K8NF4-AM2

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K8NF4-AM2

nVIDIA® nForce4
Supports Socket AM2
AMD® Athlon™ 64 FX/ Athlon™ 64 x2 Dual-Core/
Athlon™ 64/ Sempron™ Processor

User Manual

Dimensions (Micro-ATX Form-Factor):
- 190 mm x 305 mm (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 from the product you received depending on specific hardware models, third party components and software versions.
- 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.
- Always unplug the AC power when you install or remove any device on the mainboard or when confuguring pins and switches.

Packing List

- ◇ K8NF4-AM2 mainboard
- ◇ FDC Cable
- ◇ HDD Cable
- ◇ I/O Bracket
- ◇ Serial ATA Cable
- ◇ K8NF4-AM2 Mainboard User Manual CD
- ◇ K8NF4-AM2 Setup Driver CD
- ◇ K8NF4-AM2 Mainboard Quick Installation Guide

Symbols

Attention- Important Information

Follow the procedures below…

Troubleshooting Tips

Refer to other sections in this manual…

Table of Contents

Chapter 1. Getting Started

Introduction

Congratulations on choosing the K8NF4-AM2 Mainboard. It is based on the nVIDIA® nForce4 chipset. The mainboard supports the AMD Athlon™ 64 FX/ Athlon™ 64 X2 Dual-Core/ Athlon™ 64/ Sempron™ Processor with FSB (Front Side Bus) frequencies of 1000 MHz (2000 MT/s).

The K8NF4-AM2 provides two DIMM (Dual In-Line Memory Modules) sockets and which with Dual Channel Technology supported. The sockets allow you to install 240-pin, non-ECC & unbuffered DDR II 800 (PC2-6400)/ DDR II 667 (PC2-5300)/ DDR II 533 (PC2-4300)/ DDR II 400 (PC2-3200) SDRAM, and support a total memory capacity of 4GB.

This mainboard provides one PCI-E x16 slot for use with a graphics card, and four PCI slots for expansion cards which the PCI interface compatible. In addition, one PCI-E x1 slot is provided by the mainboard for use with an expansion card which the PCI-E x1 interface compatible.

The K8NF4-AM2 provides one floppy disk drive connector that can be used with 360KB/ 720KB/ 1.2MB/ 1.44MB/ 2.88MB drive. It also has two IDE connectors for hard drives supporting Ultra ATA 133/ 100/ 66/ 33 IDE devices. In addition, the onboard Serial ATA comes with four SATA connectors, which the interface can provide up to 1.5 Gb/s transmit speed and also support RAID 0/ 1/ 0+1 mode **(See Appendix II)**.

The onboard AC' 97 Audio CODEC (ALC655) 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) output/input function (Optional).

The K8NF4-AM2 also comes with an onboard 10/100 Mbps Ethernet LAN chip. There is a LAN port on the back panel of your case that you can directly plug into an internet cable.

In addition, there are maximal eight USB2.0/ 1.1 ports which can be set up on this mainboard.

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 responsibility for any errors or mistakes within.

Specification

CPU:

- Supports Socket AM2
- Supports AMD Athlon™ 64 FX/ Athlon™ 64 x2 Dual-Core/ Athlon™ 64/ Sempron™ Processor
- Supports Hyper-Transport™ Link Technology
- Supports 1000 MHz (2000MT/s) FSB (Front Side Bus) Frequencies

Chipset:

- Chipset – nVIDIA® nForce4
- I/O Controller – Fintek® F71872FG
- AC' 97 Aduio Codec – Realtek® ALC655
- LAN PHY – Realtek® RTL8201CL 10/100 LAN PHY

Memory:

- Two DIMM sockets with Dual Channel Technology supported
- Supports a total memory capacity of 4GB
- Supports to use the 240-pin, non-ECC & unbuffered DDR II 800 (PC2-6400)/ DDR II 667 (PC2-5300)/ DDR II 533 (PC2-4300)/ DDR II 400 (PC2-3200) SDRAM

Slots:

- Two PCI-Express interface slots for graphics cards and expansion cards:
  1. PCI-E x16 slot: Supports up to x16 mode with 4 GB/s one-way bandwidth
  2. PCI-E x1 slot: Supports up to x16 mode with 250 MB/s one-way bandwidth
- Four PCI slots with 133 MB/s one-way bandwidth per channel for expansion cards

FDC Connector:

- One floppy disk drive connector supporting up to two FDC
- Supports 360KB/ 720KB/ 1.2MB/ 1.44MB/ 2.88MB

Onboard IDE Connector:

- Two IDE connectors that support up to four IDE devices
- Supports Ultra ATA 133/ 100/ 66/ 33

● Supports high capacity hard disk drives

Serial ATA Connector:

● Four SATA connectors that support up to four SATA HDD
● Supports SATA 1.0 specification which provides 1.5 Gb/s transmit rate
● Supports RAID 0/1/ 0+1 mode

I/O facility Connectors:

● One multi-mode Parallel Port is capable to support as the following:
    1. Standard & Bi-direction Parallel Port
    2. Enhanced Parallel Port (EPP)
    3. Extended Capabilities Port (ECP)
● One PS/2 mouse port and one PS/2 keyboard port
● One COM1 connector

Universal Serial Bus:

● Four onboard USB 2.0/ 1.1 ports
● Two front USB header comes with this mainboard supporting four additional USB ports to be set
● Supports a maximum of eight USB 2.0/ 1.1 ports for compliant devices

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 (optional)

Onboard LAN Chip:

● Supports 10/100 Mbps Ethernet LAN
● Supports nVIDIA® Active Armor ™, it provides advanced data packet inspection
● Supports nVIDIA® Firewall ™, it protects your system from intruders

BIOS:

- Phoenix-Award™ BIOS
- Supports APM 1.2
- Supports ACPI 2.0 power management

Green Function:

- Supports Phoenix-Award™ BIOS power management function
- Supports system-wake-from-power-saving-mode by keyboard or mouse touching

Shadow RAM:

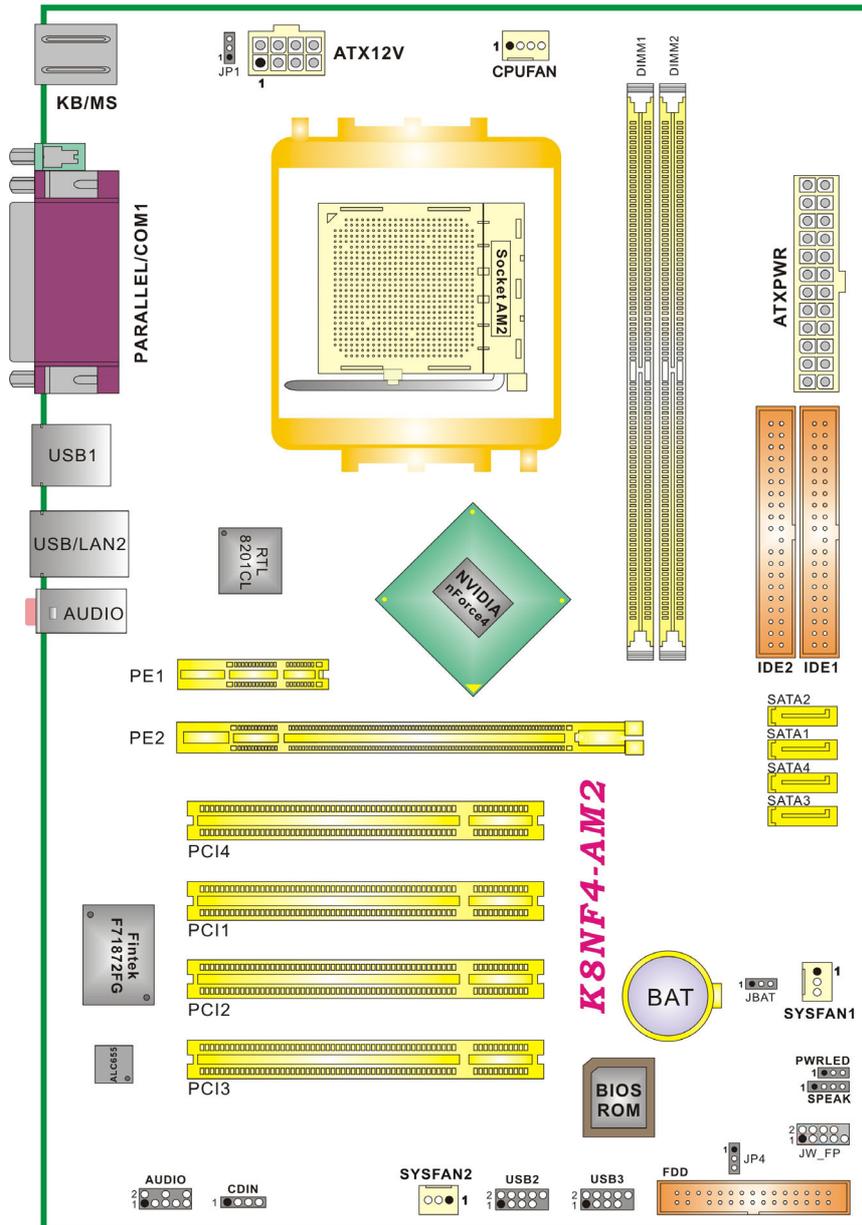- Integrated memory controller provides shadow RAM functionality and supports ROM BIOS

Flash Memory:

- Supports flash memory functionality
- Supports ESCD functionality

Hardware Monitor Function:

- Monitors CPU/ Chassis Fan Speed
- Monitors CPU and system temperatures
- Monitors system voltages

Configuration
Layout of K8NF4-AM2

Hardware Installation

This section will assist you in quickly 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 FX/ Athlon^{TM} 64 x2 Dual-Core/ Athlon^{TM} 64/ Sempron^{TM} processor and uses a Socket AM2. Before building your system, we suggest you visit the AMD website and review the processor installation procedures. http://www.amd.com

CPU Socket AM2 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.

