V in 0.050V increment. We recommend that you leave this at the default value.

DIMM Voltage

This item allows you to adjust the DIMM slot voltage.

Options: +0.00V to +0.70V in 0.10V increments. We recommend that you leave this at the default value.

4-9 Defaults Menu

Selecting “Defaults” from the main menu shows you two options which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box:

Load Fail-Safe Defaults (Y/N) ? N

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box:

Load Optimized Defaults (Y/N) ? N

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4-10 Supervisor/User Password Setting

This function lets you set either Supervisor or User Password, or both, to prevent unauthorized changes to BIOS menus.

supervisor password: full rights to enter and change options of the setup menus.

user password: only enter but no rights to change options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to key in each time you enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You can determine when the password is required within the Advanced BIOS Features Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4-11 Exiting BIOS

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing “Y” stores the selections made in the menus in CMOS – 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. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Section 5

S-ATA RAID CONFIGURATION

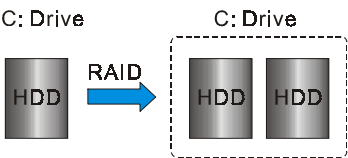
Introduction

This section gives a brief introduction on RAID-related background knowledge and a general procedure to setup RAID system on this mainboard.

RAID Basics

RAID (Redundant Array of Independent Disks) is a method of combining two or more hard disk drives into one logical unit known as a RAID array. The advantage of RAID is to provide better performance or data fault tolerance. Fault tolerance is achieved through data redundant operation, where if one drives fails, a mirrored copy of the data can be found on another drive. This can prevent data loss if the operating system fails or hangs.

Below is an example of a RAID array with 2 drives.



The individual disk drives in an array are called “members”. All disk members in a formed disk array are recognized as a single physical drive to the operating system. Hard disk drives can be combined together through a few different methods. The different methods are referred to as different RAID levels. Different RAID levels represent different performance levels, security levels and implementation costs. The table below briefly introduced these RAID levels.

RAID Level	No. of Drives	Capacity	Benefits
RAID 0 (Striping)	2	Number drivers *Smallest size	Highest performance without data protection
RAID 1 (Mirroring)	2	Smallest size	Data protection
JBOD (Spanning)	2	Sum of All drivers	No data protection and performance improving, but disk capacity fully used.

RAID 0 (Striping)

RAID 0 reads and writes sectors of data interleaved between multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. The striping block size can be set from 4KB to 64KB. RAID 0 does not support fault tolerance.

RAID 1 (Mirroring)

RAID 1 writes duplicate data onto a pair of drives and reads both sets of data in parallel. If one of the mirrored drives suffers a mechanical failure or does not respond, the remaining drive will continue to function. Due to redundancy, the drive capacity of the array is the capacity of the smallest drive. Under a RAID 1 setup, an extra drive called the “spare drive” can be attached. Such a drive will be activated to replace a failed drive that is part of a mirrored array. Due to the fault tolerance, if any RAID 1 drive fails, data access will not be affected as long as there are other working drives in the array.

JBOD (Spanning)

A spanning disk array is equal to the sum of the all drives when the drives used are having different capacities. Spanning stores data onto a drive until it is full, then proceeds to store files onto the next drive in the array. When any disk member fails, the failure affects the entire array. JBOD is not really a RAID and does not support fault tolerance.

Others

Other RAID derivatives are RAID 10 and RAID 5. These RAID levels require more than 2 drives to operate, combining the benefits of RAID 0 and RAID 1.

VIA S-ATA RAID Features

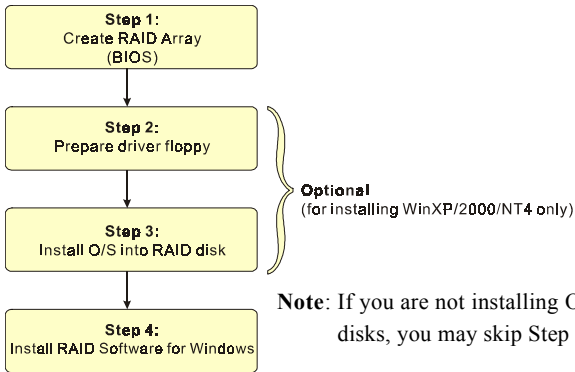
The VIA S-ATA RAID solution uses the VT8237 chip as a RAID controller, which is a 2-channel S-ATA and 1-channel ATA133 solution. Listed below are the main features and benefits of VIA S-ATA RAID:

