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# Chapter 1 Specification

## Introduction

This mainboard features an integration of the powerful AMD Athlon 64 CPU and the single chip nVIDIA nForce3 250Gb, with which the whole system performance supports HyperTransport Bus up to 800MHz.

nVIDIA nForce3 250Gb supports on-board AMD Athlon 64 processor to implement HyperTransport 800MHz, the AGP 8X/4X interface, PCI interface, IEEE 802.3 nVIDIA MAC, the LPC Super I/O, the USB 2.0 interface, ATA 133/100/66 data transfer rate, and Serial ATA RAID interface. This chapter is to introduce to users every advanced function of this high performance integration.

**Topics included in this chapter are:**

**1-1 Mainboard Layout**

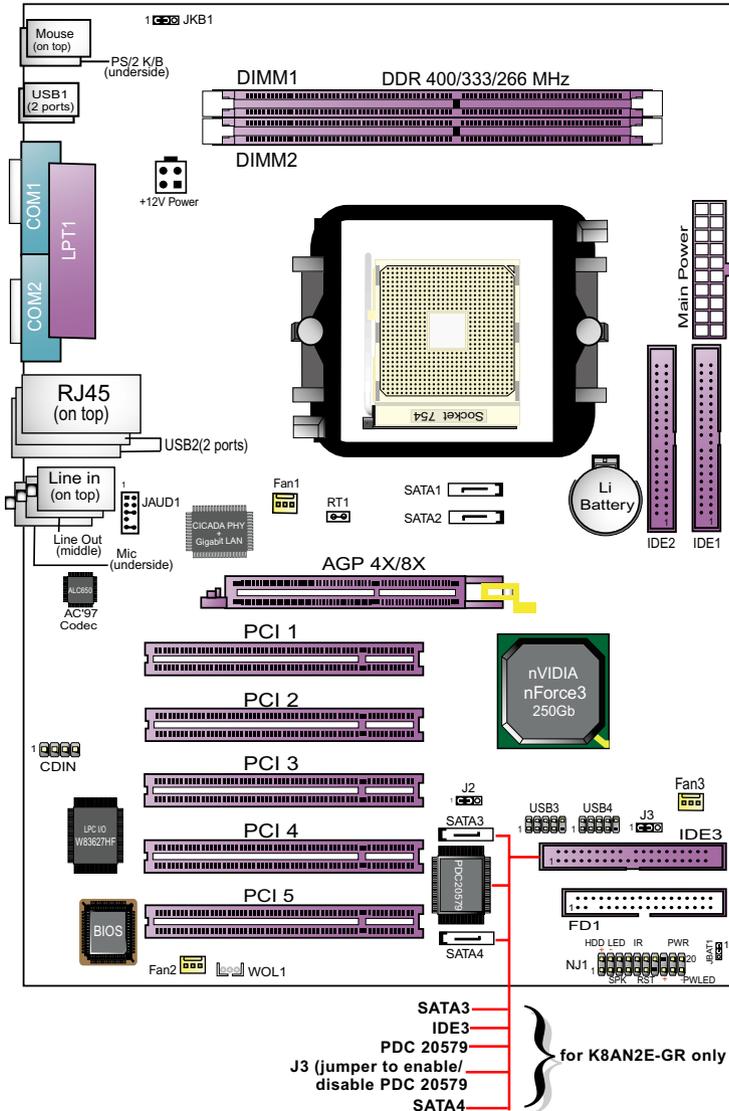
**1-2 Mainboard Specifications\*\***

**1-3 Mainboard Specification Table**

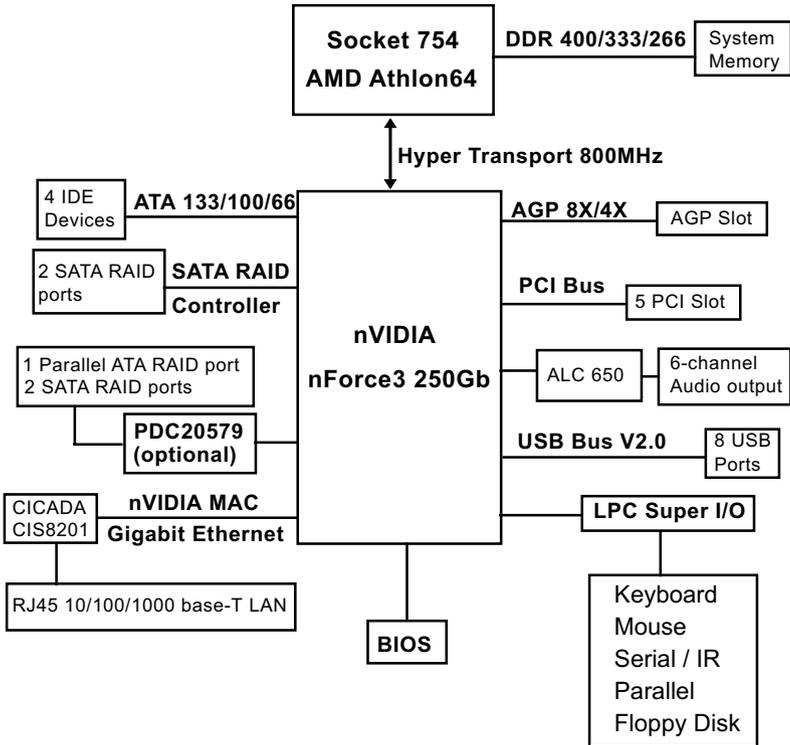
**1-4 Chipset System Block Diagram**

**\*\* If any difference is found between this manual and the Mainboard you are using, please look up the ERRATA/UPDATE Slip enclosed inside for the correction or updated information, or else contact the Mainboard Dealer or visit our Web Site for the latest manual update.**

## 1-1 SL-K8AN2-GR / K8AN2E-GR Mainboard Layout



## 1-2 Chipset System Block Diagram



Socket 754 + nVIDIA nForce3 250 Gb Diagram

### 1-3 Mainboard Specification Table

<b>SL-K8AN2-GR / K8AN2E-GR Specifications and Features</b>		
CPU	Socket 754 for AMD Athlon 64 CPUs	
System Chipset	Single chip nVIDIA nForce3 250Gb, supporting up to 800MHz HyperTransport Speed	
BIOS	Award BIOS	
Memory	Supporting DDR 400/333/266 SDRAM, up to 2GB in 2 DDR SDIMM slots	
I/O Chip	Winbond W83627 with Hardware Monitor support	
AGP interface	AGP 8X/4X mode only	
Audio	RTL ALC650 Audio Codec, 6-channel compliant	
IDE Interface	2 IDE ports for ATA 133/100/66; 1 IDE RAID port supported by PDC20579 Controller	
Serial ATA RAID Interface	2 SATA RAID ports supported by nForce3 250Gb ; 2 SATA RAID ports supported by PDC20579 Controller	
PCI Slots	5 PCI Master slots on board	
I/O Connectors	8 USB V2.0, 1 FDD port, 2 COM ports, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse	
Networking	Gigabit Ethernet supporting 10/100/1000 Base-T LAN	
Other common features	Keyboard/ Mouse Wake Up; ATX Power Supply V2.03; ATX form factor	
Optional Features	K8AN2-GR	K8AN2E-GR
SATA RAID (PDC20579)	No	Yes

## **1-4 Mainboard Specifications**

### **1-4.1 CPU**

CPU Socket 754 on board, supporting AMD Athlon 64 processors, implementing up to 800MHz Hyper Transport Speed (System Bus) designed to be capable of operating up to 1600MT/s with a resulting bandwidth of up to 6.4 Gbytes/s and integrated Memory Controller which supports up to DDR SDRAM at 200MHz