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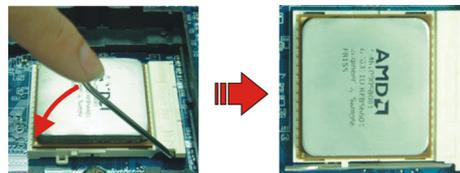
4. Smear thermal grease on top of the CPU. Lower the CPU fan onto the CPU and use the clasps on the fan to attach it to the socket. Finally, extend the power cable from the fan and insert it onto the "CPUFAN" adapter.
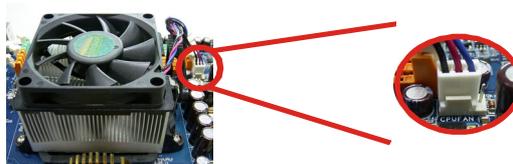
Attention

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, SYSFAN1, SYSFAN2

There are three fan headers available for cooling fans. The cooling fans play an important role in maintaining ambient temperatures in your system. The CPUFAN header is attached with a CPU cooling fan. The SYSFAN1 and SYSFAN2 headers are attached with other cooling fans.

CPUFAN

SYSFAN1/ SYSFAN2

Attention

You can avoid damaging your CPU due to high temperatures with proper cooling equipment. It is recommended that attach a cooling fan on top of your CPU. Use the CPUFAN header to attach the fan cord.

On most fan power cord, the black wire of the fan cable is the "ground" and should be attached to pin-1 of the header.

Memory Installation: DIMM1/2

The K8NF4-AM2 provides two DIMM (Dual In-Line Memory Modules) sockets with Dual Channel Technology supported. The sockets allow you to install 240-pin, non-ECC & unbuffered DDR II 800 (PC2-6400)/ DDR II 667 (PC2-5300)/ DDR II 533 (PC2-4300)/ DDR II 400 (PC2-3200) SDRAM, and support to install a total memory capacity of 4GB.

DIMM1

DIMM2
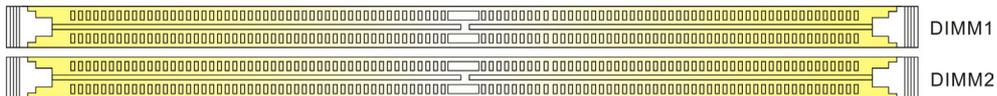
Attention

It is recommended that to install memories which are identical specifications (same timing specifications and same DDR II speed) to achieve the best effects. It may cause the failure of power-on or lower memory speed if installing different type, SPD (series presence detects) memories.

How to Enable Dual-Channel functionality:

1. This mainboard provides Dual-Channel functionality for the two DIMM sockets. Enabling Dual-Channel can significantly increase your data access rates. DIMM1 and DIMM2 share one channel.

2. For enabling Dual-Channel, you have to install two memories in the DIMM sockets at the same time; according to the definition by Intel, once one channel of the memory capacity is the same with the other channel, then Dual-Channel will be enabled.

3. *For example,* if you install one 256 MB memory in DIMM1 and the other one in DIMM2 (256MB x 2 = 512MB), so that the Dual-Channel can be enabled.

4. If you only need to install one memory, then the Dual-Channel won't be enabled.

Memory Installation Steps:

1. Pull the white plastic tabs at both ends of the slot away from the slot.
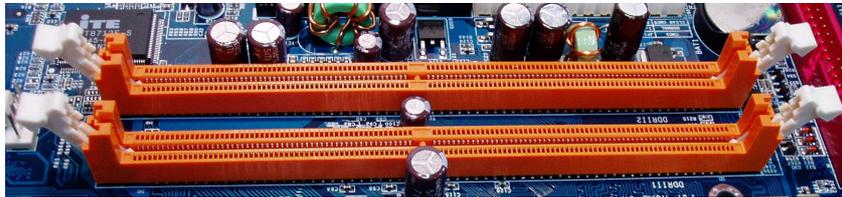
2. Match the notch on the RAM module with the corresponding pattern in the DIMM slot. This will ensure that the module will be inserted with the proper orientation.
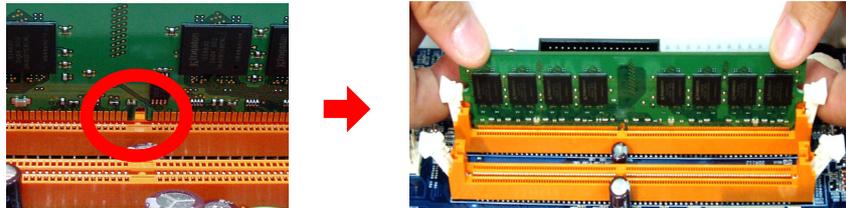
3. Lower the RAM module into the DIMM Slot and press firmly using both thumbs until the module snaps into place.
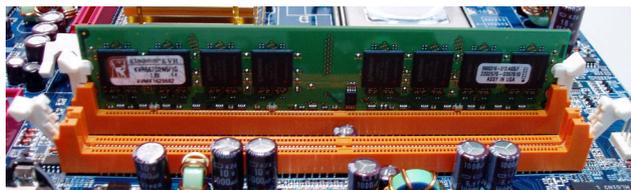
4. Repeat steps 1, 2 & 3 for the remaining RAM modules.