- Support two S-ATA hard disk drives.
- Supports hard disk drive larger than 137 GB (48-bits LBA).
- Supports RAID 0, 1 and JBOD.
- 4 KB to 64 KB striping block size support.
- Bootable disk or disk array support.
- Windows-based RAID configure and management software tool. (Compatible with BIOS)
- Real-time monitoring of device status and error alarm with popup message box and beeping.
- Mirroring automatic background rebuilds support.
- ATA SMART function support.
- Microsoft Windows 98, Me, NT4.0, 2000, XP operating systems support.
- Event log for easy troubleshooting.
- On-line help for easy operation for RAID software.

S-ATA RAID Configuration

Enable RAID Function

For any RAID controller, the general procedure to enable RAID function are shown below:



Note: If you are not installing O/S into the RAID disks, you may skip Step 2 & Step 3.

Step 1: Create RAID Array

RAID arrays are created using the RAID controller’s BIOS utility.

► VIA VT8237

Power-on the system and wait for the following screen to appear. Press the “Tab” key to enter its BIOS configuration utility.

```
VIA Technologies, Inc. VIA VT6420 RAID BIOS Setting Utility V0.94
Copyright (C) VIA Technologies, Inc. All Right reserved.

Press < Tab > key into User Window!
Scan Devices, Please wait...
Channel 0 Master: Maxtor 6Y060M0
Channel 1 Master: Maxtor 6Y060M0
```

The main interface of the BIOS utility is as below:

```
VIA Tech. RAID BIOS Ver 0.94

> Create Array
> Delete Array
> Create/Delete Spare
> Select Boot Array
> Serial Number View

Create a RAID array with
the hard disks attached to
VIA IDE controller

F1 : View Array/disk Status
F1 : Move to next item
Enter: Confirm the selection
ESC : Exit

Channel Drive Name Array Name Mode Size(GB) Status
Channel0 Master Maxtor 6Y060M0 ATA 133 52.26 Hdd
Channel1 Master Maxtor 6Y060M0 ATA 133 52.26 Hdd
```

Refer to Appendix C-1 for details about creating RAID array using this utility.
After the RAID array is created, press “ESC” to exit.

Step 2: Prepare driver floppy

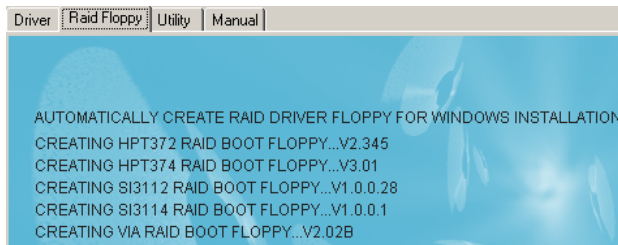
When installing Windows XP/2000/NT4.0 into any RAID disk, the O/S setup will require a floppy disk containing the RAID driver. This step will show you how to prepare this driver floppy. There are 2 methods to prepare this floppy:

► Method 1

1. Insert the bundled CD into the CD-ROM drive
2. Boot the system from the CD-ROM
3. A menu of driver for various RAID controllers will appear
4. Insert a blank floppy into the A:drive
5. Select the appropriate RAID controller to begin copy into the floppy

► Method 2

1. Locate another computer and insert the bundled CD into its CD-ROM drive.
2. A main menu screen will appear (Autorun feature)
3. Select the page “RAID floppy”



4. Insert a blank floppy into the A:drive
5. Click on the required driver to begin copy into the floppy

Step 3: Install O/S into RAID disk

Continue to install Windows XP/2000/NT4.0 as normal. When requested by Windows Setup for RAID driver, insert the floppy created earlier in Step 2.

Step 4: Install Software utility for Windows

After the O/S has been installed, you may install the RAID driver and software. The RAID software is a Windows-based utility with graphical user interface that provides an easy operating tool to configure and manage RAID arrays.