### **1-4.2 System Chipsets**

Media and Communication Processor nVIDIA nForce3 250 Gb:

- HyperTransport 800MHz to the AMD Athlon 64 processor
- AGP 8X interface at 533 MT/s (million transfers per second)
- PCI 2.3 interface
- Integrated SATA RAIDcontroller supporting SATA /SATA RAID interface
- Gigabit Ethernet through CICADA CIS8201 controller
- USB 2.0 interface supporting up to 8 USB ports
- Fast ATA-133 IDE controller

### **1-4.3 Memory**

2 DDR DIMM 184-pin slots on board :

- Supporting unregistered, non-ECC DDR 400/333/266 SDRAM up to 2GB
- Supporting installation of mixed volumes yet same type of DDR SDRAM modules
- SPD (Serial Presence Detect) Scheme for DIMM Detection supported

### **1-4.4 BIOS**

Flash Memory for easy upgrade, Year 2000 compliant, and supporting various hardware configuration during booting system (See Chapter 4 BIOS Setup):

- Standard CMOS Features (Times, Date, Hard Disk Type etc.)
- Advanced BIOS Features (Virus Protection, Boot Sequence etc.)
- Advanced Chipset Features (AT Clock, DRAM Timing etc.)
- Power Management Features (Sleep timer, Suspend Timer etc.)
- PNP/PCI Configurations (IRQ Settings, Latency Timers etc.)
- Integrated Peripherals (Onboard I/O, IRQ, DMA Assign. etc.)
- SmartDoc Anti-Burn Shield (CPU/System Temp., Fan speed etc.)
- CPU Ratio/Voltage Control (Voltage of CPU, DIMM, AGP etc.)

### **1-4.5 AGP (Accelerated Graphics Port) interface**

AGP Controller is embedded on board, supporting:

- 1.5V (8x/4x) power mode
- 8X 66MHz AD and SBA signaling; AGP pipelined split-transaction longburst transfers up to 2GB/sec.
- One AGP Slot on board, AGP v3.0 compliant

### **1-4.6 Multi-I/O Functions**

- PCI EIDE Controller, supporting:
  - 2 ATA 133 / 100 / 66 IDE connectors supporting up to 4 IDE devices
- Dedicated IR Functions:
  - 1x5 IR connector dedicated to IR function with Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
- Multi-mode parallel data transfer:
  - Standard mode, high speed mode ECP and enhanced mode EPP
- Floppy Drive Connector:
  - 1 FDD connector supporting 2 floppy drives with drive swap support
- Universal Serial Bus Transfer Mode:
  - USB V2.0 compliant, 480 MB/s USB Bus, by Windows 2000 / XP.
  - 4 built-in USB connectors and 2 more USB pin-headers which require 2 additional USB cables to provide 4 more USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
  - 2 complete serial ports on board

### **1-4.7 SATA and SATA RAID Interface**

SATA and SATA RAID Interface supported by nVIDIA nForce3 250 Gb:

- Supporting 2 Serial ATA connectors for 2 Serial ATA Hard Disks with 150Mb/s transfer rate
- Supporting RAID 0, 1, 0+1, configuration
- Serial ATA RAID Drivers enclosed in Support CD/Floppy Diskette for user's installation

### **1-4.8 Advanced System Power Management**

Advanced Configuration and Power Interface incorporated in BIOS for reducing power consumption :

- PowerNow! compliant
- ACPI V2.0 compliant (Advanced Configuration and Power Interface), Suspend Modes supported
- PCI PM 1.1 specifications

### **1-4.9 AC'97 Audio Codec on board**

RTL ALC 650 AC'97 Audio Codec on board:

- Supporting 6-channel playback of PCM audio output
- 6 channel audio consists of Front Left, Front Right, Back Left, Back Right, Center and Subwoofer for complete surround sound effect.
- AC'97 Audio Codec Driver enclosed in Support CD for user's installation

### **1-4.10 Hardware Monitor on board**

- Hardware Monitor supported by LPC I/O Winbond W83627HF, providing monitoring functions on hardware voltage, temperatures and fan speeds.
- Utility Software Soltek Hardware Monitor for displaying monitor status is enclosed in Support CD for user's installation.

### **1-4.11 Gigabit Ethernet Controller on board**

Gigabit Ethernet Controller CICADA CIS8201 on board:

- Supporting 10/100/1000Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45 LAN Connector
- LAN Driver enclosed in Support CD for user's installation.

### **1-4.12 Form Factor**

- Micro-ATX Form Factor, ATX Power Supply
- Mainboard size: 305mm x 220mm

# *Memo*

# Chapter 2 Hardware Setup

## To Get Things Ready for Hardware Setup !

1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User Manual for proper setup. Incorrect setting will cause damage to your CPU.

## The following topics are included in this chapter:

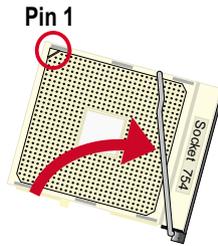
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## 2-1 CPU Installation with Socket 754

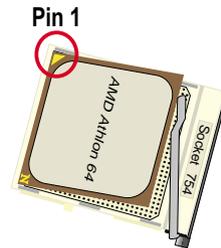
This series is built with CPU Socket 754 supporting the AMD CPUs Athlon 64:

- Follow the steps described in this section to install CPU into the on-board Socket 754.
- After installation of CPU, you must also install a proper cooling fan on top of the CPU and connect the Fan cable to the CPU fan connector.

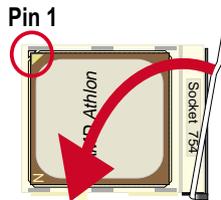
1. First pull sideways the lever of Socket 754, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the pin holes of the socket.



3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.



## 2-2 Socket 754 Athlon 64 Fan Installation

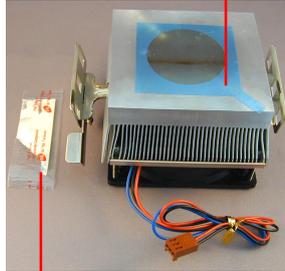
1. Note that the Socket 754 Cooling Fan is equipped with two metal latches.



Metal Latch without Lever.

Metal Latch with Lever.

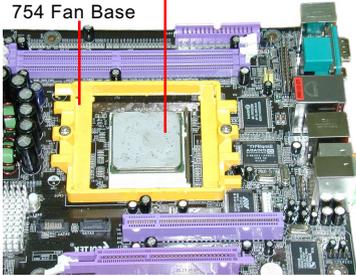
2. Turn over the Fan to the Heat Sink side. Tear away the protective plastic foil and then apply Heat Glue to Heat Sink.



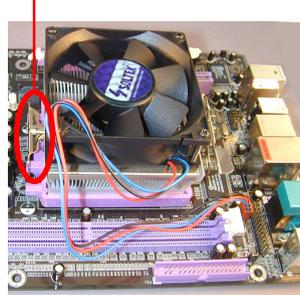
The Heat Glue can help disperse heat much better.

3. Insert 754 CPU into Socket 754 before settling down cooling Fan.

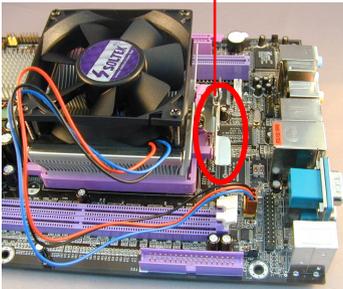
754 Fan Base



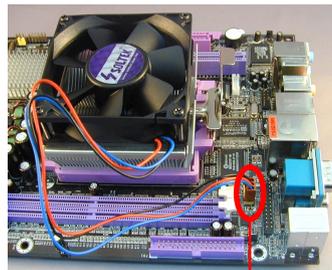
5. Fix the Metal Latch without Lever to Fan Base.