> * The pictures above are for reference only. Your actual installation may vary slightly from the pictures.

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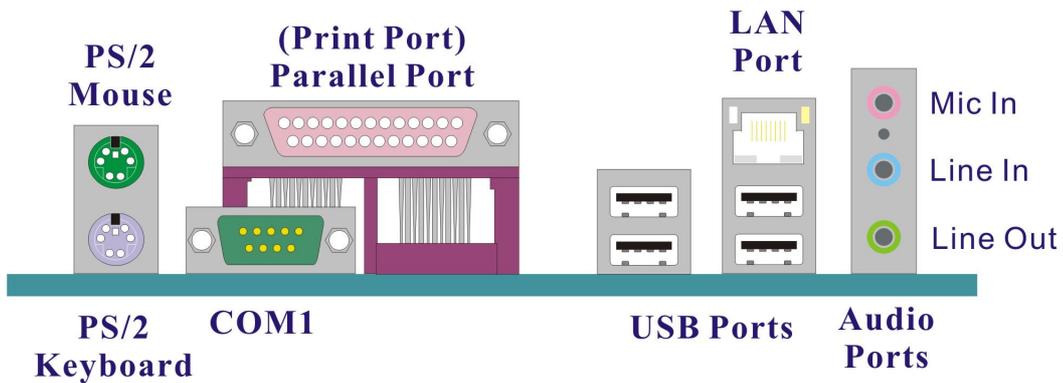
PS/2 Mouse & PS/2 Keyboard Ports: KB/MS

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

Serial and Parallel Interface Ports

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

Parallel Interface Port: PRT

The parallel port on your mainboard is a standard 25-pin one, and is used to connect a parallel printer.

The Serial Interface: COM1

This mainboard provides a serial port COM1 on your back panel, and is used to connect mice, modem and other peripheral devices. Through this port, you can also transfer data from your computer hard disk drive to other computers.

USB & LAN Ports: USB1, USB2, USB/LAN

There are six 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.

Audio Ports: CN1

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

Mic-In (Pink)

This port is for connecting to a microphone. When the Super 5.1 Channel Audio Effect is enabled, this port will output audio for your subwoofer/center speakers.

Line-In (Blue)

This port is for audio input and connects to external audio devices such as CD player, tape player, etc. When the Super 5.1 Channel Audio Effect is enabled, this port will output audio for the rear speakers.

● Mic in

● Line in

● Line out

Audio Ports

Line-Out (Green)

This port is an output audio port used for connecting to speakers or a headset. When the Super 5.1 Channel Audio Effect is enabled, this port will output audio for the front speakers.
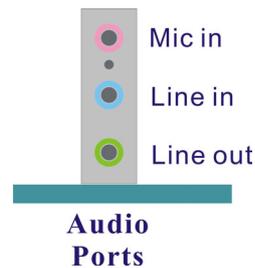
> This mainboard supports Super 5.1 Channel Audio Effect which allows you to transform your 2 speaker audio system into a 6 speaker audio system. See **Appendix I** for more information.

Connectors

Floppy Disk Drive Connector: FDD

The mainboard provides a standard floppy disk drive connector (FDD) that supports 360KB/ 720KB/ 1.2MB/ 1.44MB/ 2.88 MB floppy disk drives using a FDD ribbon cable.

Hard Disk Drive Connectors: IDE1/IDE2

The mainboard provides two IDE connectors that support Ultra ATA 133/ 100/ 66/ 33 IDE devices. You can attach a maximum of four IDE devices, such as hard disk drive (HDD), CD-ROM, DVD-ROM, etc. using IDE ribbon cables.

Primary IDE Connector: IDE1

In general, two IDE devices can be attached onto one IDE connector. If you attach two IDE HDD, you 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 IDE HDD, and remember to configure one drive as the Master and the other one as the Slave as well. In addition, it is recommended that attach the optical devices such as CD-ROM, DVD-ROM, etc. onto this IDE2 connector.

SATA Connector: SATA 1/2/3/4

The four SATA connectors support 1.5 Gbps transmission speeds and RAID 0/ 1/ 0+1 mode. One SATA connector only can attach one SATA HDD of each time using SATA cables.