- 1) Insert the bundled CD into the CD-ROM drive.
- 2) When the main menu appears, click on the SATA RAID driver corresponding to the SATA controller you have configured in Step 1. See driver installation in section 6 for more details.

Note: For information on using the software utility, refer to the user guide in the bundled CD.

Section 6

DRIVER INSTALLATION

Easy Driver Installation

Once the operating system has been installed, you need to install the drivers for the mainboard.



Insert the bundled CD into the CD-ROM and the main menu screen will appear. The main menu displays links to the supported drivers, utilities and software.

► **Method 1**

This item installs all drivers automatically.

► **Method 2**

This item allows you to install the drivers selectively.

Step 1 : Click “**SERVICE PACK 4_IN_1 Driver**” to install all components recommended.

Step 2 : Click “**AC'97 AUDIO Driver**” to install audio driver.

Step 3 : Click “**VIA LAN Driver**” to install LAN driver.

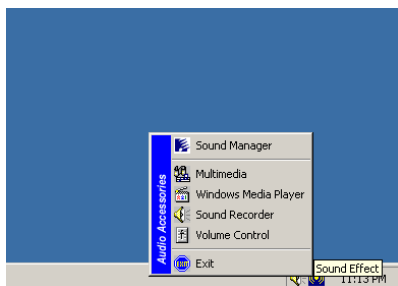
Step 4: Click “**VIA USB V2.0 Driver**” to install USB2.0 driver.

Step 5 : Click “**VIA SATA RAID DRIVER**” to install Serial ATA driver.

Realtek Sound Manager Quick User-guide

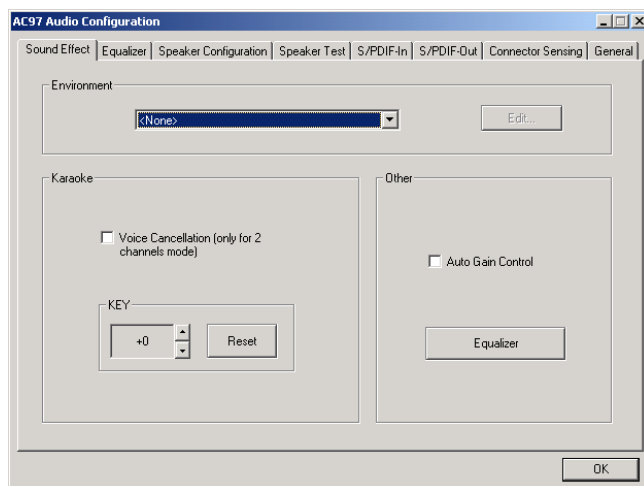
◆ Introduction

To obtain the best performance from your audio system, run the "Sound Manager" utility to adjust the settings to suit your needs. This section of the manual is intended to provide a quick user-guide to setup "Sound Manager". For more detailed information, refer to "Sound Manager manual" in the CD.



<Figure 1>

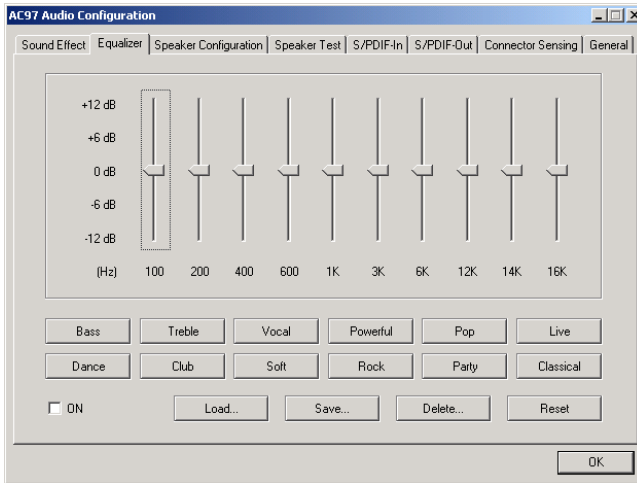
1. Right-click "Sound Effect" button on the task bar and select "Sound Manager".