6. Fix the Metal Latch with Lever to Fan Base and press it down so as to lock fan to socket base.



7. Finally connect the Fan Power connector to the onboard CPU Fan connector.



CPU Fan Connector

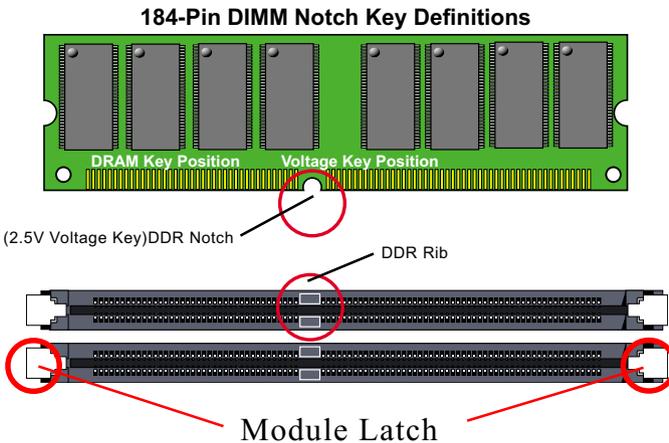
## 2-3 Memory Installation

### 2-3.1 How to tackle the memory Modules:

- Make sure to unplug your power supply before adding or removing memory module. Failure to do so may cause severe damage to both your mainboard and the memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM into a slot improperly will damage the memory module and slot itself.
- Make sure you have the right type of memory module for your mainboard.

### 2-3.2 To Install DDR SDRAM Module

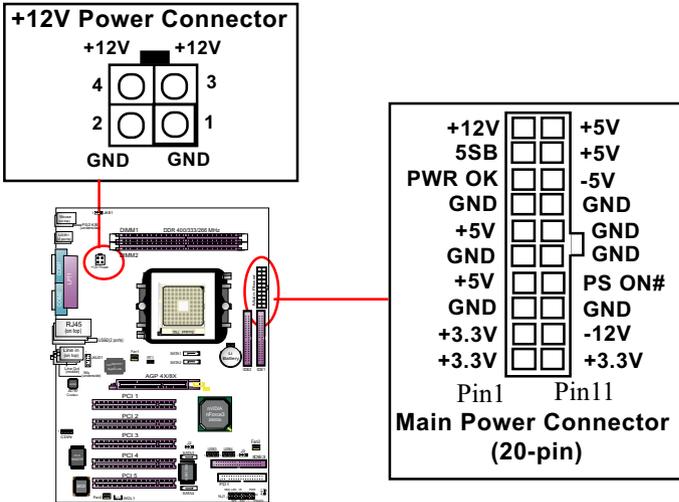
- This mainboard supports up to 2GB unbuffered DDR 400/333/266/200 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- DDR DIMM slot has 184-pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching. Press the Module down in a gradual way until it surely reaches the bottom and clicks straight up the two latches on the left and right of the slot. If any one of the latches has not turned up completely, you should unplug the module and press it down a bit more firmly.



## 2-4 ATX Power Supply Installation

To set up Power Supply on this mainboard:

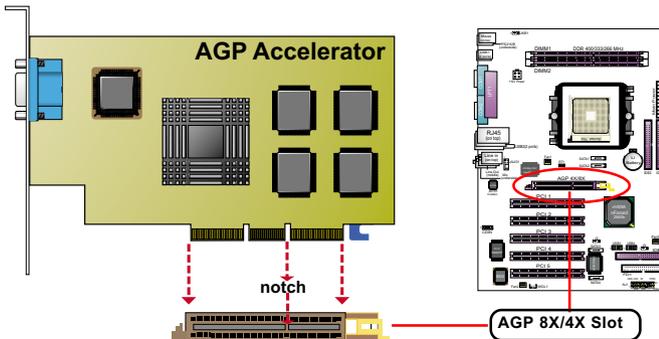
Both main Power Connector and the +12V Power Connector should all be connected to a V2.03 ATX Power Supply so as to boot system with sufficient power.



## 2-5 AGP Slot Installation

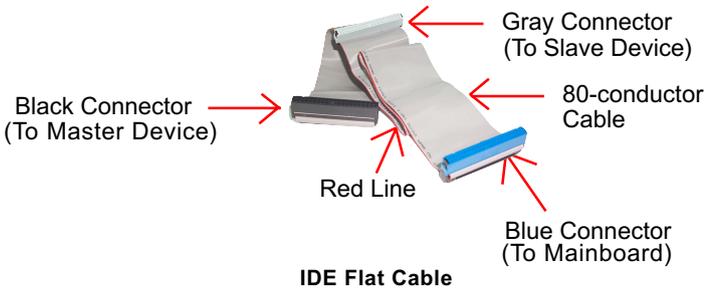
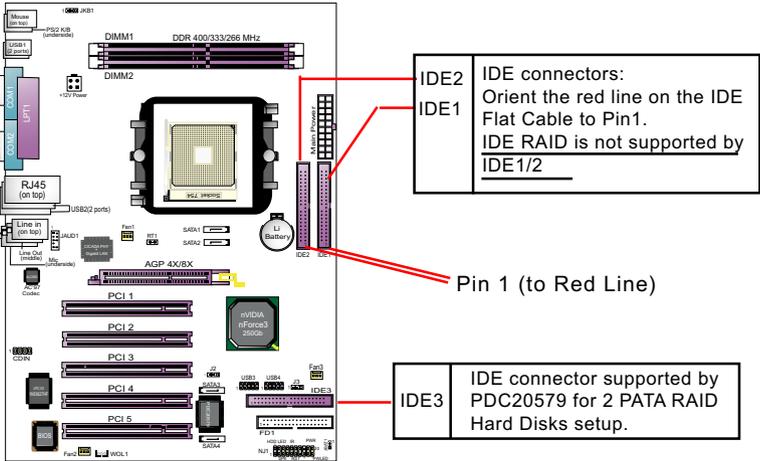
The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec., while an AGP 4X card will provide 1GB/sec transfer rate.



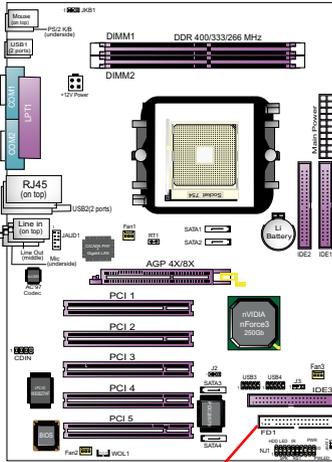
## 2-6 IDE Connector Installation

To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.

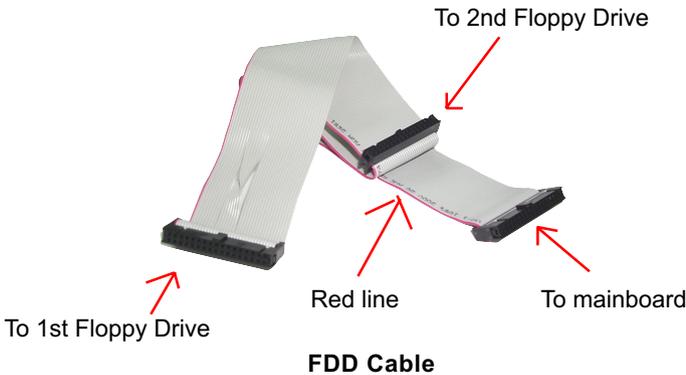


## 2-7 Floppy Drive Connector ( FDC ) Installation

To install FDC, you should connect the end of FDC cable with single connector to the board, and connect the other end with two connectors to the floppy drives.