	Pin	Assignment	Pin	Assignment
SATA1~4	1	Ground	2	TX+
	3	TX-	4	Ground
	5	RX-	6	RX+
	7	Ground		

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

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

Front Panel Headers: JW_FP, PWRLED, SPEAK

JW_FP

Pin	Assignment	Function	Pin	Assignment	Function
1	VCC5 (+)	Hard Drive LED (HDLED)	2	VCC5 (+)	2-pin Power LED (PWR LED)
3	HDDLE (-)		4	PWRLED (-)	
5	GND	Reset Switch (RESET)	6	PWRBTN	Power-on Button (PWRBTN)
7	RSTSW		8	GND	
9	N/A		10	Key	

Hard Drive LED Header: HDLED

If your case front panel has a hard drive LED cable, attach it to this header. The LED will flicker when there is hard disk drive activity.

Reset Switch Header: RESET

This header can be attached to a momentary SPST switch (reset button) cable on your case front panel. 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: PWRBTN

This header can be attached to a power switch cable on your case front panel. You can turn your system on or off by pressing the button attached to this power switch cable.

2-pin Power LED Header: PWR LED

The mainboard provides a 2-pin power LED header. If there is a 2-pin power LED cord on your case front panel, you can attach it to the 2-pin power LED header. Then the power LED will illuminate while the system is powered on.

3-pin Power LED Header: PWRLED

The mainboard also provides a 3-pin power LED header. If there is a 3-pin power LED cord on your case front panel, you can attach it to this 3-pin header instead of attach to the 2-pin one on the SW/LED header.

	Pin	Assignment	Pin	Assignment
1 ● ○ ○ **PWRLED**	1	PWR_LED (+)	2	Key
	3	PWR_LED (-)		

Speaker Header: SPEAK

A speaker cable on your case front panel can be attached to this header. When you reboot the computer, this speaker will issue a short audible (beep). If there are problems during the Power On Self-Test, the system will issue an irregular pattern of audible beeps through this speaker.

	Pin	Assignment	Pin	Assignment
1 ● ○ ○ ○ **SPEAK**	1	SPK	2	N/A
	3	Ground	4	VCC5

Headers & Jumpers
Front USB Header: USB2/3

This mainboard provides four onboard USB 1.1/2.0 ports on the back panel of your case that attach to USB devices. There are two additional USB headers that can be connected by cables to four more USB ports on your case front panel giving you a possible 8 USB ports.

	Pin	Assignment	Pin	Assignment
USB2/3	1	VCC	2	VCC
	3	-DATA	4	-DATA
	5	+DATA	6	+DATA
	7	GND	8	GND
	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 On function Header: JP4

USB devices attached to the back panel USB ports can awaken the system from sleep mode. In order to enable this functionality, you must adjust the jumper caps on JP1 header for +5V or +5VSB mode depending on which USB port that the USB device is attached to.

JP4	Assignment	Assignment
Pin 1-2 Closed	+5V	USB Power On Disable (Default)
Pin 2-3 Closed	+5VSB	USB Power On Enabled

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

Keyboard Power On function Header: JP1

USB devices attached to the back panel USB ports can awaken the system from sleep mode. In order to enable this functionality, you must adjust the jumper caps on JP1 header for +5V or +5VSB mode depending on which USB port that the USB device is attached to.

JP1	Assignment	Assignment
1 Pin 1-2 Closed	+5V	KB/ USB Power ON Disable (Default)
1 Pin 2-3 Closed	+5VSB	KB/ USB Power ON Enabled

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

Clear CMOS Jumper: JBAT

The "Clear CMOS" function is used when you are unable boot your system and need to reset the BIOS settings (CMOS settings) back to the manufacturer's original settings. This is also a way to reset the system password if you have forgotten it.

JBAT	Assignment
1 Pin 1-2 Closed	Normal (Default)
1 Pin 2-3 Closed	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 JBAT header to OFF (2-3 Closed).
3. Wait several seconds.
4. Set JBAT 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: CDIN

The CD-IN connector is used to attach an audio cable to audio devices such as CD-ROMs, DVD-ROMs etc.

1 ●○○○

CDIN

Front Audio Connector: AUDIO

If your case front panel has audio ports, you can connect them to the Front Audio Header of this mainboard.   First, you must remove the jumper caps on this header and then attach the cables from the front panel to the pins on this header. You can use both the front audio panel and back panel audio simultaneously.   If you are not using front panel audio ports, leave the jumper caps on the header pins (Note: pins 5-6 and 9-10) to avoid problems with the back panel audio ports.

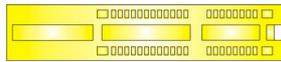| Pin	Assignment	Pin	Assignment
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_VCC
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	N/A
9	AUD_FPOUT_I	10	AUD_RET_L

Slots

PCI-Express x1 Slot: PE1

This mainboard is able to install an expansion card which the PCI-Express x1 interface compatible such as network card, SCSI card, etc. to this PE1 slot.

PE1

PCI-Express x16 Slot: PE2

This mainboard is able to install a graphics card, which the PCI-Express x16 interface, supporting one-way bandwidth up to 4 GB/s, is compatible to this PE2 slot.
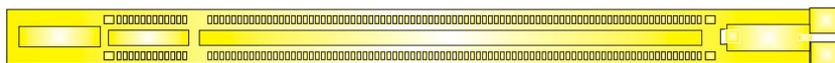
PE2

PCI Slots: PCI1/2/3/4

PCI stands for Peripheral Component Interconnect and is a bus standard for installing expansion cards such as network card, SCSI card, etc. to these PCI slots.