Sound Effect:

<Figure 2>

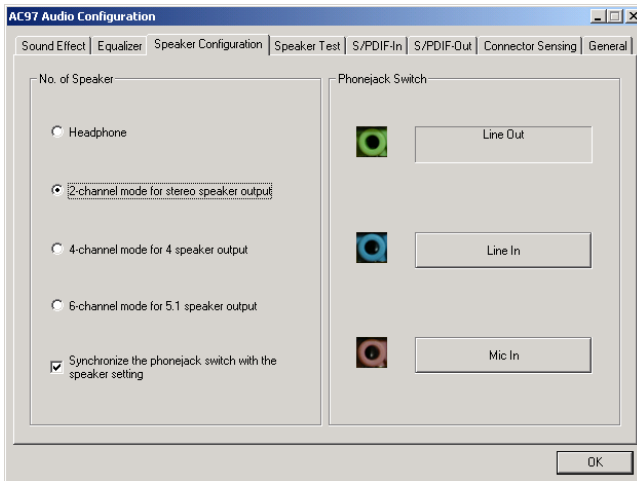
2. Select "Sound Effect" page to set the desired audio environment from the pull-down menu. There are in total 23 kinds of sound effect.
 - a. For Karaoke function, "Voice Cancellation (only for 2 channels mode)" removes the human voice. "Key" lets you adjust the key pitch.
 - b. "Auto Gain Control" avoids saturation when adjusting the equalizer.



Equalizer:

<Figure 3>

3. There are 10 bands of equalizer control, check "ON" when you want to adjust the equalizer.

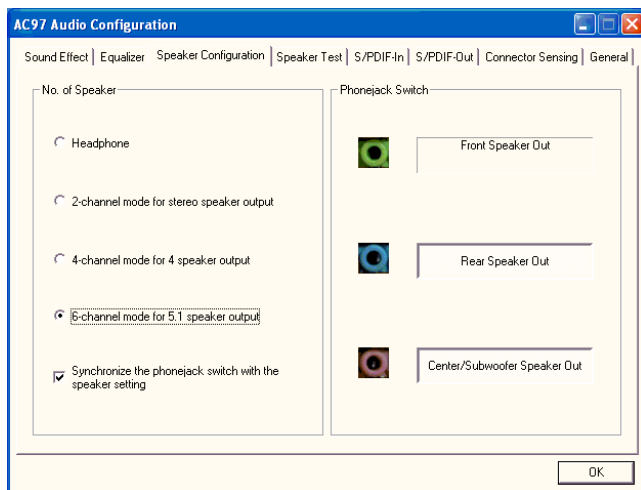


Speaker Configuration:

<Figure 4>

4. This page displays the mainboards's phone jack function when a corresponding audio mode (no. of speaker) is selected.

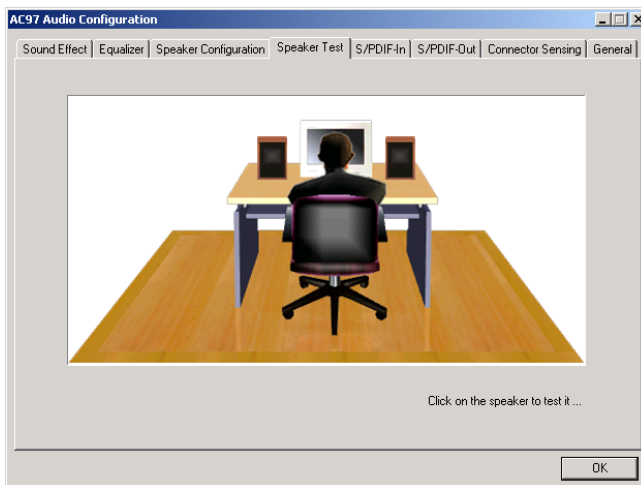
Figure 4 above shows the phone jack setup for 2 channel mode.



Speaker Configuration:

<Figure 5>

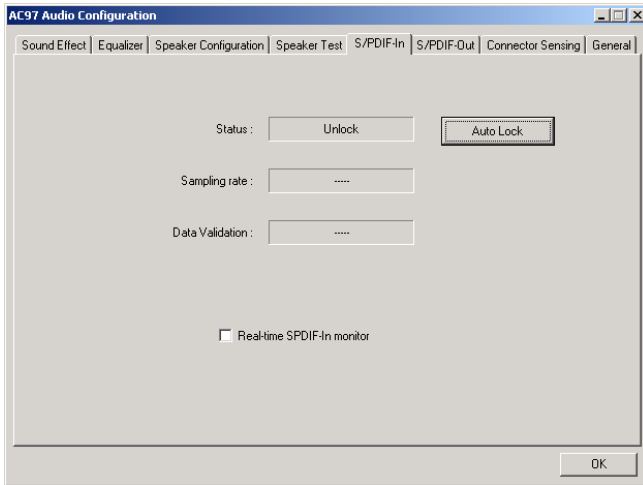
5. For 6 channel mode, the audio combination is shown above.



