K8NF4X-754

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K8NF4X-754

nVIDIA® nForce4-4X
Support Socket 754
AMD Athlon™ 64/ Sempron™ Processor

User Manual

Dimensions (ATX form-factor):
- 244mm x 202mm (W x L)

Operating System:
- Windows® 2000/ XP

Things You Should Know

- The images and pictures in this manual are for reference only and may vary depending on hardware models, third party components and software versions.
- Power off your system when configuring switches and pins.
- This mainboard contains very delicate IC chips. Always use a grounded wrist strap when working with the system.
- Do not touch any IC chip, lead, connector or other components.
- Unplug the AC power when you install or remove any device on the mainboard.

Packing List

- ◆ K8NF4X-754 mainboard
- ◆ FDD Cable
- ◆ HDD Cable
- ◆ I/O Bracket
- ◆ SATA Power Cord (Optional)
- ◆ SATA Cable (Optional)
- ◆ Mainboard User Manual CD
- ◆ Mainboard Setup Driver CD
- ◆ Mainboard Quick Installation Guide

Symbols

The following list explains the convention for symbols that will be used throughout this manual:

Attention …

Follow the steps …

Troubleshooting …

Please refer to …

Table of Contents

INSTALLATION NOTE

This mainboard complies with the ATX standard, which means the ACPI connector on this board is 2-pin. If the Power LED cable of your case uses a 3-pin adapter, you must use the 2-pin to 3-pin adapter (contained in the packaging).

本主機版之電路設計遵循標準 ATX 規格，標準 ATX 規格的 ACPI 針腳為 2 pin；若機殼面板的 Power LED 連接線為 3 pin 時，請利用隨產品包裝所附的 2 pin 轉 3 pin 連接線來連接。

本メインボードの電路は ATX 規格に基づいて、設計されたものだから、ACPI コネクタは 2-ピンです。ケースの Power LED ケーブルが 3-ピンである場合は、パッケージの中での 2-3 ピンアダプタを使って、LED をこのコネクタに接続してください。

La carte de mère se conforme à ATX norme, signifie que l'adaptateur de ACPI sur cette carte est 2-broche. Si le ACPI câble de votre boîtier d'ordinateur est 3-broche, utlisez l'adapteur 2-broche vers 3-broche dans le paquet pour le connecter.

Dieses Mainboard stimmt mit dem ATX-Standard überein (d.h. auf der Hauptplatine befindet sich ein 2-poliger ACPI-Anschluss). Falls Ihr Power-LED-Kabel 3-polig ist, benutzen Sie bitte einen 3 poligen zu 2 poligen Zwischenstecker.

the 2-pin to 3-pin adapter

120470017M1N

◆ Locate the Power LED cable attached to the case. If the Power LED cable has a 3-pin adapter, you must use the 2-pin to 3-pin adapter which comes with the packaging.

◆ The heads of the power cables usually have a triangular mark which indicates the positive electrode(+). Connect the 3-pin end of the adapter to the Power LED cable, matching up the positive electrodes(+).

◆ Finally, attach the 2-pin end of the adapter to the ACPI pins on the mainboard, making sure you match up the positive electrodes(+).
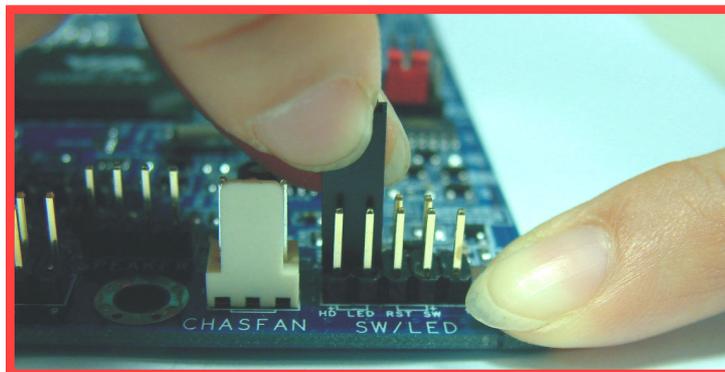
Chapter 1. Getting Started

Introduction

Congratulations on the choosing K8NF4X-754 Mainboard. It is based on the nVIDIA$^{®}$ nForce4-4X chipset and supports the AMD Athlon^{TM} 64/ Sempron^{TM} Processor Socket 754 with system bus 800 MHz (1600 MT/s).

The K8NF4X-754 provides two 184-pin DIMM (Dual In-Line Memory Modules) sockets which support to insert DDR400 (PC3200)/ DDR333 (PC2700)/ DDR266 (PC2100)/ DDR200 (PC1600) SDRAMs, and support a total memory capacity of 2 GB.

This mainboard provides two PCI-E x16 interface slots and which up to x16 and x4 modes can be supported individually. It is recommended that insert a graphics card onto the PCI-E4 slot, and insert an expansion card which the interface is capable for PCI-E x16 specification onto the other slot, PCI-E5. This mainboard can support up to four separated monitors displaying at the same time. In addition, two PCI slots come with this mainboard and are capable for use with expansion cards.

This mainboard provides one floppy disk drive connector with 360KB/720KB/1.2MB/ 1.44MB/2.88MB specification, and provides two IDE connectors that support Ultra ATA 33/66/100/133 for hard disk drives. The onboard Serial ATA function, four SATA connectors are able to support SATA RAID 0/1/ 0+1/ JBOD mode **(see Appendix II)** and with transfer rate up to 150 Mbps.

There is a maximum of eight USB2.0/ 1.1 ports that can be set up on this mainboard.

The onboard AC' 97 sound codec supports high quality performance 6-channel audio play (Super 5.1 Channel Audio Effect) **(See Appendix I)**. The mainboard also supports the Sony/Philips Digital Interfaces (SPDIF) function (including a SPDIF out port provided on the back panel).

The K8NF4X-754 comes with an onboard 10/100 Mbps Ethernet LAN chip. There is a LAN port on the back panel that you can directly plug an Internet cable into.

In addition, this mainboard supports the ABS (Albatron BIOS Security) function, which provides a backup BIOS while inserting an ABS Card (optional) onto the mainboard header. When your system cannot be powered on due to the onboard BIOS has damaged, then you can utilize the rescue BIOS of the ABS Card to recover the damaged BIOS. The installation of ABS Card is really easy and convenient to follow and use (**See Appendix III**).

All the information (including hardware installation and software installation) in this manual are for reference only. The contents in this manual may be updated without notice. The company will not assume any mistake that user caused.

Specification

CPU:
- Support Socket 754
- Support AMD Athlon^{TM} 64/ Sempron^{TM} processor
- Support Hyper-Transport^{TM} Link Technology
- Support system bus 800 MHz (1600MT/s)

Chipset:
- Main Chipset –nVIDIA$^{®}$ nForce4-4X
- I/O Controller –Winbond$^{®}$ W83627HF-AW
- AC' 97 Aduio Codec – Realtek® ALC655
- LAN Controller – Broadcom AC 131

Memory:
- Two 184-pin DIMM sockets, support a total memory capacity of 2GB
- Support DDR400 (PC3200)/ DDR333 (PC2700)/ DDR266 (PC2100)/ DDR200 (PC1600) SDRAM

Slots:
- Two PCI-E x16 slots, support x16 and x4 mode in individual
- Two PCI slots

Onboard FDC:
- One floppy drive disk connector, supports a maximum of two FDDs to be set up
- Support 360KB/ 720KB/ 1.2MB/ 1.44MB/ 2.88MB

Onboard IDE:
- Two IDE connectors, support a maximum of four IDE devices to be set up
- Support Ultra ATA 33/ 66/100/133

Onboard Serial ATA :
- Four SATA connectors, support a maximum of four SATA HDDs to be set up
- Support SATA 1.0 specification and with a transfer rate of up to 150 Mbps
- Support SATA RAID 0/1/ 0+1/ JBOD mode

Onboard AC' 97 Sound Codec:
- High performance Codec with high S/N ratio (>90 db)
- Compliant with AC' 97 2.3 specification
- Support 6-channel playback capability (Super 5.1 Channel Audio Effect)
- Support 3D stereo enhancement
- Support Sony/ Philips Digital Interfaces (S/PDIF) functionality

Onboard LAN Chip:
- 10/100 Mbps Ethernet LAN supported

I/O facilities:
- One multi-mode Parallel Port capable of supporting the following specifications:
    1. Standard & Bi-direction Parallel Port
    2. Enhanced Parallel Port (EPP)
    3. Extended Capabilities Port (ECP)
- One serial port
- One SPDIF out port
- One PS/2 mouse port and one PS/2 keyboard port

Universal Serial Bus:
- Four onboard USB 2.0/ 1.1 ports
- Two front USB headers come with this mainboard, support a maximum of four additional USB ports to be set up

BIOS:
- Phoenix-Award™ BIOS
- Support APM1.2
- Support ACPI2.0 power management

ABS (Albatron BIOS Security):
- One BIOSCN1 header, supports the ABS Card (Optional) installation
- Support BIOS backup

Green Function:

● Support Phoenix-Award™ BIOS power management function
● System Waked from sleeping mode of power saving by touching any keyboard or mouse

Hardware Monitor Function:

● Monitor CPU/ Chassis Fan Speed
● Monitor CPU and system temperature
● Monitor system voltages

Watch Dog Timer:

● This function is for detecting the system when it is unable to handle over-clocking configurations during the POST stage. Once the problem is detected, the system will reset the configurations and reboot the system within five seconds.