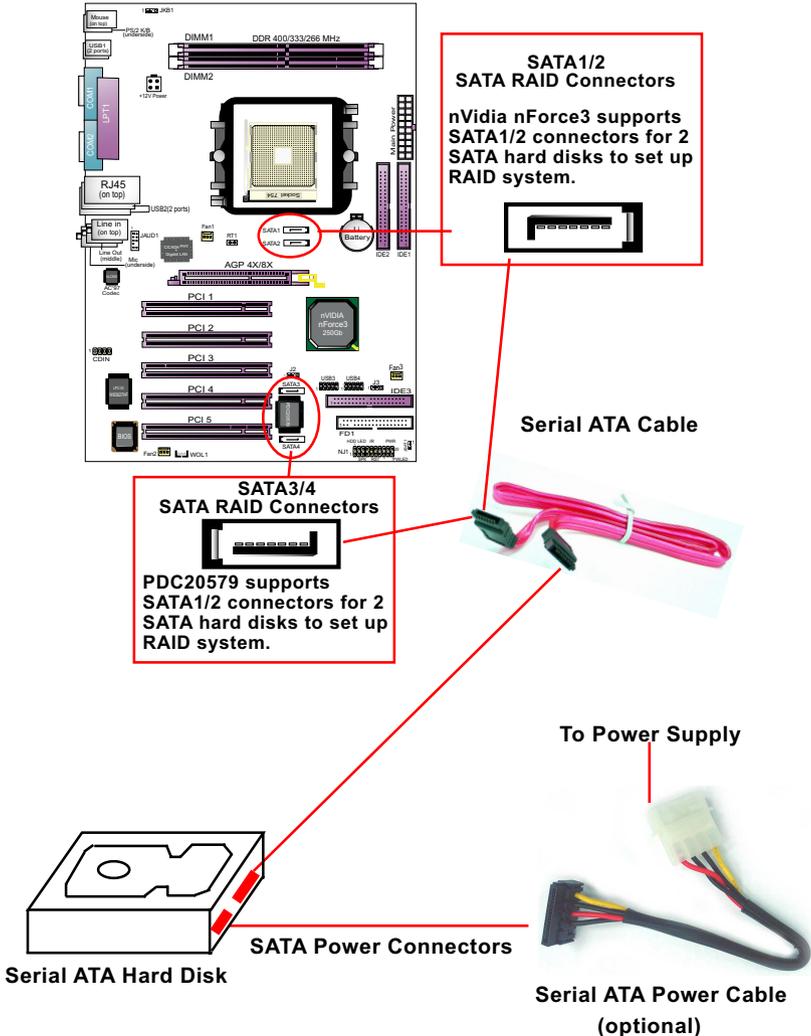
Pin 1 (to Red Line)



## 2-8 Serial ATA Connectors Installation

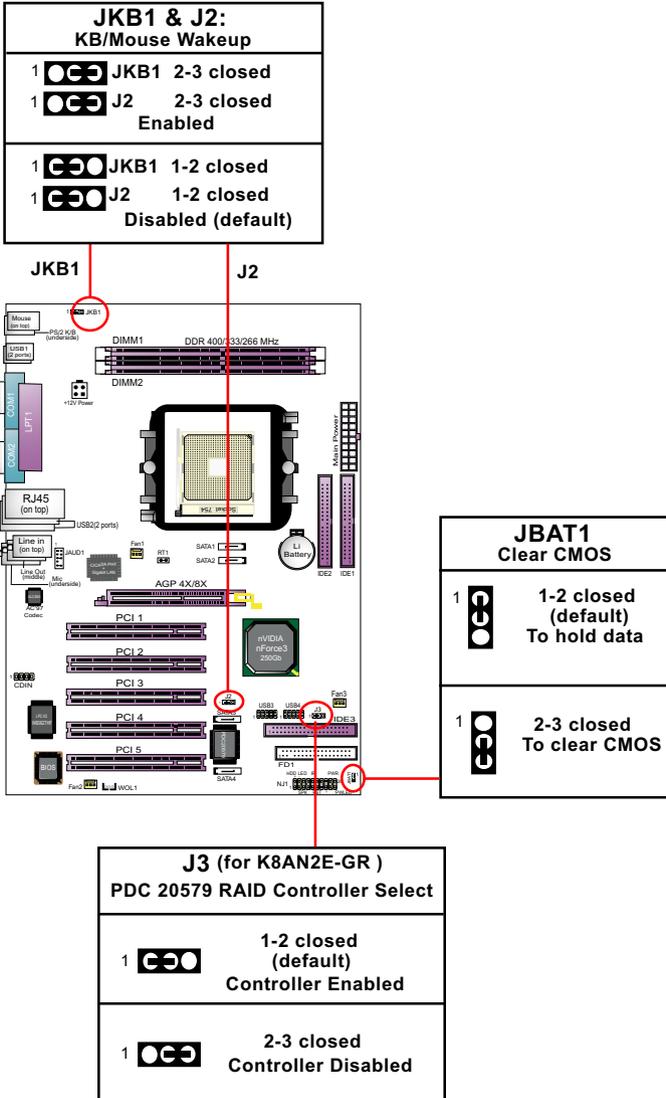
The Serial ATA interface improves the Parallel ATA with the capability of Hot Plug and offer a data bandwidth of 150Mbytes/second.

4 Serial ATA RAID connectors are built on board, supported by nVidia nForce3 250GB chipset and PDC20579 for 4 SATA RAID hard disks.

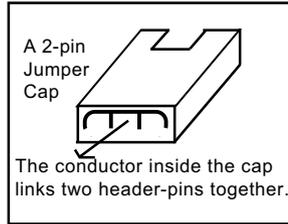
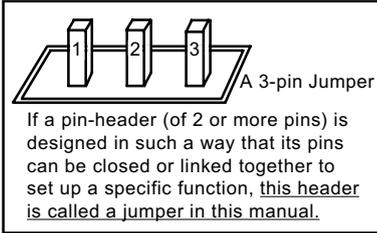


## 2-9 Jumper Settings

The following diagrams show the locations and settings of jumper blocks on the mainboard.



### 2-9.1 How to tackle the Jumpers:



- A Jumper is usually but not necessarily denoted by “Jp( )” .
- In the Jumper setting diagram, all jumper pins covered with black marks stand for closed pins with jumper cap.



- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, mainboard could be damaged.

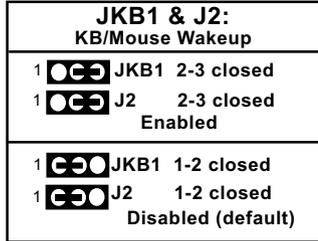
### 2-9.2 J3: RAID Controller Select

J3 is designed on board as a jumper to enable/disable the RAID Controller on board. That means, before user has to configure RAID system, J3 must be set to 1-2 closed enabled.

<b>J3 (for K8AN2E-GR)</b> PDC 20579 RAID Controller Select	
1	1-2 closed (default) Controller Enabled
1	2-3 closed Controller Disabled

### 2-9.3 JKB1 & J2 (optional): KB/Mouse Wake-up

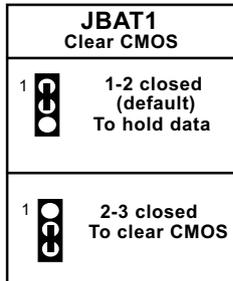
JKB1 with J2 is an optional design on board for the “Wake up system from suspend mode” function with the PS/2 keyboard/mouse. Yet user should still enter “BIOS Setup” to choose the Wake-up/Power-on mode.