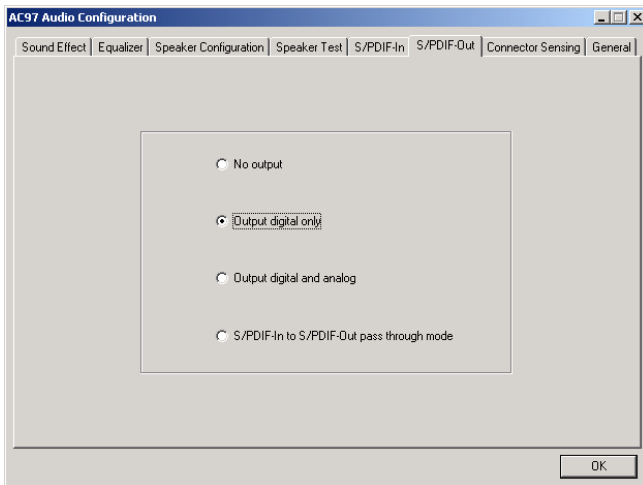
Speaker Test:

<Figure 6>

6. To test the speaker , select the “**Speaker Test**” page and click directly on the speakers shown on the screen.

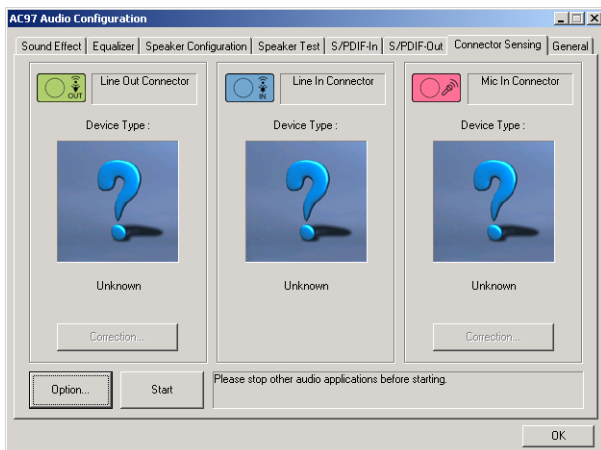
**SPDIF-In:***<Figure 7>*

7. This page shows S/PDIF IN function on your system.
 - a. Click "Auto Lock" to detect S/PDIF input and display its information.
 - b. Check "Real-time S/PDIF-In monitor" to listen to the S/PDIF IN signal through Line-out connector.

**SPDIF-Out:***<Figure 8>*

8. This page lets you choose the type of audio source that will appear on the S/PDIF-out connector.

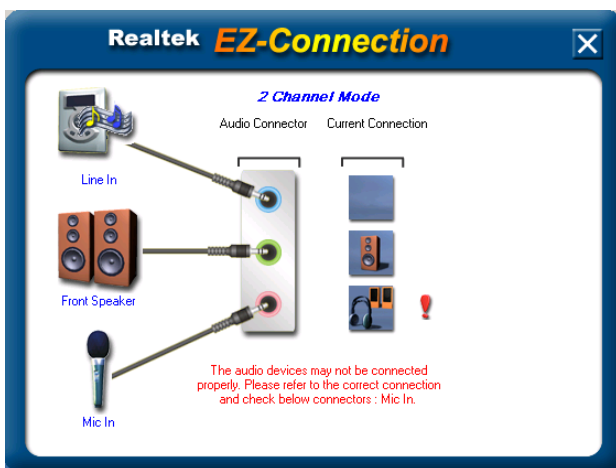
This board is equipped with Jack Sensing capability. If an audio device is plugged into the wrong connector, a warning message will appear to remind users to check the connection.