PCI

Power Supply Attachments

ATX Power Connector: ATXPWR, ATX12V

This mainboard provides two ATX power connectors, a 24-pin ATXPWR connector and a 8-pin ATX12V connector. You must use a power supply that ha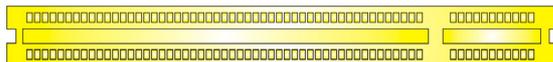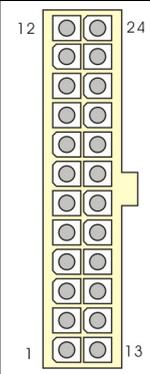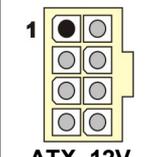s both of these connectors and both connectors must be attached before the system is powered on. These power connectors support several power management functions such as the instant power-on function. The connector pins are described below.

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	5	Ground
2	+12V	6	Ground
3	+12V	7	Ground
4	+12V	8	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™ 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™ 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

```
         Phoenix — AwardBIOS CMOS Setup Utility

  Standard CMOS Features        Thermal Throttling Options

  Advanced BIOS Features        Power User Overclock Settings

  Advanced Chipset Features     Password Settings

  Integrated Peripherals        Load Optimized Defaults

  Power Management Setup         Load Standard Defaults

  Miscellaneous Control         Save & Exit Setup

  PC Health Status              Exit Without Saving

  Esc : Quit   F9 : Menu in BIOS    ↑ ↓ → ← : Select Item

  F10 : Save & Exit Setup

              Time, Date, Hard Disk Type...
```

Standard CMOS Features
Include all the adjustable items in standard compatible BIOS.

Advanced BIOS Features
Include all the adjustable items of Award special enhanced features.

Advanced Chipset Features
Include all the adjustable items of chipset special features.

Integrated Peripherals
Include all onboard peripherals.

Power Management Setup
Include all the adjustable items of Green function features.

Miscellaneous Control
It is for you to specify settings for Miscellaneous Control, such as the CPU clock and frequency ratio.

Attention

Before going to update BIOS, please change the item,【Miscellaneous Control】→ 【Flash Write Protect】, from【Enabled】to【Disabled】. When the BIOS update is done, please adjust the item from【Disabled】to【Enabled】.

PC Health Status
It is for monitoring the system status such as temperature, voltage, and fan speeds.

Thermal Throttling Options
Set the function to low down the CPU temperature being at high workload to protect processor from damage or accidental shutdown when CPU temperature is over the value.

Power User Overclock Settings
It allows you to change the CPU Host/ DRAM clock for overclock demand.

Password Settings
Set change or disable password. It allows you to limit access to the system and/or BIOS setup.

Load Optimized Defaults
It can load the preset system parameter values to set the system in its best performance configurations.

Load Standard Defaults
It can load the preset system parameter values to set the system in its stable performance configurations.

Save & Exit Setup
Save CMOS value settings to CMOS and exit setup.

Exit Without Saving
Abandon all CMOS value changes and exit setup.

Chapter 3: Software Setup

Software List

Category	Platform
Microsoft® DirectX 9.0c	Windows 2000 /XP
nForce® Chipset Driver	Windows 2000 /XP
nVIDIA® Firewall	Windows 2000 /XP
Realtek® Audio Driver	Windows 2000 /XP
Adobe® Acrobat Reader 6	Windows 2000 /XP
Trend PC-Cillin® 2005	Windows 2000 /XP
Drive Clone	Windows 2000 /XP
Restore IT	Windows 2000 /XP

> **Attention:** You don't need to install the driver for USB 2.0 version if you are using Windows® XP with Service Pack 2 (or more advanced), or Windows® 2000 with Service Pack 4 (or more advanced).

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.)

◎ 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.

1. When you insert the driver CD into the CD-ROM, you'll see the screen as the picture below. There are several driver buttons displayed in the "Driver Menu" screen, and you can click on the drivers to install.

- **Microsoft DirectX 9.0c** – provides the software of Microsoft DirectX 9.0c.
- **nForce Chipset Driver** – provides all the drivers needed for the chipset.
- **nVIDIA Firewall** – provides firewall to protect your system from hackers and viruses.
- **Realtek Audio Driver** – provides the driver for being able to input/output audio.

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

2. Click on the "Utility Menu" button, you can choose the software to install.
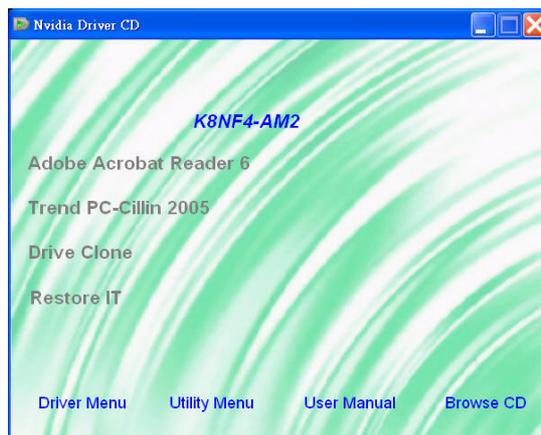
◆ **Adobe Acrobat Reader 6** – Installing the Adobe Acrobat Reader program, you can browse files with PDF styled.