### 2-9.4 JBAT1: Clear CMOS

When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

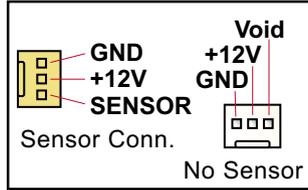
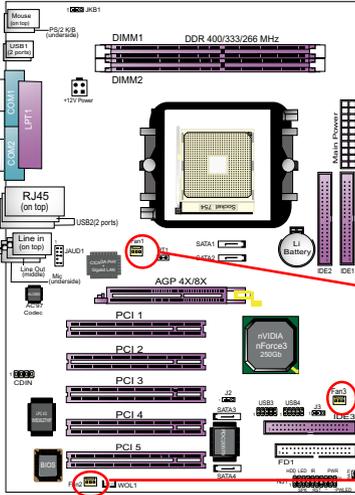
1. Power off system.
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, return the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default. Remember never clear CMOS when system power is on.



## 2-10 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

### 2-10.1 On-board FAN Connectors



	FAN1, Sensor Fan Connector (Yellow)
	FAN3, Sensor Fan Connector (Yellow)
	FAN2, Sensor Fan Connector

Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. A Hardware Monitor chipset is on board, with which user can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan connector. Otherwise, user can read the fan speed from the “Hardware Monitor Status” via CMOS BIOS.

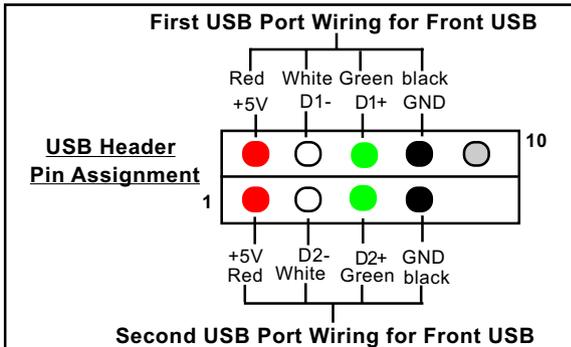
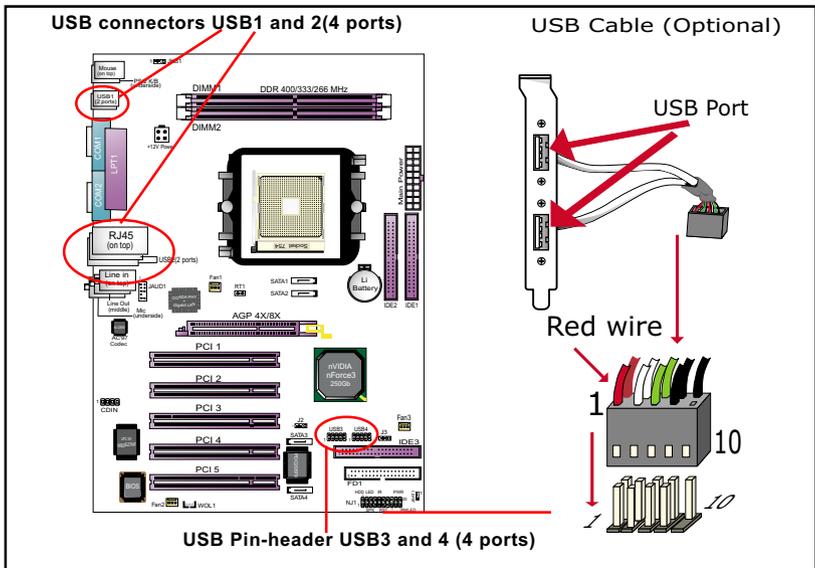
A running fan will send out 2 electric pulses per rotation of its fan blade to a Sensor Fan Connector which in turn will count the electric pulses and send the information to the System Hardware Monitor. The hardware Monitor Program will work out the fan rotation speed and display it on screen.

## 2-10.2. USB Port and USB Pin-header

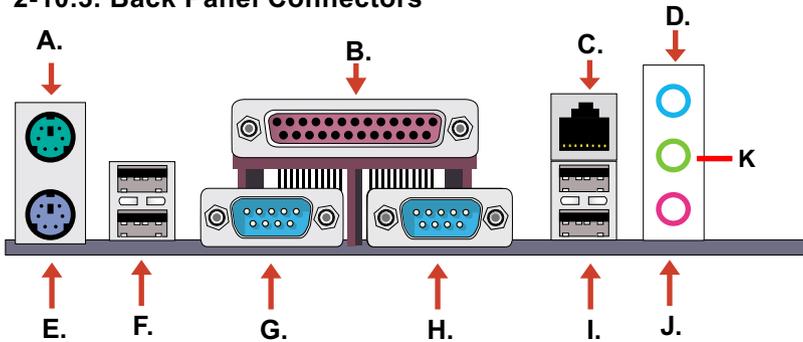
This series provides 4 USB ports USB0~3 on board supporting various USB devices. In addition, 2 USB pin-headers are added on board to provide expansion of 4 more USB ports by using 2 optional USB Cable. The optional USB cables can be available from the mainboard dealer or vender.

When plugging the USB cable to USB Header, user must make sure the red wire is connected to Pin 1.

All USB ports are compliant with USB 2.0 Bus. USB 2.0 drivers are provided in Support CD for user's installation.



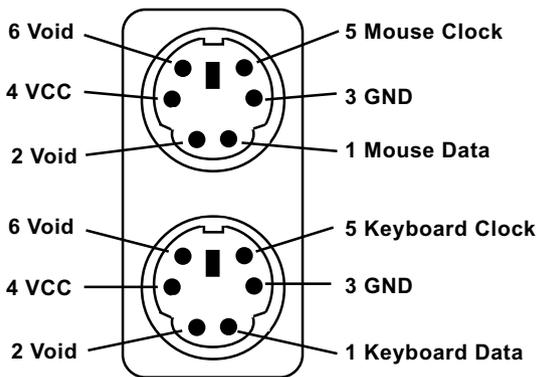
### 2-10.3. Back Panel Connectors



- |                                  |   |
|----------------------------------|---|
| A : PS/2 MOUSE                   | G : COM 1                               |
| B : LPT1 PORT                    | H : COM 2                               |
| C : RJ45                         | I : 2 USB Ports                         |
| D : Line-in/<br>Rear Speaker Out | J : Microphone-in /<br>Center/Subwoofer |
| E : PS/2 KEYBOARD                | K : Line-out /<br>Front Speaker         |
| F : 2 USB Ports                  |   |

### 2-10.4 PS/2 Mouse And PS/2 Keyboard

PS/2 Mouse Connector (green, on top)



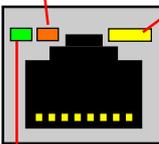
PS/2 Keyboard Connector (purple, underside)

### 2-10.5 LAN Connector

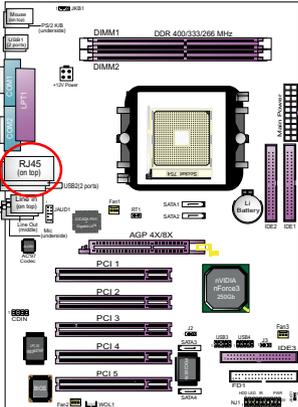
One RJ45 connector is on board for LAN connection, supporting GiGabit Ethernet 10/100/1000Mb data transfer.

Red/Orange LED blinks to indicate that data transmission is undergoing in 1000 Base T mode.

Yellow LED "On" to indicate Network hub is in connection with the system.