Configuration
Layout of K8NF4X-754
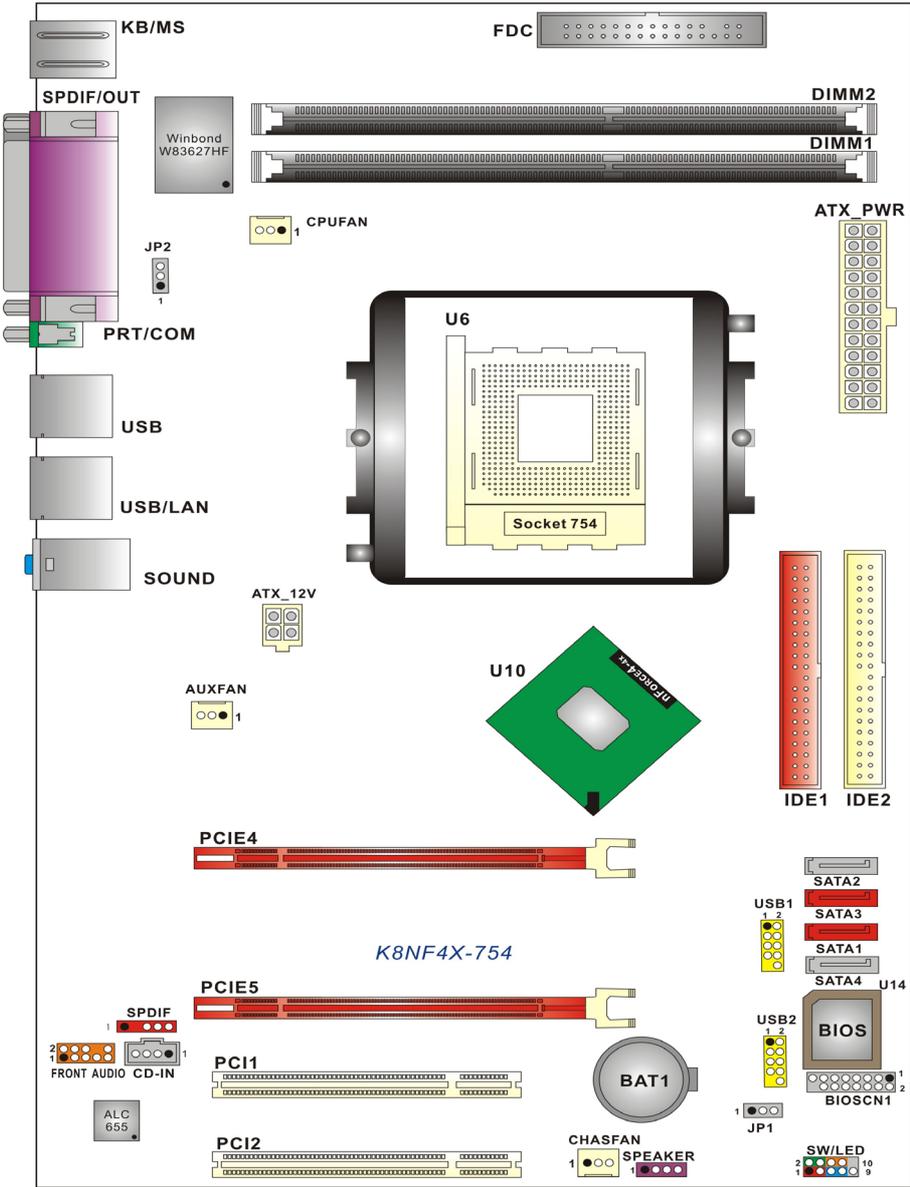
Hardware Installation

This section will assist you quickly in installing your system hardware. Wear a wrist ground strap before handling components. Electrostatic discharge may damage your system components.

CPU Processor Installation

This mainboard supports AMD Athlon^{TM} 64/ Sempron^{TM} processor using a Socket 754. Before building your system, we suggest you to visit the AMD website and review the processor installation procedures. (http://www.amd.com)

CPU Socket 754 Configuration Steps:

1. Locate the CPU socket on your mainboard and nudge the locking lever away from the socket. Then lift the lever to a 90-degree angle.

2. On the socket, locate the corner which has the "diagonally cut-corner" on the rectangular shaped pattern of pinholes (see diagram below-left). Match that corner with the "gold triangle" on the CPU (see diagram below-right) and lower the CPU onto the socket. The bottom of the CPU should be flush with the face of the socket.

Diagonally Cut-corner

Gold triangle
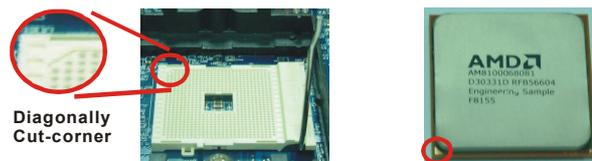
3. Lower the lever until it snaps back into position. This will lock down the CPU.
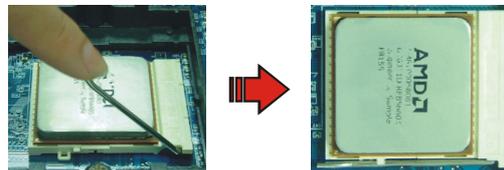
4. Smear thermal grease on top of the CPU. Lower the CPU fan onto the CPU and use the clasps on the fan to attach it to the socket. Finally, extend the power cable from the fan and insert it onto the "CPUFAN" adapter.
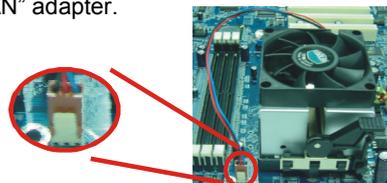
Attention

DO NOT touch the CPU pins in case they are damaged. Also, make sure that you have completed all installation steps before powered on the system. Finally, double-check that the cooling fan is properly installed and the CPU fan power cord is securely attached, in case your CPU and other sensitive components are damaged because of high temperatures.

FAN Headers: CPUFAN, AUXFAN, CHASFAN

Three power headers for cooling fans are available on the K8NF4X-754. The cooling fans are playing important roles in maintaining CPU and ambient temperatures in your system. Please attach the fan power cords to these two headers.

	Pin	Assignment
CPUFAN/ AUXFAN/ CHASFAN	1	Ground
	2	Power (+12V)
	3	FAN RPM rate sense

Attention

We strongly recommend you that attach a cooling fan on top of the CPU and also attach the fan power cord onto the mainboard CPUFAN header, to avoid your CPU damaged due to high temperatures.

In general, the fan power cord is designed and should be attached with a specific direction. The black wire of the fan power cord is Ground and should be attached onto the header pin-1.

Memory Installation: DIMM1/2

The K8NF4X-754 provides two 184-pin DIMM (Dual In-Line Memory Module) sockets which support to insert DDR400 (PC3200)/ DDR333 (PC2700)/ DDR266 (PC2100)/ DDR200 (PC1600) SDRAMs and a total memory capacity of 2 GB.

DIMM2

DIMM1

Memory Setup Steps:

The following instructions explain how to set memories onto the DIMM sockets for this mainboard.

1. Pull the white plastic tabs at both ends of the socket away.
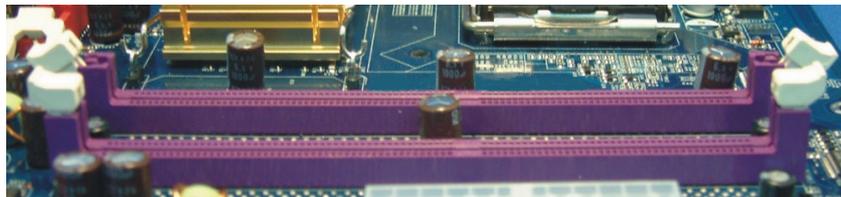
2. Align a memory on the socket such that the notch on the memory matches the break on the socket.
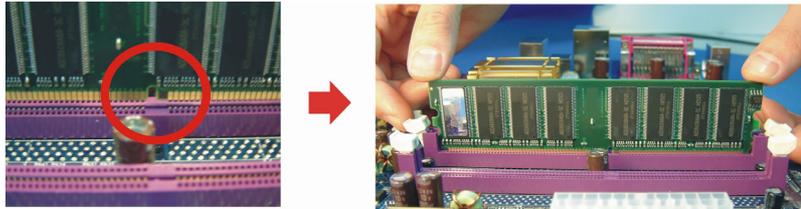
3. Lower the memory vertically into the socket and press firmly by using both thumbs until the memory snaps into place.
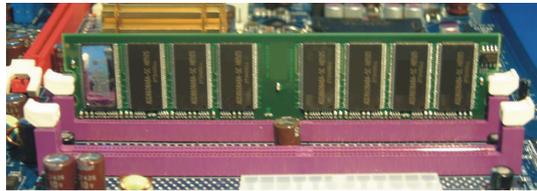
4. Repeat steps 1, 2 & 3 for the remaining memory and DIMM sockets setup.

* The pictures shown above are for reference only. The actual installation may vary depending on models.

Back Panel Configuration
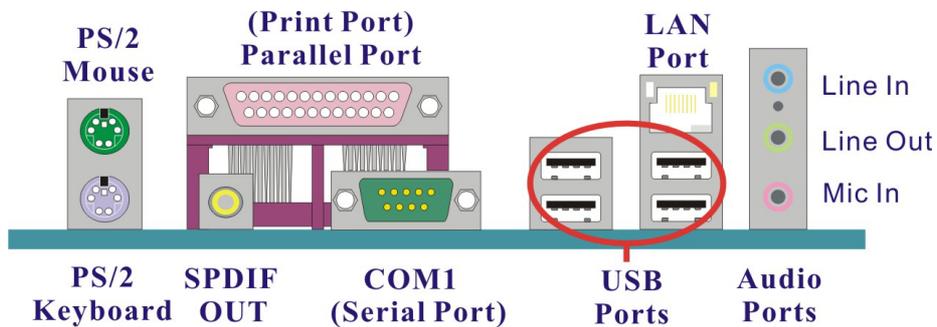
PS/2 Mouse & PS/2 Keyboard Ports: KB/MS

This mainboard provides a standard PS/2 mouse port and a PS/2 keyboard port. The pin assignments are described below.

PS/2 Mouse
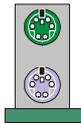
PS/2 Keyboard

Pin	Assignment	Pin	Assignment
1	Data	4	+5 V (fused)
2	N/A	5	Clock
3	Ground	6	N/A

Parallel, Serial, and SPDIF Out Interface Ports

The mainboard provides one serial port, one parallel port, and one SPDIF out port on the back panel.

Print Port

Parallel Interface Port: PRT

The parallel port on your system is used to attach a parallel printer or other devices with this interface supported.

Serial Interface Port: COM1

This mainboard provides a serial port COM1 on the back panel, and is used to attach mice, modems and other peripheral devices.

SPDIF OUT   **COM1**

SPDIF Out Port: SPDIF/OUT

S/PDIF (Sony/Philips Digital Interface) is a recent audio transfer file format which provides high quality audio using optical fiber and digital signals. The SPDIF out port on your PC back panel is used to output the audio format files, so you can just attach a cord which with this interface supported into this SPDIF out port for use.
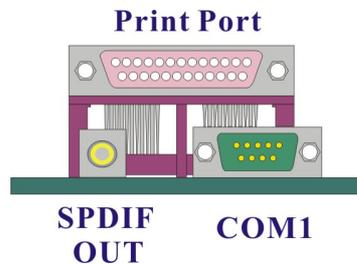
USB & LAN Ports: USB/LAN

There are four USB 2.0/ 1.1 ports on the back panel. These USB ports are used to attach with USB devices, such as keyboard, mice and other USB supported devices. There is also a 10/100 Mbps Ethernet LAN port available for you to attach an Internet cable.

LAN Port

USB Ports

Pin	Assignment	Pin	Assignment
1	TX+ (TX+)	5	NC (TRD2-)
2	TX- (TX-)	6	RX- (RX-)
3	RX+ (RX+)	7	NC (TRD3+)
4	NC (TRD2+)	8	NC (TRD3-)

Pin	Assignment	Pin	Assignment
1/5	+5 V (fused)	3/7	USBP0+/P1+
2/6	USBP0-/P1-	4/8	Ground

Audio Ports: Sound

This mainboard provides three Audio Ports. The Mic-in, Line-in and Line-out are standard audio ports that provide basic audio function.

Line-In (Blue)

This port is used to attach an external audio device such as a CD player, tape player or other audio device that has an audio input connector. When the Super 5.1 Channel Audio Effect is enabled, your rear speakers will be enabled with this port.

Line-Out (Green)

It is a standard audio port and used to attach speaker or headset. When the Super 5.1 Channel Audio Effect is enabled, your front speakers will be enabled with this port. In addition, if you have enabled the Super 5.1 Channel Audio Effect but still are using the Standard 2-channel audio play, we strongly recommend you to use this port.