◆ **Trend PC-Cillin 2005** – It provides the software of Trend PC-Cillin 2005 (Anti-virus program).

◆ **Drive Clone** – It provides the software of Drive Clone which is used to back up or clone hard drives or partitions.

◆ **Restore IT** – It provides the software of Restore IT to help you recover lost data or restore files.

3.   Click on the "User Manual" button, you can choose the manual to read.

Attention: Before you read manuals, you must install the driver of Adobe Acrobat Reader 6 to browse PDF files.

4.   If you click the "Browse CD" button, you can browse all the files in the Driver CD.

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 starting your system, click the Sound Effect Manager icon [icon] from the tool bar on the desktop. You can also find the icon by going to Start-> Setting -> Control Panel.

2. Click the Speaker Configuration button. One of the screens will display as shown below.

3. You can choose a 2, 4 or 6 channel (speaker) system.

2 Channels	4 Channels	6 Channels

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 [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.

2 Channels	4 Channels	6 Channels

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, RAID JBOD, and RAID 5.

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 Striped 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.

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).
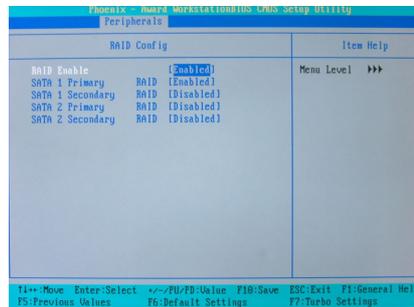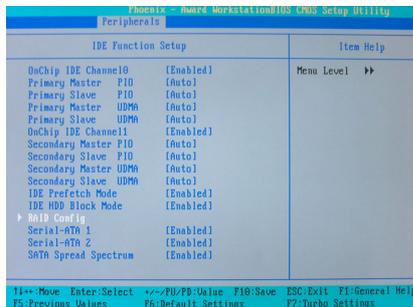
## NVIDIA RAID Utility Configuration

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.
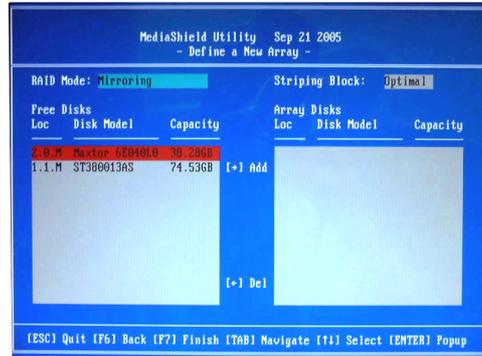
Associating Screen Drive Names with Physical Drives on the Board

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), "Spanning" (JBOD), or "RAID5". 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>.
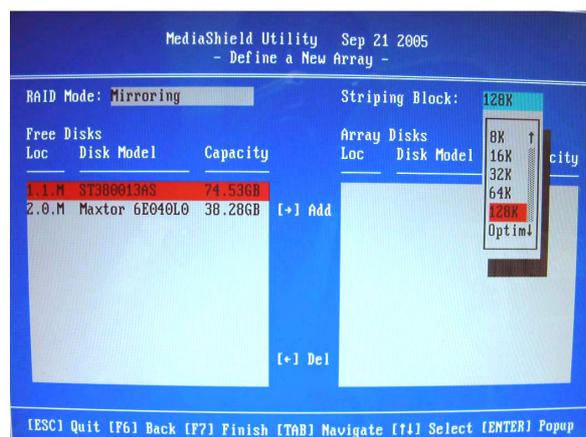
Next, in the "Free Disks" section, you can use the up/down arrow keys to select disks to be used in your RAID array. After highlighting a disk, use the right-arrow key to activate the disk as part of the RAID Array. The selected disk will move over to the "Array Disks" section. You can use the left-arrow 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.
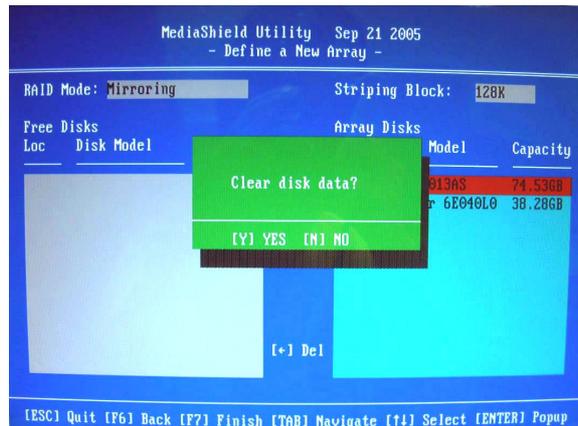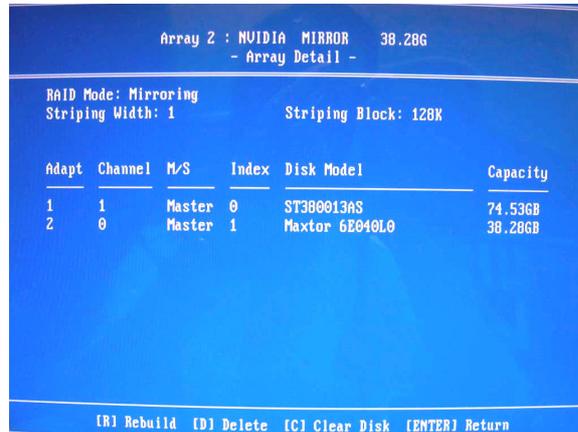