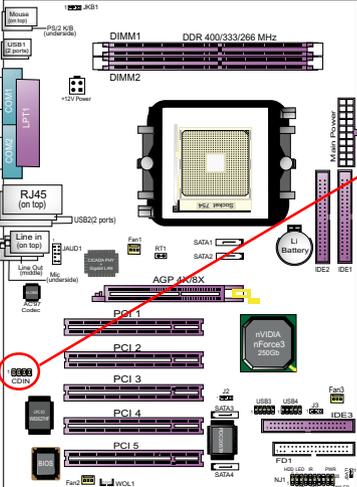


Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



### 2-10.6 CD-ROM Audio Connectors (CDIN)

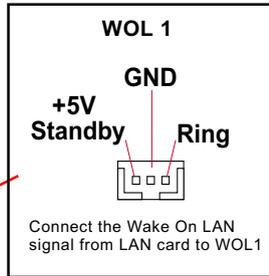
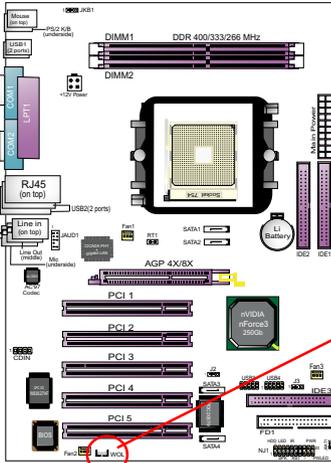
CDIN is an audio connector connecting CD-ROM audio to mainboard.



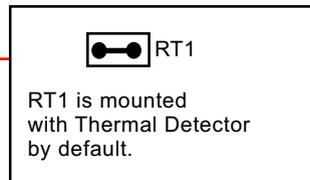
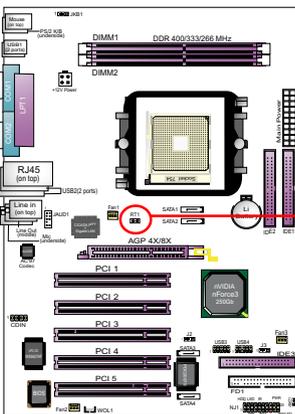
CD-ROM Audio Connector	
CDIN	Pin Signal
1 	
Pin 1	Left Channel
Pin 2	GND
Pin 3	GND
Pin 4	Right Channel

### 2-10.7 Connector WOL1: Wake On LAN

1. This connector is connected to a LAN card with a Ring signal output. The connector powers up the system when it receives a wake-up packet or signal through the LAN card.
2. Your system must be on ATX power supply with at least 720mA / +5V standby power.



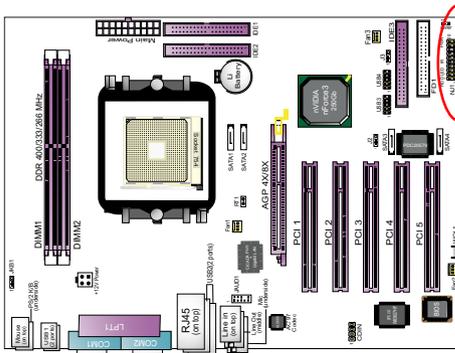
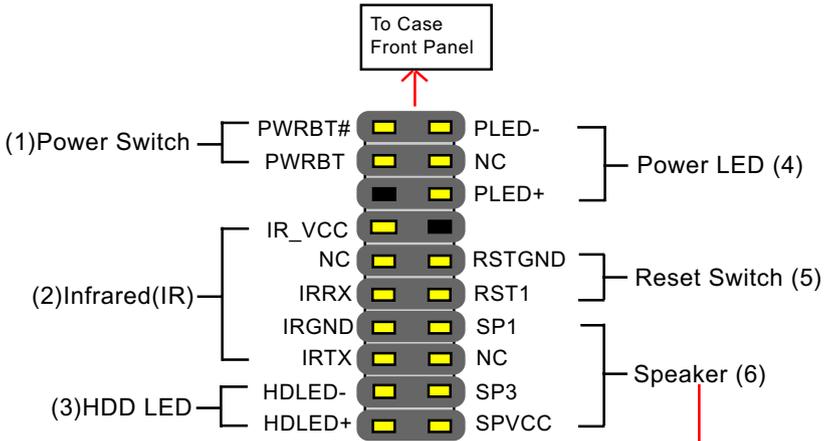
### 2-10.8 Thermal Detector



Thermal Resistor RT1: A thermal Detector is mounted by default to connector RT1 so as to detect the temperature of the chassis. What RT1 does is to transmit the thermal signal to Hardware Monitor.

### 2-10.9 Complex Pin-header (Front Panel Connectors)

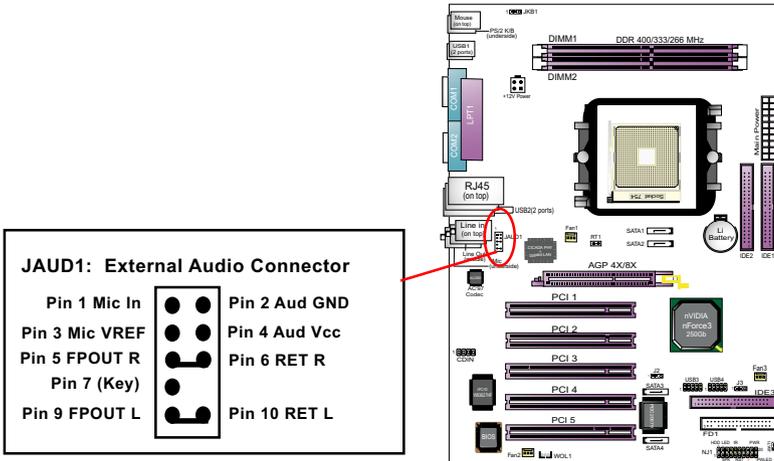
This complex Pin-header consists of the following connectors for various front panel supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.



### 2-10.10 External Audio Connector

This Mainboard is designed with an External Audio connector “JAUD1” which provides connection to your chassis.

1. When JAUD1 is set to 5-6 closed and 9-10 closed, this default setting disables this connector and leaves the Back Panel Audio enabled.
2. To use this Front Panel Audio Connector, please open all pins of JAUD1 and connect it to your chassis.



# Chapter 3 Software Setup

## Drivers, Utilities and Software Installation

- Support CD:

This series of mainboards will be shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

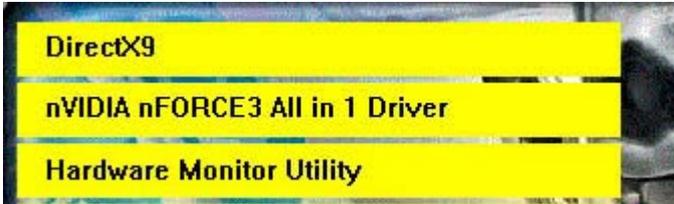
This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 98SE, Windows ME, Windows 2000 and Windows XP. And installation on Windows XP as the general illustration example hereby.

The priority of drivers to be installed should also be noted. Users are recommended to take the following installation orders :

<b>3-1 To Open up the Support CD .....</b>	<b>35</b>
<b>3-2 To Install DirectX9 .....</b>	<b>36</b>
<b>3-3 To Install “nVIDIA nForce3 All-in-1 Driver” .....</b>	<b>37</b>
<b>3-4 To Verify 6-channel Audio Configuration .....</b>	<b>38</b>
<b>3-5 To Install Hardware Monitor Utility .....</b>	<b>40</b>
<b>3-5.1 Installation .....</b>	<b>40</b>
<b>3-5.2 Verification .....</b>	<b>41</b>
<b>3-6 To Install USB 2.0 Driver for Windows 2000 or XP .....</b>	<b>42</b>
<b>3-6 RAID Driver Installation .....</b>	<b>43</b>

### **3-1 To Open up the Support CD**

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatically appear, displaying the contents to be installed for this series:



2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

D:\Autorun.exe (assuming that your CD-ROM Drive is Drive D)

3. We should take "nVIDIA nForce3 All in 1 Driver" as first installation priority to optimize the Intel system.  
From next section, we provide detailed descriptions of all these installations with graphical illustrations.

4. Drivers will be updated from time to time in our web site. If you are installing a newer driver than the one illustrated in this chapter, please be aware that the illustration pictures might be different.