Mic-In (Pink)

This port is used to attach a microphone to input your voice. When the Super 5.1 Channel Audio Effect is enabled, your subwoofer/center equipments will be enabled.

.
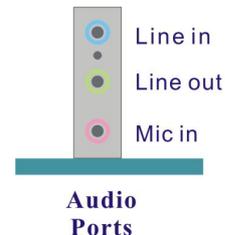
> This mainboard supports Super 5.1 Channel Audio Effect which you can transfer the audio system from 2-channel to 6-channel. See **Appendix I** for more information.

Connectors

Floppy Disk Drive Connector: FDC

The mainboard provides a standard floppy disk drive connector (FDC) that supports to attach a maximum of two floppy disk drives with 360KB/720KB/1.2MB/1.44MB/2.88MB specifications by a FDD ribbon cable.

Hard disk drive Connectors:

The mainboard provides two IDE connectors that support Ultra ATA 66/100/133 specifications. You can attach a maximum of four IDE devices, such as hard disk drive (HDD), CD-ROM, DVD-ROM, and so on by IDE ribbon cables.

Primary IDE Connector: IDE1

In general, two IDE devices can be attached onto one IDE connector. If you attach two IDE HDDs, you must use an IDE ribbon cable which with two cable connectors for attaching. You also must configure one drive as the master and the other one as the slave.

Secondary IDE Connector: IDE2

The IDE2 connector can also be attached with two HDDs by an IDE ribbon cable; however, you also must configure one as the Master and the other one as the Slave.

SATA Connector: SATA1/ SATA2/ SATA3/ SATA4

The four SATA connectors support a transfer rate of 150 Mbps and SATA RAID 0/1/ 0+1/ JBOD mode. One SATA connector only can attach one SATA HDD of each time.

	Pin	Assignment	Pin	Assignment
	1	Ground	2	TX+
	3	TX-	4	Ground
JSATA1~4	5	RX-	6	RX+
	7	Ground		

> This mainboard supports SATA RAID 0/1/0+1/JBOD mode, refer **Appendix II** for more information.

> **Attention**
> In general, the IDE/SATA cable is designed and should be attached with a specific direction. One edge of the cable will be in color red usually, to indicate that connector should line up the header pin-1.

Front Panel Headers: SW/LED, SPEAKER

SW/LED
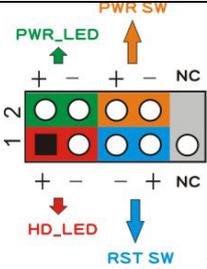
Pin	Assignment	Function	Pin	Assignment	Function
1	HDD LED (+)	Hard Drive LED (HD_LED)	2	Power LED (+)	Power LED (PWR_LED)
3	HDD LED (-)		4	Power LED (-)	
5	Reset Control (-)	Reset Switch (RST_SW)	6	Power Switch (+)	Power-on Switch (PWR_SW)
7	Reset Control (+)		8	Power Switch (-)	
9	N/C		10	N/C	

Hard Drive LED Header (Red): HD_LED

This header can be attached with a PC front panel LED cord. The LED will flicker during the hard disk drive (HDD) activity.

Reset Switch Header (Blue): RST_SW

This header can be attached with a momentary SPST button cord. The switch is normally left open. When the switch closed, it will cause the mainboard to reset and run the POST (Power-On Self Test).

Power-on Switch Header (Orange): PWR_SW

This header can be attached with a PC front panel power switch cord. The power switch cord must pull the power switch pin to ground for at least 50 ms to signal the power supply to turn on or off (the time required is due to internal debounce circuitry on the system board). At least two seconds must pass before the power supply will recognize another on/off signal.

Power LED Header (Green): PWR_LED

Attach the power LED cord onto this header, then the power LED will illuminate while the system is powered on.

Speaker Header (Purple): SPEAKER

A PC front panel speaker cord can attach onto this header. When you reboot the system, the speaker will sound a short "beep". If there is something wrong during the Power On Self-Test, the speaker otherwise will sound "irregular beep" to let you know.

	Pin	Assignment	Pin	Assignment
SPEAKER	1	PC_BEEP	2	N/C
	3	Ground	4	+5V

Headers & Jumpers

Front USB Headers: USB1/2

There are four USB 1.1/2.0 ports have provided on this mainboard, and it also provides two front USB headers which allowing you to set four additional USB ports on your PC front panel. An optional USB bracket may be included within this product and you can attach more USB devices on it.
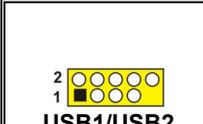
	Pin	Assignment	Pin	Assignment
	1	+5V (fused)	2	+5V (fused)
	3	USB-	4	USB-
USB1/USB2	5	USB+	6	USB+
	7	Ground	8	Ground
	9	Key	10	N/A

Attention

If you are using a USB 2.0 device with Windows 2000/XP, you will need to install the USB 2.0 driver from the Microsoft® website. If you are using Service pack 1 (or later) for Windows® XP, and using Service pack4 (or later) for Windows® 2000, you will not have to install the driver.

USB Power Headers: JP2

Through adjusting the jumper caps on this JP2 header, it can set for +5V or +5VSB mode. You can wake up the system from the sleep mode by using the USB devices which the KB/MS ports and the USB ports attached.

JP2	Assignment	Assignment
Pin 1-2 Close	+5V	S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode)
Pin 2-3 Close	+5VSB	S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode)

Note: Close stands for putting a jumper cap onto two header pins.

Clear CMOS Jumper: JP1

The "Clear CMOS" function is used when you cannot boot your system due to some CMOS problems, such as forget a password. Configuring the jumper caps on this header will allow you to reset the CMOS configurations.

JP1	Assignment
Pin 1-2 Close	Normal (Defult)
Pin 2-3 Close	Clear CMOS Data

Note: Close stands for putting a jumper cap onto two header pins.

> The following steps explain how to reset your CMOS configurations when you forgot a system password.

1. Turn off your system and disconnect the AC power cable.
2. Set JP1 header to OFF (2-3 Closed).
3. Wait several seconds.
4. Set JP1 header to ON (1-2 closed).
5. Connect the AC power cable and turn on your system.
6. Reset your new password.

Audio Configuration

CD-ROM Audio-In Connector: CD-IN

This header is used to attach a CD-ROM / DVD audio cable.

Pin	Assignment
1	Left channel input
2	Ground
3	Ground
4	Right channel input

CD-IN 1

SPDIF Header: SPDIF

S/PDIF is a recent audio transfer file format, which provides high quality audio using optical fiber and digital signals. This mainboard is capable to deliver audio output and receive audio input through the SPDIF header and FRONT AUDIO header. One way you would use these headers is by using an SPDIF Card (optional) and attaching the cords onto the two specific headers of mainboard. The RCA or TOS-Link connectors will be provided on the SPDIF Card and which are convenient you to output or input audio format files between your system and the SPDIF styled players.

SPDIF 1

Pin	Assignment	Pin	Assignment
1	+5V	2	Key
3	SPDIF out	4	Ground
5	SPDIF in		
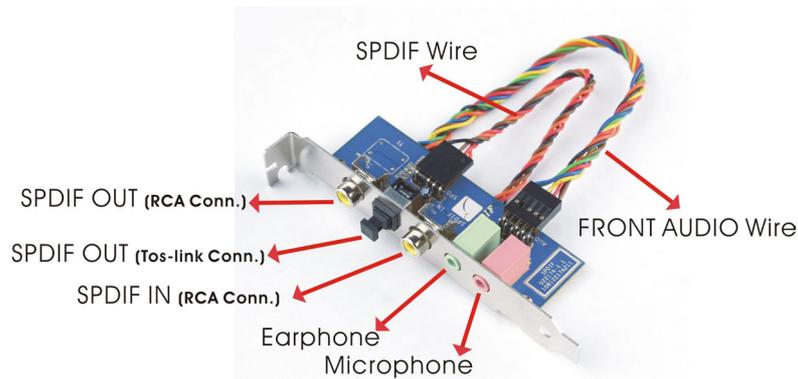
Front Audio Connector: FRONT AUDIO

If your PC front panel has the audio ports, please remove the jumpers on this header, and then you will have two sets of audio ports (one set is on your PC front panel and the other one is on your PC back panel) to use. On the other hand, your audio ports on the PC back panel will fail to work if the jumper caps on this header are removed.
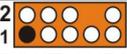
FRONT AUDIO

Pin	Assignment	Pin	Assignment
1	Mic in/center	2	Ground
3	Mic_VREF	4	Audio power +5V
5	Front out_R	6	Rear out_R
7	N/C	8	Key
9	Front out_L	10	Rear out_L

Slots

This mainboard provides two PCI-Express x16 slots for graphics cards used and two PCI slots for expansion cards used.
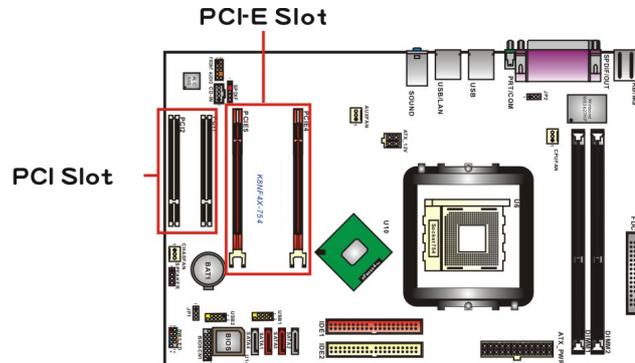
PCI-Express slots: PCI-E4, PCI-E5

This mainboard provides two PCI-E x16 interface slots and which up to x16 and x4 modes can be supported individually. It is recommended that insert a graphics card onto the PCI-E4 slot, and insert an expansion card which the interface is capable for PCI-E x16 specification onto the other slot, PCI-E5.

PCI Slots: PCI1, PCI2

This mainboard provides two standard 32-bit PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which has supplanted the older ISA bus standard.

Power Supply Attachments
ATX Power Connector: ATX_PWR, ATX_12V

Attach power cords on these connectors and make sure they are set in secure before applying the power. Then the system is able to support several functions such as the instant power-on and so on. In addition, a 20-pin power cord can attach onto the ATX_PWR connector as well.

Pin	Assignment	Pin	Assignment
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PW_ON	20	-5V
9	+5V standby voltage	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground
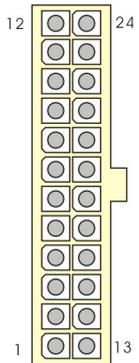
ATX_PWR
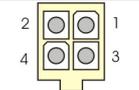
Pin	Assignment	Pin	Assignment
1	+12V	3	Ground
2	+12V	4	Ground

ATX_12V

Attention
In general, power cords are designed and should be attached with a specific direction. The black wire of the power cord is Ground and should be attached onto the header location of Ground.

Chapter 2. BIOS Setup

Introduction

This section describes PHOENIX-AWARD™ BIOS Setup program which resides in the BIOS firmware. The Setup program allows users to modify the basic system configuration. The configuration information is then saved to CMOS RAM where the data is sustained by battery after power-down.

The BIOS provides critical low-level support for standard devices such as disk drives, serial ports and parallel ports. As well, the BIOS control the first stage of the boot process, loading and executing the operating system.