Connector Sensing:

<Figure 9>

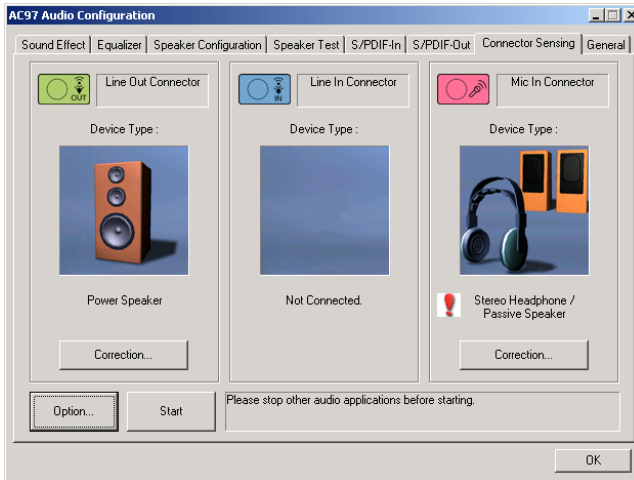
9. Push "Start" button to start the sensing. Please remember to terminate all audio applications before starting the sensing.



Connector Sensing:

<Figure 10>

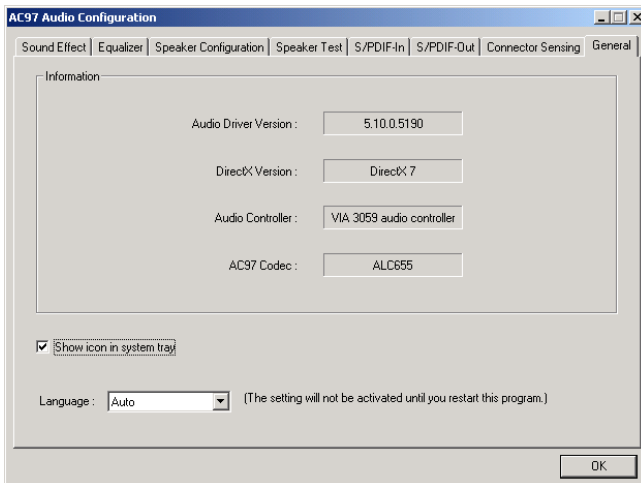
10. EZ-Connection shows the result of the detection.
“Audio Connector” column reflects the settings used in the "Speaker Configuration" page.
“Current Connection” column shows the type of device detected. If the results do not match, an exclamation mark will appear on the right side.



Connector Sensing:

<Figure 11>

11. After closing EZ-Connector, this page will show the latest connector status as above.



General:

<Figure 12>

12. This page displays information regarding the audio hardware and software. To remove "Sound Manager" icon from Windows Task bar, uncheck "Show icon in system tray".



Appendix A

A-1 Update Your System BIOS

Download the xxxxx.EXE file corresponding to your model from our website to an empty directory on your hard disk or floppy. Run the downloaded xxxxx.EXE file and it will self extract. Copy these extracted files to a bootable floppy disk.

Note: The floppy disk should contain NO device drivers or other programs.

1. Type "A:\AWDFLASH and press <Enter> Key.
2. You will see the following setup screen.
3. Please key in the xxxxx.bin BIOS file name.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxx-W83627-6A69LPA9C-0  DATE: 05/11/2000
Flash Type -
File Name to Program : _____

Error Message:
```

4. If you want to save the previous BIOS data to the diskette, please key in [Y], otherwise please key in [N].

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxx-W83627-6A69LPA9C-0  DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V
File Name to Program : xxxxx.bin

Error Message: Do You Want To Save Bios (Y/N)
```

Appendix

5. Key in File Name to save previous BIOS to file.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0 DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
File Name to Save : xxxxx.bin

Error Message:
```

6. To confirm and proceed, please key in [Y] to start the programming.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0 DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
Checksum : 938EH
File Name to Save : xxxxx.bin

Error Message: Are you sure to program (y/n)
```

7. The BIOS update is finished.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0 DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
Checksum : 4B04H
Verifying Flash Memory - 7FE00 OK

[Progress Bar]