### 3-2 To Install DirectX9

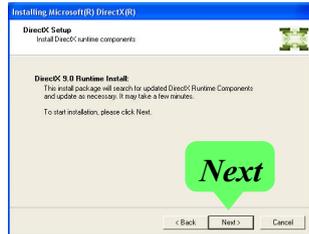
Please open the Support CD with your CD-ROM to enter the Main Installation Menu.

Then click to “Install DirectX9”.

1. When the screen of “Installing Microsoft DirectX ” appears, please select “ I accept the agreement” and press “Next” button to continue.



2. Click “Next” to start DirectX 9.0 Runtime Installation.



3. After all the setup procedures have completed, click to “Finish” button to exit the Installation program and restart your system.

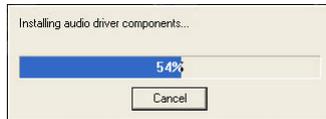


### 3-3 To Install “nVIDIA nForce3 All-in-1 Driver”

1. Before opening the Support CD, please update Windows 2000 or Windows XP with the latest Service Pack. Otherwise, the installation of USB2.0 driver will not take effect.
2. Following the procedures of opening the Support CD, click to “ Install nVIDIA nForce3 All-in-1 Driver” to proceed.



3. The nVIDIA InstallShield Wizard will pop up to guide you to set up nForce3 Drivers. This All-in-1 Driver will first start to install GART Driver, and then System management Bus driver, LAN driver and Audio driver.



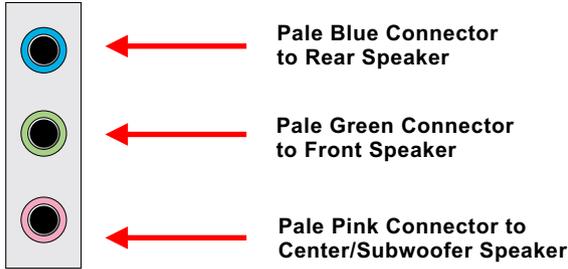
8. After all the setup processes are finished, please restart your computer by clicking on “Finish” so as to put the just installed drivers into effect.



### 3-4 To Verify 6-channel Audio Configuration

After installation of AC'97 6-channel Codec, you must configure the 5.1 Speaker connection to enable the 6-channel audio.

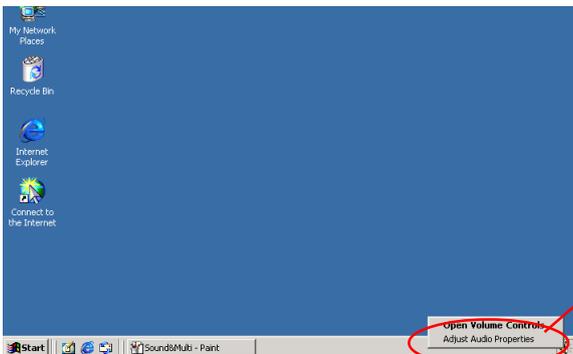
1. Connect your on-board Audio Connector to your 6-channel speakers as depicted in the figure below:



2. After Connection is done, start your Windows system and right click the Speaker icon to enter nVidia 6-channel configuration:

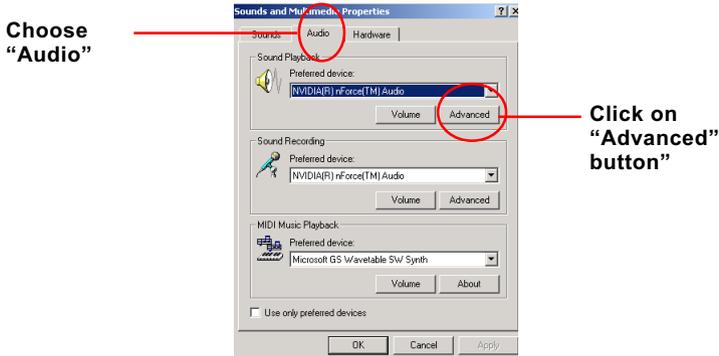


Right Click

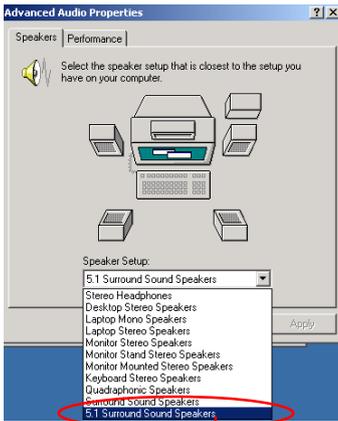


Click on "Adjust Audio Properties"

3. Again click “Advanced” button to enter 6 channel configuration.



4. Instantly, the “Advanced Audio Properties” screen will pop out. Pick the items “5.1 Surround Sound Speakers” and then click on “OK” button to enable the 6-channel speakers configuration.



## 3-5 To Install Hardware Monitor Utility

### 3-5.1 Installation

Hardware Monitor is built on this mainboard. Its installation is programmed to a fully automated mode on Windows 9X/Me/2000/XP. Users can follow the model installation below for its installation on various Windows System.

1. Following the procedures of opening the Support CD, click to “Hardware Monitor Utility” to proceed.

2. The Hardware Monitor InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press “Next” button to continue.



3. The InstallShield Wizard screen will show options to be chosen, please click the “Next” button to continue.



4. After all the setup process is finished, click “Finish” to exit the wizard.



### 3-5.2 Verification

1. After installing Soltek Hardware Monitor, double click “SoltekHM” icon on the desktop to open the main window of the Soltek Hardware Doctor.



2. Then the pop-up screen will show all information about CPU Temperature, Fan Speed and various Voltages.

The screenshot shows the Soltek Hardware Monitor software interface, which is designed to look like a futuristic dashboard. It features several data panels and a central control knob. Callout boxes provide the following information:

- Showing the temperature(s), the function of which is supported by the mainboard.** Points to the 'TEMPERATURE' panel.
- Showing the Fan Speed(s) that is supported by the mainboard.** Points to the 'FAN TACHOMETER' panel.
- Click on "Soltek" button to display the function menu.** Points to the central 'SOLTEK' knob.
- Showing the Voltage(s) that is supported by the mainboard.** Points to the 'VOLTAGE' panel.
- Status Warning LED** Points to a green LED indicator on the right side of the dashboard.

TEMPERATURE		FAN TACHOMETER	
CPU Die	40	Fan 1	not found
ABS II	47	Fan 2	6730
RT2	29	Fan 3	not found

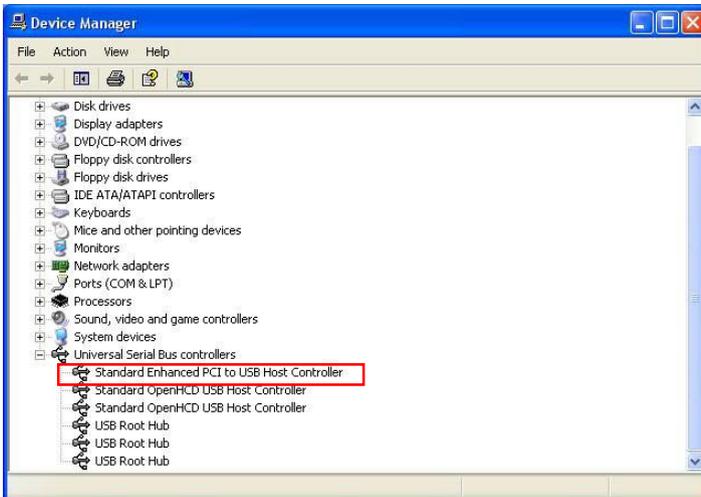
VOLTAGE		12V	
CPU Voltage	1.712	12V	12.098
DRAM Voltage	2.512	-12V	-12.944
3.3V	3.298	5VSB	4.914
5V	4.914	Battery	7.080

\*Note: Not all items or functions showing in the above picture will show up. Only those items or functions that are supported by the mainboard will reveal themselves in the above screen.