The PHOENIX-AWARD^{TM} BIOS installed in your computer system's ROM is a custom version of an industry standard BIOS. This means that it supports the BIOS of AMD based processors.

This version of the PHOENIX-AWARD^{TM} BIOS includes additional features such as virus and password protection as well as special configurations for fine-tuning the system chipset. The defaults for the BIOS values contained in this document may vary slightly with the version installed in your system.

Key Function

In general, you can use the arrow keys to highlight options, press <Enter> to select, use the <PgUp> and <PgDn> keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate within the BIOS Setup program.

Keystroke	Function
Up arrow	Move to previous option
Down arrow	Move to next option
Left arrow	Move to the option on the left (menu bar)
Right arrow	Move to the option on the right (menu bar)
Esc	Main Menu: Quit without saving changes
	Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the option you desire
PgUp key	Increase the numeric value or enter changes
PgDn key	Decrease the numeric value or enter changes
+ Key	Increase the numeric value or enter changes
- Key	Decrease the numeric value or enter changes
Esc key	Main Menu – Quit and do not save changes into CMOS
	Status Page Setup Menu and Option Page Setup Menu – Exit
	Current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the defaults from BIOS default table

Main Menu

When you enter the PHOENIX-AWARD™ BIOS Utility, the Main Menu will appear on the screen. The Main menu allows you to select from several configuration options. Use the left/right arrow keys to select a particular configuration screen from the top menu bar or use the down arrow key to access and configure the information below.
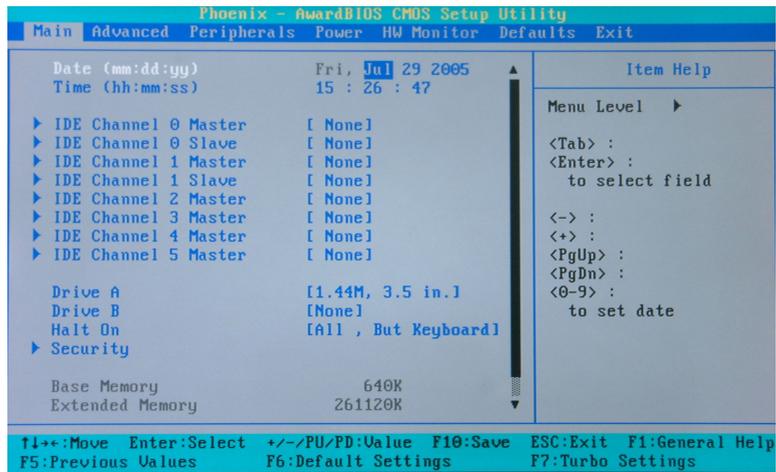
Main Menu Setup Configuration Options

Item	Options	Description
Date	mm dd yyyy	Set the system date. Note that the 'Day' automatically changes when you set the date.
Time	Hh: mm: ss	Set the current time of the system.
IDE Primary Master	Options contained in sub menu.	Press <Enter> to enter the sub menu.
IDE Primary Slave	Options contained in sub menu.	Press <Enter> to enter the sub menu.
IDE Secondary Master	Options contained in sub menu.	Press <Enter> to enter the sub menu.
IDE Secondary Slave	Options contained in sub menu.	Press <Enter> to enter the sub menu.
IDE Channel 2/3/4/5 Master	Options contained in sub menu.	Press <Enter> to enter the sub menu.
Drive A **Drive B**	360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5in 2.88M, 3.5 in None	Select the type of floppy disk drive installed in your system.
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device.
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/ Key	Select the situation in which you want the BIOS to stop the POST process and notify you.
Security	Options contained in sub menu.	Press <Enter> to enter the sub menu.
Base Memory	N/A	Displays the amount of conventional memory detected during boot up.
Extended Memory	N/A	Displays the amount of extended memory detected during boot up.
Total Memory	N/A	Displays the total memory available in the system.

Advanced BIOS Features
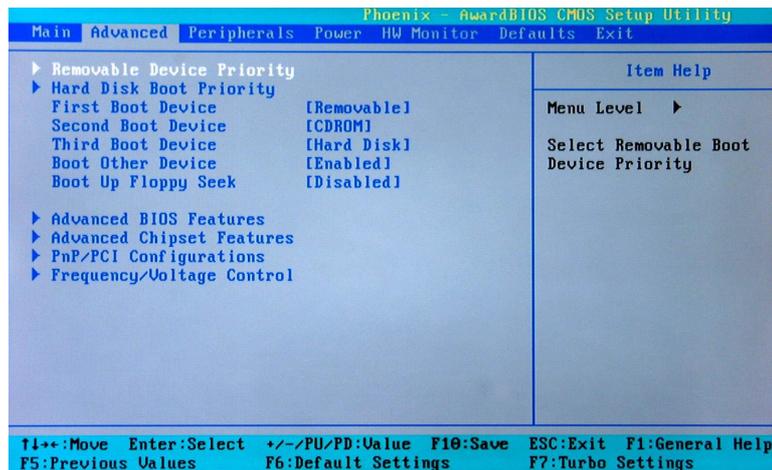
Removable Device Priority
Select removable device boot priority.

Hard Disk Boot Priority
Select hard disk drive boot priority.

First /Second/Third Boot Device
Select the order in which devices will be searched in order to find a boot device.

Options: Removable (default for first boot device), CD ROM (default for second boot device), Hard Disk (default for third boot device), Disabled.

Boot Other Device
Set to "Enabled" allows the system trying to boot from other devices if the system fails to boot from the 1st/ 2nd/ 3rd boot devices. Options: Enabled (default), Disabled.

Boot Up Floppy Seek
When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks. Drives with 720KB, 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to "Disabled".

Options: Enabled, Disabled (default).

Advanced BIOS Features

Virus Warning

Set the virus warning feature for IDE hard disk boot sector protection. If the function is enabled, any attempt to write data into this area will cause a beep and warning message display on screen. Options: Disabled (default), Enabled.

CPU Internal Cache

Make CPU internal cache active or inactive. System performance may degrade if you disable this item. Options: Enabled (default), Disable.

External Cache

This option allows you to enable or disable "Level 2" secondary cache on the CPU to enhance performance. Options: Enabled (default), Disabled.

Quick Power On Self Test

Allow the system to skip certain tests while booting. This will speed up the boot process.

Options: Enabled (default), Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose "Enabled" to assign physical drive B to logical drive A and vice-versa. Options: Disabled (default), Enabled.

Boot Up NumLock Status

Select the power on state for NumLock.

Options: On (default)   Numpad keys are number keys.

Off   Numpad keys are arrow keys.

Typematic Rate Setting

When "Enabled", the "typematic rate" and "typematic delay" can be configured. Typematic Rate determines the keystroke repeat rate used by the keyboard controller.

Options: Disabled (default), Enabled

Typematic Rate (Chars/Sec)

The rate at which a character repeats when you hold down a key.

Options: 6 (default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

The delay before keystrokes begin to repeat. Options: 250 (default), 500, 750, 1000.

APIC Mode

By enabling this option, "MPS version control for OS" can be configured. Options: Disabled, Enabled (default).

MPS Version Control For OS

The 1.1 version is the older version that supports 8 more IRQs in the Windows NT environment. Choose the new 1.4 version for Windows 2000 and Windows XP.

Options: 1.4 (default), 1.1.

OS Select For DRAM > 64MB

Select "OS2" only if you are running the OS/2 operating system with greater than 64 MB of RAM. Options: Non-OS2 (default), OS2.

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

Self Monitoring Analysis and Reporting Technology is a technology that enables a PC to attempt to predict the possible failure of storage drives. Options: Disabled (default), Enabled.

Small LOGO (EPA) Show

This item allows you to show or hide the small LOGO EPA.

Options: Disabled (default), Enabled.

Advanced Chipset Features

DRAM Configuration

Timing Mode

This item allows you to select if you want to let the bios detect and use informations in SPD or it's you to configure those items below. Options: Auto (default), Manual.

Memclock index value (Mhz)

This item allows you to select the memory clock. When it set to "auto", the system will automatically detect the memory clock. Options: 200, 100, 133, 166.

CAS# latency (Tcl)

This item determines CAS Latency. When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. Options: 2.0, 2.5, 3.

Min RAS# active time (Tras)

This item allows you to select DRAM Active to Precharge Delay.
Options: Auto, 5T, 6T, 7T, 8T, 9T, 10T, 11T, 12T, 13T, 14T, 15T.

RAS# to CAS# delay (Trcd)

Select the DRAM delay time when being read.

Options: Auto, 2T, 3T, 4T, 5T, 6T, 7T.

Row precharge Time (Trp)

You can set the time to precharge. Options: Auto, 2T, 3T, 4T, 5T, 6T, 7T.

1T/2T Memory Timing

Use this item to select the memory timing that you installed.
Options: 1T, 2T(default).

System BIOS Cacheable

When enabled, accesses to system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. Options: Enabled, Disabled (default).

PnP/PCI Configurations

PCI / VGA Palette Snoop
Some graphic controllers that are not VGA compatible take the output from a VGA controller and map it to their display as a way to provide boot information and VGA compatibility. Options: Disabled (default), Enabled.

PCI Latency Timer (CLK)
This item allows you to set up the PCI Latency Time (0-255). If you select the "32" it will optimize PCI speeds. Options: 0-255, 32 (default).

PCI Express relative items

Maximum Payload Size
This item allows you to set maximum TLP payload size for the PCI Express devices. The uinit is byte.
Options: 128, 256, 512, 1024, 2048, 4096(default).

Frequency/Voltage Control

CPU Speed Detected
This item displays the CPU speed information detected by the system.

CPU Host Frequency (MHz)
This item displays the CPU Host frequency. You can set it from 200 to 450. The default depends on your CPU frequency. The default for this field depends on the CPU installed.

CPU Spread Spectrum
The Spread Spectrum function can reduce the EMI (Electromagnetic Interference) generated. Options: Enabled (default), Disabled.

DDR Speed (strobe/sec)
This item display the current DDR speed (CPU Host frequency * Max Memclock ÷ 100).

Hammer Fid control
This item displays the CPU ratio information detected by the system.

Options: The options that will be available will depend on the default value of the CPU installed. For example, if the CPU default value is 10 then the options will be from 4 to 10.

Note: Before you try to make any adjustments to this option, make sure that your CPU Ratio is adjustable and has not been locked by the CPU manufacturer.

CPU Speed Setting
This item display the CPU speed that you setting for. If you don't change the "CPU Host Frequency" or the "CPU Clock Ratio" and the item will display the current CPU speed.

> CPU Speed = Current CPU Host Frequency x CPU Clock Ratio,
> DDR Speed = Current CPU Host Frequency x (Max Memclock ÷ 100)

HT Ratio

This item allows you to set Hyper Transport Frequency.

Options: 1x, 2x, 3x, 4x, 5x.

HT Frequency

This item displays the result of your HT Ratio setting.

PCIE Clock

This item allows you to select PCIE clock form 100 Mhz(default) to 145Mhz.

PCIE Spread Spectrum

The Spread Spectrum function can reduce the EMI (Electromagnetic Interference) generated.
Options: Enabled (default), Disabled.

CPU Voltage (Volt)

This item allows you to adjust your CPU core voltage. Options range from +15%, +10%, +5%,
Default.