■ Write OK ■ No Update ■ Write Fail

F1: Reset F10: Exit
```

Appendix B

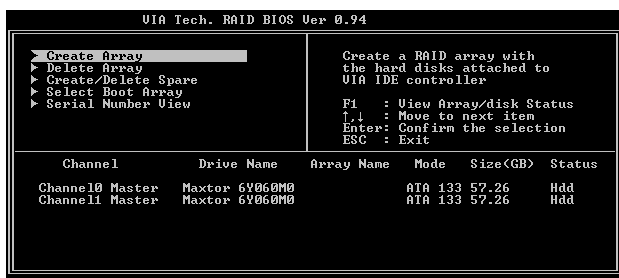
B-1 VIA RAID BIOS Utility

Power-on the system and wait for the following screen to appear. Press the "Tab" key to enter its BIOS configuration utility.

```
VIA Technologies, Inc. VIA UT6420 RAID BIOS Setting Utility V0.94
Copyright (C) VIA Technologies, Inc. All Right reserved.

Press <Tab> key into User Window!
Scan Devices. Please wait...
Channel 0 Master: Maxtor 6Y060M0
Channel 1 Master: Maxtor 6Y060M0
```

The main interface of the BIOS utility is as below:



Create Disk Array

1. Use the arrow keys to navigate the main menu. Use the up and down arrow keys to select the **Create Array** command and press <Enter> to call out the list of creation steps.

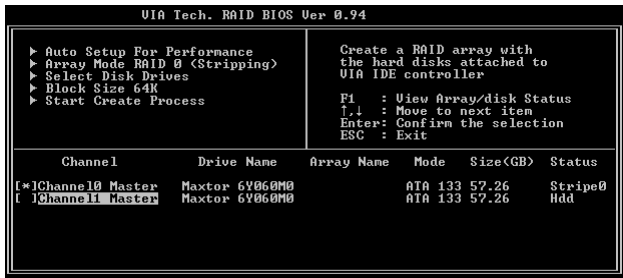


Appendix

2. Select **Array Mode** and press <Enter>, a list of array modes will appear. Highlight the target array mode that you want to create, and press <Enter> to confirm the selection. If RAID 1 is selected, an option list will popup and enable the users to select **Create only** or **Create and duplicate**. **Create only** will allow BIOS to only create an array. The data on the mirroring drive may be different from the source drive. **Create and duplicate** lets BIOS copy the data from the source to the mirroring drive.



3. After array mode is selected, there are two methods to create a disk array. One method is "Auto Setup" and the other one is "Select Disk Drives". **Auto Setup** allows BIOS to select Master disk drives and create arrays automatically, but it does not duplicate the mirroring drives even if the user selected **Create and duplicate** for RAID 1. It is recommended all disk drives are new ones when wanting to create an array. **Select Disk Drives** lets the user select the array drives by their requirements. When using **Select Disk Drives**, the channel column will be activated. Highlight the target drives that you want to use and press <Enter> to select them. After all drives have been selected, press <Esc> to go back to the creation steps menu.



- If user selects a RAID 0 array in step 2, the block size of the array can also be selected. Use the arrow key to highlight **Block Size** and press <Enter>, then select a block size from the popup menu. The block size can be 4KB to 64KB.



- Use the arrow key to highlight **Start Create Process** and press <Enter>. A warning message will appear, Press **Y** to finish the creation, or press **N** to cancel the creation.
- Important note: All existing content in the hard drive will be destroyed after array creation.

Delete Disk Array

A RAID can be deleted after it has been created. To delete a RAID, use the following steps:

- Select **Delete Array** in the main menu and press <Enter>. The channel column will be activated.
- Select the member of an array that is to be deleted and press <Enter>. A warning message will show up, press **Y** to delete or press **N** to cancel.



Deleting a disk array will destroy all the data on the disk array except RAID 1 arrays. When a RAID is deleted, the data on these two hard disk drives will be reserved and become two normal disk drives.

View Serial Number of Hard Drive

Highlight **Serial Number View** and press <Enter>. Use arrow key to select a drive, the selected drive's serial number can be viewed in the last column. The serial number is assigned by the disk drive manufacturer.

View Array Status

Press the **F1** key to show the array status on the lower screen. If there are no disk arrays then nothing will be displayed on the screen.