After the array has been successfully created, the Array List screen will display as shown below-left. You can press the Enter key to view the RAID details in the "Array Detail" screen.

RAID 1 mode (Array List)

30

RAID 1 mode (Array Detail)

Deleting an Array

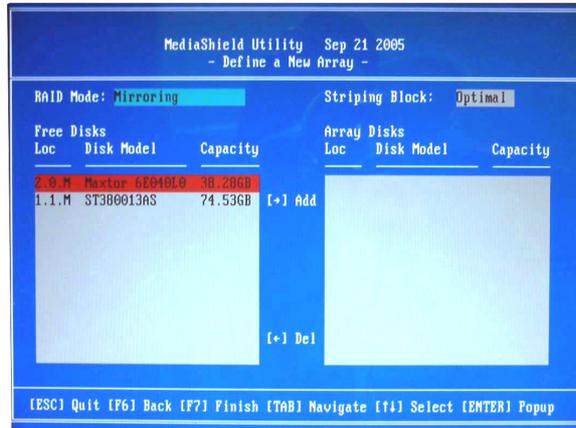You can delete an existing array on the "Array Detail" screen. Press the <D> key. A warning/confirmation message will display (as shown below). Press <Y> to confirm.
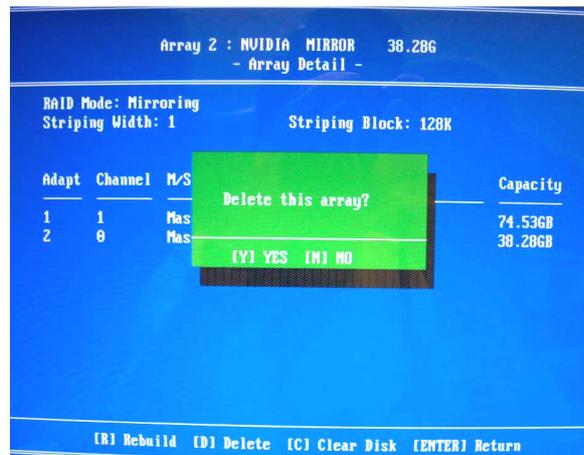
After the array is successfully deleted, the screen will display as shown below.

Rebuilding a RAID Mirrored Array

This section applies to Mirrored, Striped Mirroring RAID and RAID 5 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, RAID 0+1, RAID 5).

### 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.
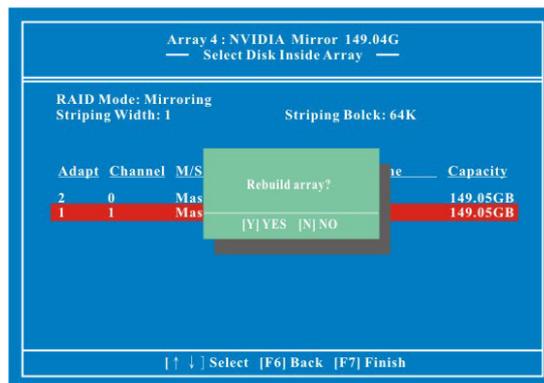
Launch the NVRAID Management utility by double-clicking the NvRaidMan.exe that has been copied to the C: drive. You can view the status of rebuilding under the Details section from the screen as shown below.
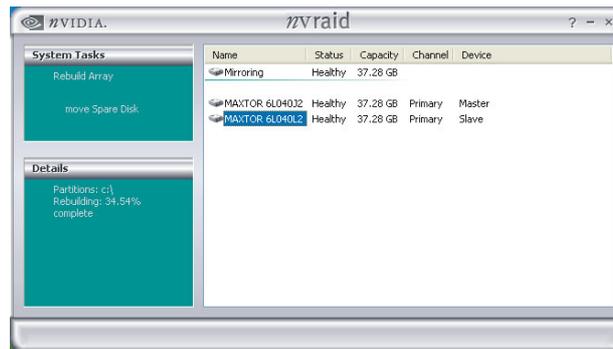
Install the OS of Windows® 2000/XP into your RAID HDDs

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.