DDR Voltage (Volt)

This item allows you to adjust the RAM voltage. Options: 2.7(default), 2.8, 2.9, 3.0.

Chipset Voltage (Volt)

This item allows you to adjust the North/ South bridge chipsets voltage.
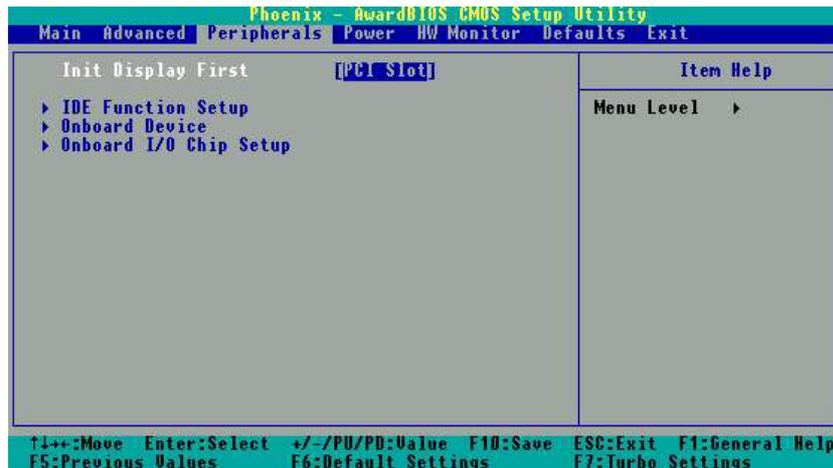
Options: 1.5v(default), 1.8v, 1.7v, 1.6v.

Attention

Before overclocking, please make sure your system components
are capable of overclocking. If you are familiar with the
overclocking, we strongly recommend you to set the clock to the
defult settings. We do not guarantee that damage will or will not
occur when overclocking.

Integrated Peripherals

Init Display First

With systems that have multiple video cards, this option determines whether the primary display uses a PCI slot or an PCIEx slot. Options: PCIEx, PCI Slot (default).

IDE Function Setup

If you highlight the "IDE Function Setup" label and then press the enter key, it will take you to a submenu with the following options:

OnChip IDE Channel 0/1

The mainboard chipset contains a PCI IDE interface with support for two IDE channels. Select "Enabled" to activate the first and/or second IDE interface. Select "Disabled" to deactivate an interface if you are going to install a primary and/or secondary add-in IDE interface.

Options: Enabled (default), Disabled.

Primary/Secondary   Master/Slave PIO

The IDE PIO (Programmed Input / Output) fields let you set a PIO mode (0-4) for each of the IDE devices that the onboard IDE interface supports. Modes 0 to 4 will increase performance incrementally. In Auto mode, the system automatically determines the best mode for each device. Options: Auto (default), Mode0, Mode1, Mode2, Mode3, Mode4.

Primary / Secondary   Master / Slave UDMA

Ultra DMA 100 functionality can be implemented if it is supported by the IDE hard drives in your system. As well, your operating environment requires a DMA driver (Windows 95 OSR2 or a third party IDE bus master driver). If your hard drive and your system software both support Ultra DMA 100, select "Auto" to enable BIOS support. Options: Auto (default), Disabled.

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IDE Prefetch Mode

The "onboard" IDE drive interfaces supports IDE prefetching for faster drive access. If you install a primary and/or secondary add-in IDE interface, set this option to "Disabled" if the interface does not support prefetching. Options: Enabled (default), Disabled.

IDE HDD Block Mode

Block mode is otherwise known as block transfer, multiple commands, or multiple sector read/write. Select the "Enabled" option if your IDE hard drive supports block mode (most new drives do).   The system will automatically determine the optimal number of blocks to read and write per sector. Options: Enabled (default), Disabled.

RAID Config

If you highlight the "RAID Config" label and then press the enter key, it will take you to a submenu with the following options:

SATA1/2   Primary/ Secondary RAID

This allows you to enable or disable the RAID function for the SATA1 /2/Primary/ Secondary device. Options: Enabled, Disabled(default).

Serial-ATA 1/2

This item allows you to enable or disable the SATA1/2 device. Options: Enabled (default), Disabled.

SATA Spread Spectrum

When you installed a SATA device this item will allow you to enable/ disable the SATA speed spread spectrum. We recommend you to enabled this item to decrease EMI noise.

Options: Enabled (default), Disabled.

Onboard Device

If you highlight the "Onboard Device" label and then press the enter key, it will take you to a submenu with the following options:

OnChip USB

This option should be enabled if your system has a USB port installed on the system board. You will need to disable this feature if you add a higher performance controller.

Options: V1.1+V2.0 (default), Disabled, V1.1.

USB Memory Type

This item allows you to set your USB Memory Type.

Options: SHADOW, Bast Memory(640k)(default).

USB Keyboard Support

This item allows you to enable the USB attached keyboards and storages.
Options: Disabled (default), Enabled.

AC97 Audio
This option allows you to control the onboard AC'97 audio.
Options: Enabled (default), Disabled.

MAC Lan
This option allows you to control the onboard LAN device.
Options: Enabled (default), Disabled.

Onboard I/O Chip Setup
If you highlight the "Onboard I/O Chip Setup" label and then press the enter key, it will take you to a submenu with the following options:

Power On Function
This field allows you to select a way to power on your computer. Options: Password, Hot KEY, Mouse Left, Mouse Right, Any KEY, BUTTON ONLY (default), and Keyboard 98.

Hot Key Power ON
This field allows you to use the Ctrl key along with a hot key (function key) to power on your system. This field is only configurable when "Power On Function" is set to "Hot Key".
Options: Ctrl-F1, Ctrl-F2…… Ctrl-F12.

Onboard FDC Controller
Select "Enabled" if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select "Disabled". Options: Enabled (default), Disabled.

Onboard Serial Port
Select an address and corresponding interrupt for the first/ second serial port.
Options: Disabled, 3F8/IRQ4 (default for port1), 2F8/IRQ3(default for port2), 3E8/IRQ4, 2E8/IRQ3, Auto.

Onboard Parallel Port
Select an address and corresponding interrupt for the onboard parallel port.
Options: 378/IRQ7 (default), 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode
This option allows you to select a parallel port mode for the onboard parallel port.
Options:　　ECP(default)　　Extended Capabilities Port.
　　　　　　EPP　　　　　　Enhanced Parallel Port.
　　　　　　SPP　　　　　　Standard Printer Port.
　　　　　　ECP+EPP　　　ECP & EPP mode.
　　　　　　Normal

EPP Mode Select

Select EPP port type 1.7 or 1.9. This field is only configurable if "Parallel Port Mode" is set to "EPP" or "ECP+EPP". Options: EPP 1.9(default), EPP 1.7.

ECP Mode Use DMA

Select a DMA Channel for the parallel port when using the ECP mode. This field is only configurable if "Parallel Port Mode" is set to "ECP". Options: 3 (default), 1.

PWRON After PWR-Fail

This field will determine whether your system will boot after restoring power after a power failure. If you select "On", the system will boot whether or not the system was on before power failure. If you select "Former-Sts", the system will be restored to the status before the power failure.
Options: Off (default), On, Former-Sts.

Power Management

The Power Management Setup Menu allows you to configure your system to utilize energy conservation features as well as power-up/ power-down options.

ACPI Suspend Type

The item allows you to select the suspend type using the ACPI operating system.

Options: S1 (POS) (default)   Power on Suspend
         S3 (STR)   Suspend to RAM
         S1 & S3   POS and STR

Power Management

There are three options of Power Management:

1. Min. Power Saving

Minimum power management

HDD Power Down = 15 minutes

2. Max. Power Saving

Maximum power management (only available for sl CPUs).

HDD Power Down = 1 minute

3. User Defined (default)

It allows you to set each mode individually.

When this option is enabled, each of the ranges is from 1 minute to 1 hour except for HDD Power Down, which ranges from 1 minute to 15 minute and includes a "disable" option.

Note: If you select Min. or Max. Power Saving modes, the "HDD Power Down" value will be fixed. User Define, Min Saving, Max Saving

Video Off Method

This option determines the manner in which the monitor goes blank.

Options:

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support (default)	Initial display power management signaling.

HDD Power Down

When enabled, the hard disk drive will power down after a certain configurable period of system inactivity. All other devices remain active.

Options: Disabled (default), 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15Min.

HDD Down In Suspend

This allows you to enable/ disable the hard driver power down in the suspend state.

Options: Disabled (default), Enabled.

Soft-Off by PWRBTN

In situations where the system enters a "hung" state, you can configure the BIOS so that you are required to press the power button for more than 4 seconds before the system enters the Soft-Off state.

Options: Delay 4 Sec, Instant-Off (default).

PCI PME Wake Up

This option will also cause the system to wake up with any onboard LAN activity.

Options: Disabled (default), Enabled.

Ring Wake Up

This option allows you to awaken the system upon receiving an incoming call to modem device. Options: Disabled (default), Enabled.

USB Wake up

This item allows you to awaken the system from suspend mode using a USB devices.

Options: Enabled, Disabled (default).

RTC Wake Up

When "Enabled", you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode. Options: Enabled, Disabled (default).

Day of Month Alarm

You can choose which date of the month the system will boot up. This field is only configurable when "RTC Wake Up" is set to "Enabled". Min=0 Max=31.

Time (hh: mm: ss) Alarm

You can choose the hour, minute and second the system will boot up. This field is only configurable when "RTC Wake Up" is set to "Enabled".

K8 Cool'n'Quiet Control

When set to "Auto", the system will auto control the CPU voltage and frequency depends the loading of system. Options: Auto, Disabled (default).

Hardware Monitor

This menu is for monitoring the system status such as temperature, voltage, and so on.

Load Defaults/Exit Menu
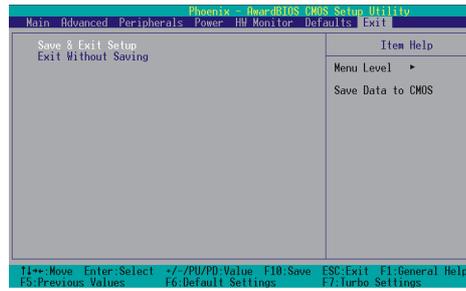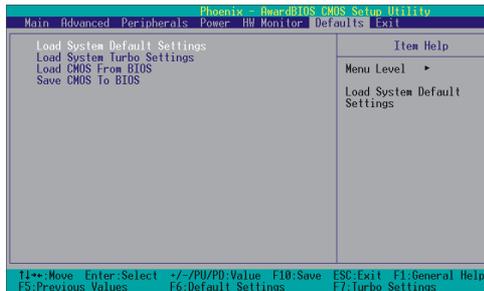
Load Defaults

Load System Default Settings

Load System Default Settings.

Load System Turbo Settings

Load System Turbo Settings.

Load CMOS From BIOS

Load defaults from flash ROM for systems without batteries.

Save CMOS To BIOS

Save defaults to flash ROM for systems without batteries.

Exit Menu

Save & Exit Setup

Save all configuration changes to CMOS (memory) and exit setup. A confirmation message will be displayed before proceeding.

Exit Without Saving

Abandon all changes made during the current session and exit setup. A confirmation message will be displayed before proceeding.