VIA Tech. RAID BIOS Ver 0.94			
<ul style="list-style-type: none">► Create Array► Delete Array► Create/Delete Spare► Select Boot Array► Serial Number View		Create a RAID array with the hard disks attached to VIA IDE controller	
		F1 : View Array/disk Status ↑,↓ : Move to next item Enter: Confirm the selection ESC : Exit	
Array Name	Array Mode	Block Size(GB)	Size(GB)
ARRAY 0	Mirror	N/A	37.27
ARRAY 1	Mirror	N/A	37.27

Duplicate Critical RAID 1 Array

When booting up the system, BIOS will detect if the RAID 1 array has any inconsistencies between user data and backup data. If BIOS detects any inconsistencies, the status of the disk array will be marked as critical, and BIOS will prompt the user to duplicate the RAID 1 in order to ensure the backup data consistency with the user data.

Critical RAID 1		Critical Status	
Duplicate now Continue to boot		The RAID 1 array needs to be duplicated to ensure data consistency.	
		Fault Hdd Found: Channel 1 Device 0 Fault	
Remaining members of the failed array			
Channel	Drive Name	Array Name	Mode Size(GB) Status
Channel1 Device0	IC35L040RVA07-0	Array0	ATA 100 38.34 Mirror
Channel0 Device0	IC35L040RVA07-0	Array0	ATA 100 38.34 Source
Note: 1)Press <ESC> to Exit. 2)After Execute,Press <TAB> immediately can into Utility Window!			

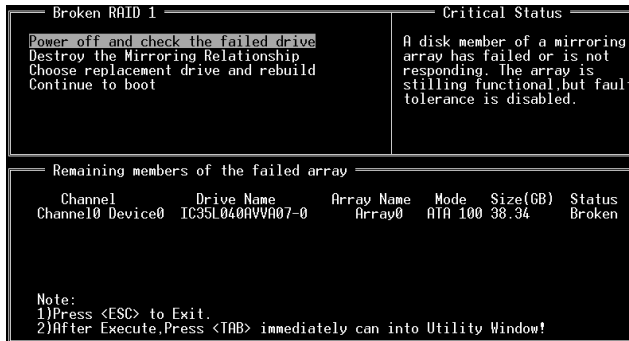
If user selects **Continue to boot**, it will enable duplicating the array after booting into OS.

Rebuild Broken RAID 1 Array

When booting up the system, BIOS will detect if any member disk drives of RAID has failed or is absent. If BIOS detects any disk drive failures or missing disk drives, the status of the array will be marked as broken.

If BIOS detects a broken RAID 1 array but there is a spare hard drive available for rebuilding the broken array, the spare hard drive will automatically become the mirroring drive. BIOS will show a main interface just like a duplicated RAID 1. Selecting **Continue to boot** enables the user to duplicate the array after booting into operating system.

If BIOS detects a broken RAID 1 array but there is no spare hard drive available for rebuilding the array, BIOS will provide several operations to solve such problem.



1. Power off and Check the Failed Drive:

This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

2. Destroy the Mirroring Relationship:

This item cancels the data mirroring relationship of the broken array. For broken RAID 1 arrays, the data on the surviving disk will remain after the destroy operation.

3. Choose Replacement Drive and Rebuild:

This item enables users to select an already-connected hard drive to rebuild the broken array. After choosing a hard drive, the channel column will be activated.

Broken RAID 1		Critical Status			
Power off and check the failed drive Destroy the Mirroring Relationship Choose replacement drive and rebuild Continue to boot		The contents on the disk you have selected will be deleted.			
Remaining members of the failed array					
Channel	Drive Name	Array Name	Mode	Size(GB)	Status
()Channel0 Device1	IC35L040HVVH07-0	ATA 100	38.34	Hdd	
()Channel1 Device1	IC35L040HVVH07-0	ATA 100	38.34	Hdd	
Note: 1)Press <ESC> to Exit. 2)After Execute,Press <TAB> immediately can into Utility Window!					

Highlight the target hard drive and press <Enter>, a warning message will appear. Press **Y** to use that hard drive to rebuild, or press **N** to cancel. Please note selecting option **Y** will destroy all the data on the selected hard drive.

4. Continue to boot:

This item enables BIOS to skip the problem and continue booting into OS.