Chapter 3: Software Setup

Software List

Category	Platform
Microsoft DirectX9.0c	**Windows 98 /ME /2000 /XP**
nForce Chipset Driver	**Windows 2000 /XP**
Trend PC-Cillin 2005	**Windows 98 /ME /2000 /XP**
Adobe Acrobat Reader 5	**Windows 98 /ME /2000 /XP**
Dr. Speed	**Windows 2000 /XP**

Software Installation

Place the Driver CD into the CD-ROM drive and the Installation Utility will auto-run. You can also launch the Driver CD Installation Utility manually by executing the Intel.exe program located on the Driver CD. (For more details, please refer to the Readme.txt files that in each folder of the Driver.)

1. When you insert the driver CD into the CD ROM, you'll see the screen as the picture below. There are several buttons displayed in the main screen as shown below.

◎   The pictures shown below are for your reference only. The version of the software you received and shown on the screen may vary depending on models.

Attention
Please install Microsoft DirectX 9.0c (or the latest version), and then install the nForce Chipset Driver.

- Microsoft DirectX9.0c – It provides the software of Microsoft DirectX9.0c.
- nForce Chipset Driver – It provides all the drivers needed for the chipset. It also includes the audio driver.

2. Click the "Utilities" and you can choose the software to install.

- Trend PC-Cillin 2005 – It provides the software of Trend PC-Cillin 2005 (Anti-virus program).
- Microsoft DirectX9.0c – It provides the software of Microsoft DirectX9.0c.
- Adobe Acrobat Reader5 – Install this software, you can browse files with pdf format.
- Dr. Speed – Install this software, you can make the mainboard to provide higher efficiency of overclock function and more stable of voltages.

3. If you click the "Browse CD" button from the screen in step 1, you can browse all the files in the Driver CD.

4. Click "Exit" button to exit the program.

Chapter 4: Troubleshooting

Problem 1:

No power to the system. Power light does not illuminate. Fan inside power supply does not turn on. Indicator lights on keyboard are not lit.

Causes:

1. Power cable is unplugged.

2. Defective power cable.

3. Power supply failure.

4. Faulty wall outlet; circuit breaker or fuse blown.

Solutions:

1. Make sure power cable is securely plugged in.

2. Replace cable.

3.Contact technical support.

4.Use different socket, repair outlet, reset circuit breaker or replace fuse.

Problem 2:

System inoperative. Keyboard lights are on, power indicator lights are lit, hard drive is active but system seems "hung"

Causes: Memory DIMM is partially dislodged from the slot on the mainboard.

Solutions:

1. Power Down

2. Using even pressure on both ends of the DIMM, press down firmly until the module snaps into place.

Problem 3:

System does not boot from the hard disk drive but can be booted from the CD-ROM drive.

Causes:

1. Connector between hard drive and system board unplugged.

2. Damaged hard disk or disk controller.

3. Hard disk directory or FAT is corrupted.

Solutions:

1. Check the cable running from the disk to the disk controller board. Make sure both ends are securely attached. Check the drive type in the standard CMOS setup.

2. Contact technical support.

3. Backing up the hard drive is extremely important. Make sure your periodically perform backups to avoid untimely disk crashes.

Problem 4:

System only boots from the CD-ROM. The hard disk can be read and applications can be used but booting from the hard disk is impossible.

Causes: Hard Disk boot sector has been corrupted.

Solutions: Back up data and applications files. Reformat the hard drive. Re-install applications and data using backup disks.

Problem 5:

Error message reading "SECTOR NOT FOUND" displays and the system does not allow certain data to be accessed.

Causes: There are many reasons for this such as virus intrusion or disk failure.

Solutions: Back up any salvageable data. Then performs low level format, partition, and then a high level format the hard drive. Re-install all saved data when completed.

Problem 6:

Screen message says "Invalid Configuration" or "CMOS Failure."

Causes: Incorrect information entered into the BIOS setup program.

Solutions: Review system's equipment. Reconfigure the system.

Problem 7:

The Screen is blank.

Causes: No power to monitor.

Solutions: Check the power connectors to the monitor and to the system.

Problem 8:

Blank screen.

Causes:

1. Memory problem.

2. Computer virus.

Solutions:

1. Reboot computer. Reinstall memory. Make sure that all memory modules are securely installed.

2. Use anti-virus programs to detect and clean viruses.

Problem 9:

Screen goes blank periodically.

Causes: Screen saver is enabled.

Solutions: Disable screen saver.

Problem 10:

Keyboard failure.

Causes: Keyboard is disconnected.

Solutions: Reconnect keyboard. Replace keyboard if you continue to experience problems.

Problem 11:

No color on screen.

Causes:

1. Faulty Monitor.

2. CMOS incorrectly set up.

Solutions:

1. If possible, connect monitor to another system. If no color appears, replace monitor.

2. Call technical support.

Problem 12:

The screen displays "C: drive failure."

Causes: Hard drive cable not connected properly.

Solutions: Check hard drive cable.

Problem 13:

Cannot boot the system after installing a second hard drive.

Causes:

1. Master/slave jumpers not set correctly.

2. Hard drives are not compatible / different manufacturers.

Solutions:

1. Set master/slave jumpers correctly.

2.Run SETUP program and select the correct drive types. Call drive manufacturers for possible compatibility problems with other drives.

Problem 14:

Missing operating system on hard drive.

Causes: CMOS setup has been changed.

Solutions: Run setup and select the correct drive type.

Problem 15:

Certain keys do not function.

Causes: Keys jammed or defective.

Solutions: Replace keyboard.

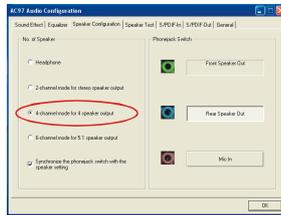# Appendix I: Super 5.1 Channel Audio Effect Setup

Channels Setup

1. After getting into the system, click the audio icon ⊚ from the Windows screen.
2. Click Speaker Configuration button, you can see the screen like the picture below.
3. You can choose 2, 4 or 6 channels by your speakers.

<div>

2 Channels   **4 Channels**   **6 Channels**

</div>

Super 5.1 Channel Audio Effect

This mainboard comes with an ALC655 Codec which supports high quality 5.1 Channel audio effects. With ALC655, you are able to use standard line-jacks for surround audio output without connecting to any auxiliary external modules. To use this function, you have to install the audio driver in the bonus Pack CD as well as an audio application supporting 5.1 Channel audio effects. See the audio Port Connectors in the Hardware Installation section for a description of the output connectors.

Speaker Test

Make sure the cable is firmly into the connector.

1. Click the audio icon ⊚ from the Windows screen.
2. Click Speaker Test button, you can see the screen like the pictures below.
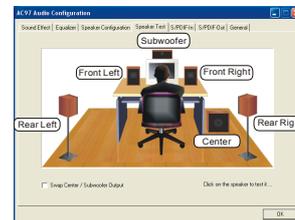3. Select the speaker which you want to test by clicking on it.

<div>

2 Channels   **4 Channels**   **6 Channels**

</div>

Appendix II: RAID Setup

Introduction to RAID

RAID (Redundant Array of Independent Disks) technology is a sophisticated disk management system that manages multiple disk drives. It enhances I/O performance and provides redundancy in order to prevent the loss of data in case of individual disk failure. The RAID facility on this board provides RAID 0, RAID 1, RAID 0+1 and RAID SPAN. The total number of drives you can apply depends on the number of connectors on your board. A board with 2 PATA connectors and 4 SATA connectors can connect up to 8 drives (4 PATA drives and 4 SATA drives). However one of the PATA drives may be used for the CD-ROM drive, in which case the maximum number of drives will be 5. The descriptions below are based on 2 PATA connectors and 4 SATA connectors.

Disk Striping (RAID 0)

Striping is a performance-oriented, non-redundant disk storage technology. With RAID striping, multiple disks are used to form a larger virtual disk. Data is then striped or mapped across all the physical disks. In this way, multiple I/O operations can be executed in parallel, enhancing performance. Striping does not provide fault tolerance. The minimum number of hard drives for RAID 0 is 2.

Disk Mirroring (RAID 1)

With Disk Mirroring there are redundant disks that mirror the primary disks. Data that is written to the primary disks are also written to the redundant disks. This redundancy provides fault tolerant protection from a single disk failure. If a read/write failure occurs on one drive, the system can still read and write data using the other drive. The minimum number of drives for a RAID 1 configuration is 2. You are required to use an even number of drives.

Disk Striping + Mirroring (RAID 0+1)

This mode combines both the performance benefits of RAID 0 with the fault tolerance of RAID 1. The minimum number of drives for RAID 0+1 configuration is 4 drives. This configuration also requires an even number of drives. **Note:** All mirrored configurations or striped/mirrored configurations should use drives of the same size.

RAID SPAN

RAID SPAN allows JBOD (Just a Bunch Of Disks) configurations which simply uses multiple disks to form a larger virtual disk without any other specialized disk management functionality. RAID SPAN is not considered a standard RAID implementation.

Before create RAID Array

Before you configure your RAID Array, you have to enable the "RAID config" option in the BIOS Setup Utility.

1. After you boot your system, press the "Del" key when prompted to enter the BIOS Setup Utility.

2. The "RAID config" option for enabling RAID will be found on the "Peripherals" screen as part of the "IDE Function Setup" section shown as below-left (Peripherals >> IDE Function Setup >> RAID config). Arrow down to the IDE RAID item and press enter.

3.On the "RAID config" screen (shown below-right), enable the disks that you want to use as RAID disks (in this example there are four SATA hard drives configured as RAID disks).
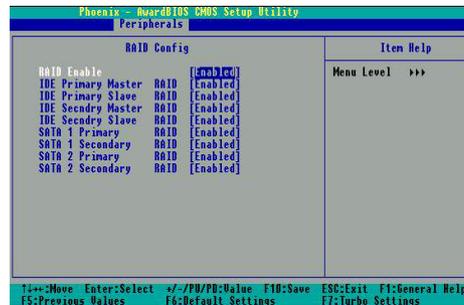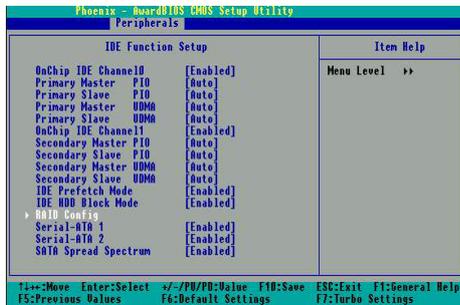
NVIDIA RAID Utility Configuration

The NVIDIA RAID Utility is used to configure RAID disk management into your hard disks. This section will explain how to setup and maintain your RAID disk drives.

Starting up the NVIDIA BIOS RAID Utility

When the system boots up during the POST (Power-On Self Test), you will be given an opportunity to enter the NVIDIA BIOS RAID Utility when the screen prompts you with following message:

Press F10 to enter RAID setup utility

Press the <F10> key to enter the NVIDIA BIOS RAID utility (note that you will only have a short window of time to press <F10> before the system continues with the next step of the boot process). The Raid Utility screen will display as shown right.
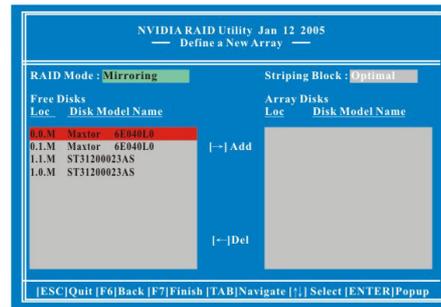
Associating Screen Drive Names

with Physical Drives on the Board

This section explains how to associate the drives listed on the "Define a New Array" screen with the physical drives attached to the connectors on the mainboard. This becomes important when identifying drives that need to be replaced or changed.

Channel, Controller, Master/Slave

Located here are 3 identifiers separated by periods. These identifiers represent the Channel, Controller, and Master/Slave ID for a drive. With these identifiers, you can associate the drives on this screen with a physical connector and drive on the board.

Channel 0 – Represents one of the PATA connectors

Channel 1 – Represents one of the SATA connectors

Controller 0 – 1st connector (e.g. PATA1 or SATA1)

Controller 1 – 2nd connector (e.g. PATA2 or SATA2)

Master/Slave – SATA drives will always be Master drives since an SATA connector can only support 1 drive. PATA connectors can support a Master and a Slave drive.
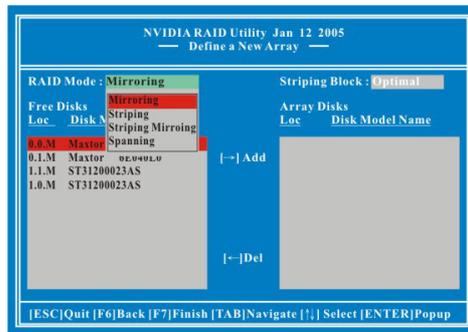
Examples:

On a board with 4 connectors (PATA1, PATA2, SATA1, SATA2), the following applies:

0.0.M = PATA1 (master drive)

0.0.S = PATA1 (slave drive)

0.1.M = PATA2 (master drive)

0.1.S = PATA2 (slave drive)

1.0.M = SATA1

1.1.M = SATA2

Creating New RAID Array

The first screen you will see upon initial configuration is the "Define New Array" screen. First, tab over to the "RAIDMode" text box and press <Enter>. The pop up menu will display as shown below. According to your configuration requirements, select "Mirroring" (RAID 1), "Striping" (RAID 0), "Striping Mirroring" (RAID 0+1) or "Spanning" (JBOD). Then press <Enter>.

Attention

The "Loc" and "Disk Model Name", located on this screen reflect the disk drives installed on the PATA or SATA connectors. The example disk drive information may differ with the information that displays on your screen.

Next, <Tab> over to the "Striping Block" option and press <Enter>. A pop menu will display as shown below. With this option you can manually select the striping block size for your array. This option will affect data access performance. We recommend that you to select "Optimal" option for automatic configuration. Press <Enter>.
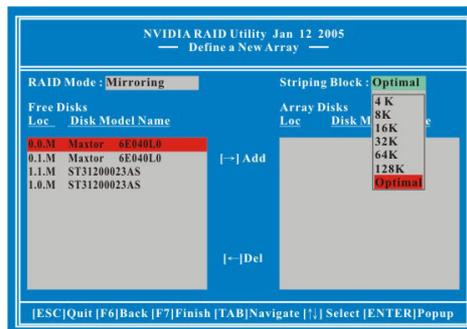
Next, in the "Free Disks" section, you can use the up/down arrow keys to select disks to be used in your RAID array. After highlighting a disk, use the right-arrow key to activate the disk as part of the RAID Array. The selected disk will move over to the "Array Disks" section. You can use the left-arrow key to reverse your selection. After you finish selecting all your disks, Press <F7>. A confirmation message will display as shown below. Then press <Y> to complete the RAID array creation.
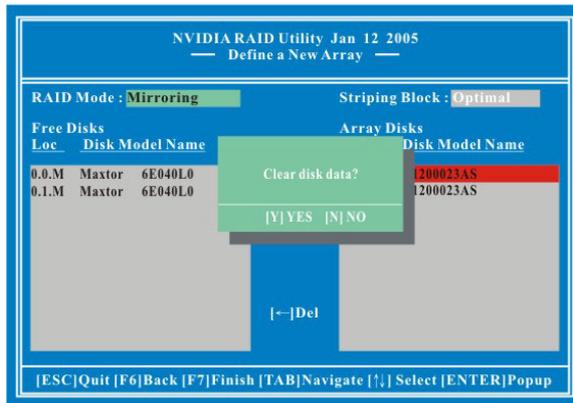
After the array has been successfully created, the Array List screen will display as shown below-left. You can press the Enter key to view the RAID details in the "Array Detail" screen.

RAID 1 mode (Array List)
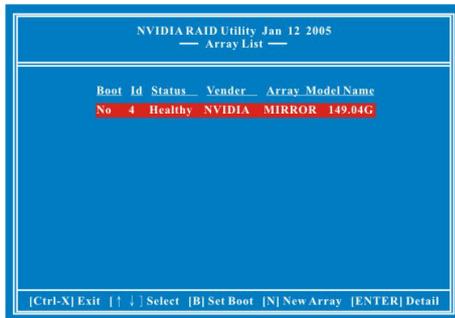
RAID 1 mode (Array Detail)
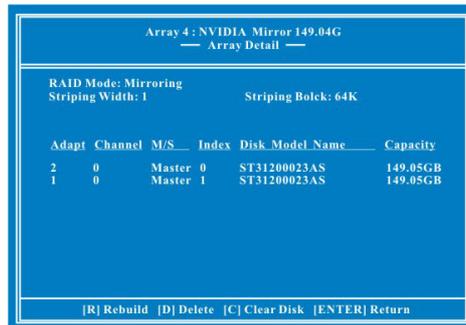
Deleting an Array

You can delete an existing array on the "Array Detail" screen. Press the <D> key. A warning/confirmation message will display (as shown below). Press <Y> to confirm.

```
        Array 4 : NVIDIA  MIRROR 149.04G
              ─── Array Detail ───

   RAID Mode: Mirroring
   Striping Width: 1              Striping Bolck: 64K


   Adapt  Channel  M/S        ┌─────────────────┐ ne      Capacity
                              │  Delete this array? │
   2        0      Ma         │                     │        149.05GB
   1        0      Ma         │   [Y] YES  [N] NO   │        149.05GB
                              └─────────────────┘



        [R] Rebuild  [D] Delete  [C] Clear Disk  [ENTER] Detail
```
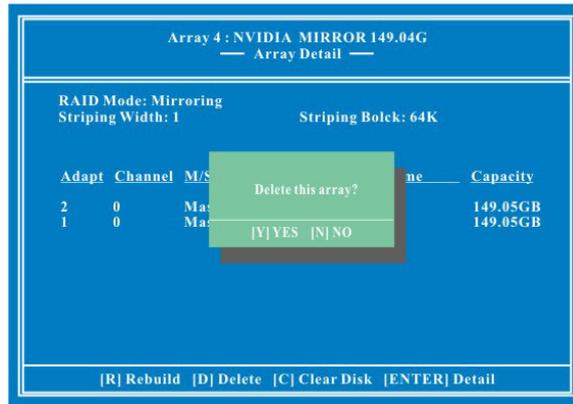
After the array is successfully deleted, the screen will display as shown below.

```
              NVIDIA RAID Utility  Jan  12  2005
                  ─── Define a New Array ───

   RAID Mode : Mirroring            Striping Block : Optimal

   Free Disks                       Array Disks
   Loc    Disk Model Name           Loc      Disk Model Name

   0.0.M   Maxtor   6E040L0
   0.1.M   Maxtor   6E040L0         [→] Add
   1.1.M   ST31200023AS
   1.0.M   ST31200023AS




                                    [←]Del


   [ESC]Quit [F6]Back [F7]Finish [TAB]Navigate [↑↓] Select [ENTER]Popup
```
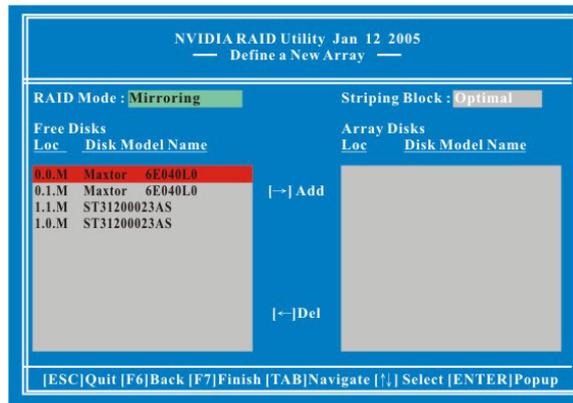
Rebuilding a RAID Mirrored Array

This section applies to Mirrored or Striped/Mirrored RAID configurations and describes how to reestablish the integrity of a mirrored environment after replacing one of the drives (typically because of a single disk failure). After replacing the errant drive, the rebuild process will move data from its mirrored sibling drive (the drive with information still intact) to the newly installed drive. This only applies to mirrored configurations (RAID 1 and RAID 0+1).

Before you rebuild a RAID Mirrored Array

Before you begin rebuilding a RAID Mirrored Array, you must copy the "NvRaidMan.exe" file from the bundled CD Driver to your C: drive. **[**CD File Location Path =>   D: \ Driver \ nForce \ 4.24 \ IDE \ WIN2K (or WINXP)\ NvRaidMan.exe**]**

To rebuild a mirrored array, bring up the NVIDIA RAID Utility. From the "Array List" screen, select the array with the newly installed drive. Then go to the "Array Detail" screen (press Enter). Then press the <R> key and use the up/down arrow keys to select the hard drive that you just installed. Then press <F7>. A confirmation message will display (as shown below). Press <Y> to confirm. Then press <Ctrl-X> to exit the "NVIDIA RAID Utility" setup.
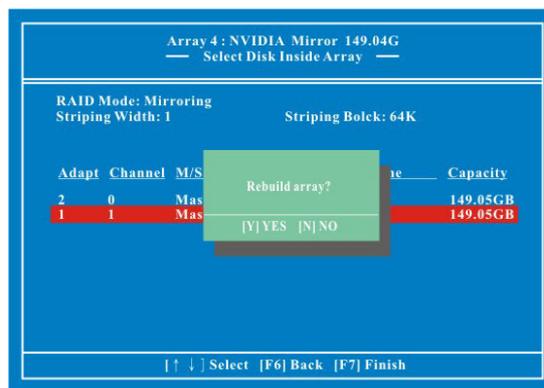

Launch the NVRAID Management utility by double-clicking the NvRaidMan.exe that has been copied to the C: drive. You can view the status of rebuilding under the Details section from the screen as shown below.

43
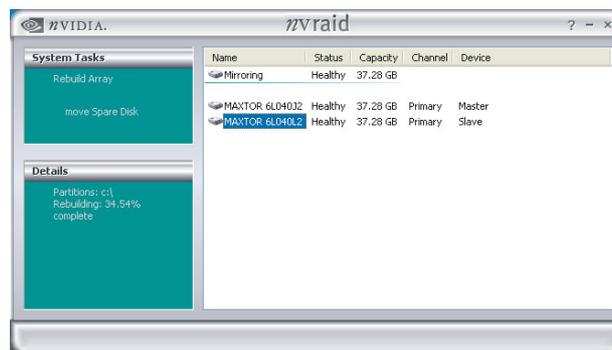
Install the OS of Windows® 2000/XP into your RAID HDDs

In this section, it will tell you how to install the operating system of Windows® 2000/XP into your RAID drives. The installation steps below will assume that your HDDs have already been attached to either the PATA or SATA connectors, and also your BIOS RAID Utility has already been configured (see NVIDIA BIOS RAID Utility Configuration section).

Preparation: Before starting to install the OS, copy the "RAID Driver" and associated files from the bundle CD Driver to an empty floppy disk [The files location in CD-ROM => \ Driver \ nForce \ 6.53 \ IDE\ Floppy \ *.*]. This will have to be done on another system if you are installing the system from scratch.

1.   During Windows installation, the "Windows Setup" screen will prompt you with "Press F6 if you need to install third party SCSI or RAID driver". Press <F6>.

2.   Press 's' when setup asks if you want to specify an additional device. Insert the floppy disk which includes the "RAID Driver" into the floppy drive. Press 'Enter' and select the appropriate OS device driver.

3.   Press 'Enter' again to continue the setup process.

4.   Follow the setup instructions and select your choice for partition and file system.

5.   After setup examines your disks, it will copy files to the Windows® 2000/ XP installation folders and restart the system. After the system is rebooted the setup program will continue with the installation all the way to completion.

6.   Wait until Windows® 2000/ XP finishes installing devices, regional settings, networking settings, components, and the final set of tasks. Reboot the system if you are asked to do so.

Attention
The RAID array can only work with the OS of Windows® 2000/ XP.

Appendix III: ABS (Albatron BIOS Security) Card Setup

Introduction

The ABS (Albatron BIOS Security) system provides your system with a recovery BIOS backup when your onboard BIOS has been damaged beyond system boot capability.

Preparation and Setup

You should prepare a boot floppy disk and have it ready in case of such BIOS failures. Otherwise you will have to find another computer to make the boot floppy disk from. When you make the disk, you should visit our website and download the latest version of the BIOS file for your mainboard along with the AWDFLASH.exe executable, placing both onto the floppy disk.

Onoboard BIOS Recovery Procedures

1. Make sure your system is turned off.

2. Set the jumper cap on the ABS_JP1 header located on the ABS Card to the "*Rescue BIOS*" position **(See Figure 1)**.

3. Remove the jumper caps (on pins 1-2, pins 3-4) from the mainboard BIOSCN1 header **(See Figure 2)**.

4. Insert the ABS Card onto the BIOSCN1 header on the mainboard. The ABS Card will fit over the entire the header and can only be inserted in one direction.

Figure 1

BIOSCN1

Figure2

45

5. Place the boot floppy disk (from the "Preparation and Setup" section) into the floppy drive and turn on your system.

Note: If your system is not setup to use the floppy drive as the first boot drive, you must enter the BIOS setup utility and make the appropriate adjustments. During the initial boot up sequence the screen will display a message that will give you an opportunity to enter the BIOS setup utility (typically, "Press Delete Key to enter BIOS utility") .

Once in the BIOS Utility, follow this path: Advanced -> Hard Disk Boot Priority -> First Boot Device and set the "First Boot Device" to "Removable".
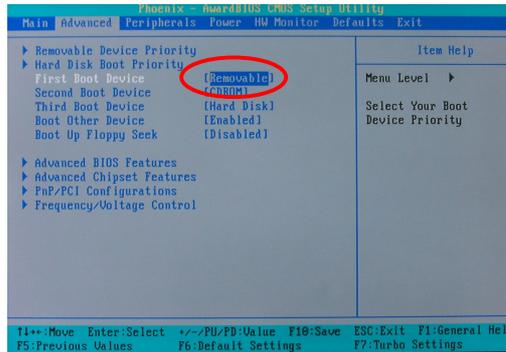

After the system boots from the floppy, the system will enter into the DOS mode (Note that the system has booted using the ABS card's BIOS).

6. With the system still running, you must carefully move the jumper cap on the ABS Card (ABS_JP1 header) back to its "*Onboard BIOS*" position. This disables the ABS BIOS which will now allow you to flash the corrupted mainboard BIOS from the floppy disk.

("Closed" means putting a jumper cap onto two adjacent header pins.)
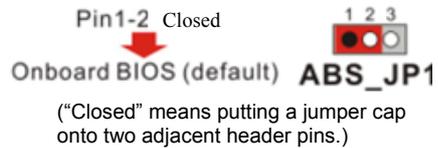
7. At the DOS prompt, type "DIR" and take notice of the name of the BIOS file name which ends with the extension ".bin" (e.g. K8N7003.bin"). There should also be an AWDFLASH.exe file present. Then type: **awdflash(space)(the file name of .bin).bin** (For example: awdflash(space) k8n7003.bin)
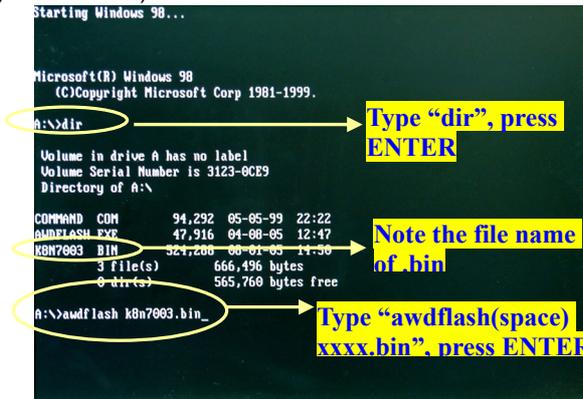
8. The initial AWARD BIOS FLASH screen (shown below-left) will appear and prompt you with the message, "Do you want to save BIOS?" Type "**N**" (**Note:** Typing "Y" is only used when saving the BIOS from the onboard BIOS to the floppy disk).
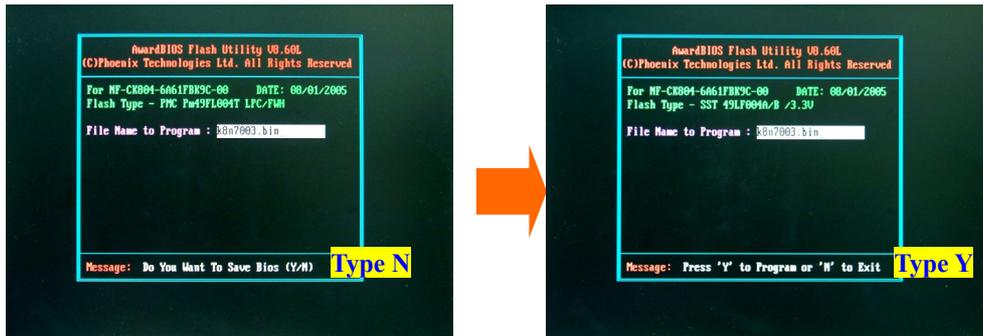
The next screen (shown above-right) will display a message "Press 'Y' to Program or 'N' to Exit". Then type '**Y**' to begin the onboard BIOS flash procedure.

9. The flashing procedure will take several minutes and will show its progress on the screen. After the flash BIOS procedures have completed, press '**F1**' to reboot the system.
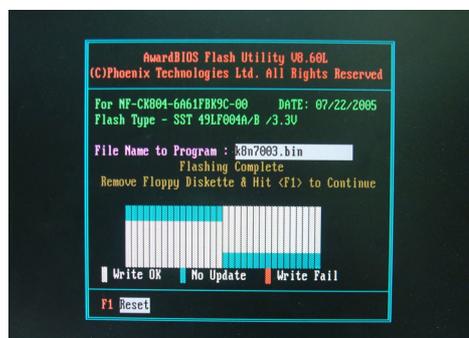
When the flash process is complete, press 'F1'

Attention
While processing the flash BIOS procedures, DO NOT power off or restart your system. Otherwise, it may damage the onboard BIOS.

10. During the next boot sequence, enter the BIOS utility program (**Note:** During the boot sequence you will be given a chance to enter the BIOS utility by pressing the "DEL" key on most systems). Load the system with the default settings, and save the changes before exit the BIOS utility program. Then the onboard BIOS recovery procedures are completed at this time.
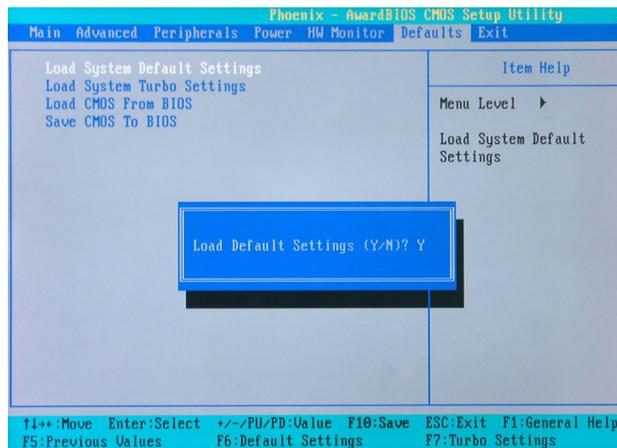
Follow the path: **Defaults** -> **Load System Default Settings** -> **Y .**
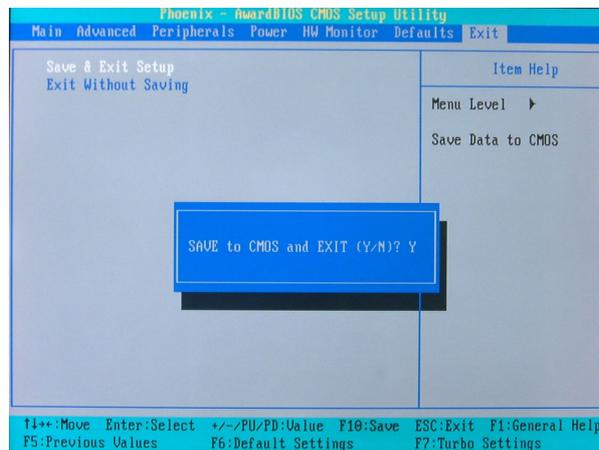
Follow the path: **Exit -> Save & Exit Setup -> Y .**

11. After you have recovered your onboard BIOS, you can choose to remove or not remove the ABS Card from the mainboard.

If you do choose to remove the ABS Card from the mainboard, make sure that the system is powered off before you remove the card. After you remove the ABS card you must replace the two jumper caps on the BIOSCN1 header back to the default positions (pins 1-2 and pins 3-4 are both closed as shown).

If you choose not remove the ABS Card from the mainboard, make sure that the jumper caps on the ABS_JP1 header located on the ABS Card to the "*Onboard BIOS*" as below, in order to reduce the damage opportunity of the rescue BIOS in ABS Card and on the other hand to extend the usage life of the ABS Card.

Pin1-2 Closed

Onboard BIOS (default) **ABS_JP1**

("Closed" means putting a jumper cap onto two adjacent header pins.)

Attention
If both your onboard BIOS and rescue BIOS are damaged unfortunately, the ABS Card will fail the feature of providing BIOS backup. Therefore, it is recommended that recover the onboard BIOS in advance, and take the ABS Card as emergency happen.