### 3-6 To Install USB 2.0 Driver for Windows 2000 or XP

USB V2.0 with its 480Mb/s transfer rate supports operating system Windows 2000 and Windows XP via the Windows 2000 and Windows XP Service Pack . Users should install the latest Service Pack for Windows 2000 or Windows XP. Please note that USB2.0 does not support windows 9X on nVidia mainboard.

1. After installation of nVIDIA nForce3 All in 1 Driver in Windows 2000 or Windows XP, start to install the latest Service Pack version into the operating system. The installation of the latest Service Pack will support USB2.0 in Windows 2000 or Windows XP now.(The latest Service Pack can be found in Microsoft Web Site.)
2. To verify USB2.0 installation, please enter “Device Manager” of “My Computer”. On the “Device Manager” screen, you should be able to see the item “Standard Enhanced PCI to USB Host Controller”, verifying USB2.0 Driver is installed successfully.



### **3-6 RAID Driver Installation**

1. RAID Driver should be installed into a RAID system. That is, user should first configure a RAID system and then install the RAID driver into it.
2. Chapter 5/6 of this User Manual introduces the configuration of RAID system and then the installation of RAID Driver. Please refer to Chapter 5/6 for the RAID Driver installation.

# Chapter 4 BIOS Setup

## THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory(ROM) chip. Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:

1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

**This Chapter includes the following topics :**

**4-1 About BIOS Setup**

**4-2 To run BIOS Setup**

**4-3 About CMOS**

**4-4 The POST (Power On Self Test)**

**4-5 To upgrade BIOS**

**4-6 BIOS Setup**

Attention: The BIOS Setup is subject to constant update without further notice to users. It is necessary for users to update the onboard BIOS by the latest BIOS version provided in our web site: [www.soltek.com.tw](http://www.soltek.com.tw)

## **4-1 About BIOS Setup**

BIOS setup is an interactive BIOS program that you need to run when:

1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

## **4-2 To Run BIOS Setup**

First access BIOS setup menu by pressing < DEL > key after "POST" is complete ( before OS is loaded ). BIOS will then display the following message:

```
Press "DEL" to enter "SETUP"
```

## **4-3 About CMOS**

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and do some proper settings in BIOS Setup.

## **4-4 The POST ( Power On Self Test )**

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

## **4-5 To Upgrade BIOS**

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette to execute saving, verifying, and updating the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

### **4-5.1 Before Upgrading BIOS**

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (AWDFLASH.EXE) to a bootable floppy disk so that you can reinstall the BIOS when needed.

### **4-5.2 Upgrade Process**

- Normally, to upgrade BIOS is unnecessary if the system is working fine. Users should only upgrade the BIOS when you experience incompatible problems or need to create new features.
- “AWDFLASH.EXE” is a Flash EPROM Programming utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in ***DOS environment, the utility can not be executed in Windows 95/98, ME, NT, WINDOWS 2000 or Windows XP environment.***
- Please follow the steps below for upgrading the system BIOS:

Step 1. Please visit the board maker’s website, download the zip file which contains the latest BIOS file and Award Flash Utility “AWDFLASH.EXE”. After unzipping, the BIOS file format will be \*.bin, of which “\*” stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and Award Flash Utility “AWDFLASH.EXE” into the diskette.

Step 3. Insert the diskette into drive A, reboot your system and boot from the diskette.

Step 4. Type **awdf flash \*.bin /sn/py/cc** and then press <Enter> to run BIOS upgrade program. (\*.bin depends on your mainboard model and version code. Instead of typing “\*”, you should type specific file name for your specific mainboard).

Step 5. Please press <F1> or <F10> to exit or reset your system.

Warning ! If the message “ **Write Fail** ” appears while AWARD “FLASH MEMORY WRITER” is verifying Flash memory, please retry the process. Please DO NOT turn off the system before updating the BIOS successfully.

Step 6. At rebooting system, press <Del> to run CMOS setup utility, then reload “LOAD SETUP DEFAULTS” or “**Load Optimized Defaults**” and save this change.

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup

/py: Program flash memory

/cc: Clear CMOS data (and update data automatically) after programming

**NOTE:** Users can type AWDFLASH /? to get further details about the parameters. Incorrect usage of the parameter will damage the BIOS information, so we strongly recommend users to leave parameters alone unless you fully understand their function.

BIOS Update Illustration:

- (1) Executing the “awdf flash.exe k8AV2008.bin” in DOS system, Award Flash Memory Writer Start Screen appears: To input BIOS file name.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003  File Name to Program : K8AV2008.BIN
Message: Input the (BIOS) file name

- (2) Press Y if you want to back up your old BIOS,. Otherwise, press N to go on without saving.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003  File Name to Program : K8AV2008.BIN
Message: Do You Want To Save BIOS (Y/N)

- (3) Press Y to write the latest BIOS into system.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003  File Name to Program : K8AV2008.BIN
Message: Press “Y” to Program or “N” to Exit

(4) Updating is in progress. Do not turn off power at this moment.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 Flash Type - SST 39SF020 /5V File Name to Program : k8av2008.bin Writing Flash Memory - 0FE00 OK ██ Write OK    No Update    Write Fail
Warning: Don't Turn Off Power Or Reset System !

(5) When the process is complete, remove the Floppy Diskette and press F1 to restart the system to put the new BIOS into effect.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 Flash Type - SST 39SF020 /5V File Name to Program : k8av2008.bin Flashing Complete Remove Floppy Diskette & Hit <F1> to Continue ██ ██ Write OK    No Update    Write Fail
F1 Reset

## **4-6 BIOS SETUP --- CMOS Setup Utility**

**Warning and Tips:** If changing CMOS Configuration causes difficulty in rebooting system, you can take the following measures:

1. At pressing the power button to reboot, press the “Insert” key at the same time. As soon as the screen displays the booting message, release the “Insert” key and press “Delete” key to enter CMOS Setup Utility . Then choose the “Load Optimized (Optimal) Defaults” menu to restore the default values for a new start. Or,
2. Open your machine cabinet and clear CMOS with jumper setting. Please refer to the Jumper Setting Section of this User manual.

### **4-6.1 CMOS Setup Utility**

This mainboard comes with the AWARD BIOS from AWARD Software Inc. Enter the CMOS Setup Utility Main Menu by:

1. Turn on or reboot your system. After a series of diagnostic checks, the following message will appear:

**PRESS <DEL> TO ENTER SETUP**

2. Press <DEL> key and the main program screen will appear as follows.

#### **Phoenix - AwardBIOS CMOS Setup Utility**

<ul style="list-style-type: none"><li>▶ Standard CMOS Features</li><li>▶ Advanced BIOS Features</li><li>▶ Advanced Chipset Features</li><li>▶ Integrated Peripherals</li><li>▶ Power Management Setup</li><li>▶ PnP/PCI Configurations</li><li>▶ SmartDoc Anti-Burn Shield</li></ul>	<ul style="list-style-type: none"><li>▶ Frequency/Voltage Control</li><li>Load Optimized Defaults</li><li>Set Supervisor Password</li><li>Set User Password</li><li>Save &amp; Exit Setup</li><li>Exit Without Saving</li></ul>
Esc: Quit	
F10: Save & Exit Setup	
↑↓←→ : Select Item	
Time, Date, Hard Disk Type...	

3. When one main item of the Main Menu is chosen and clicked on, its submenu will appear to display the related items and options. On the other hand, a list of operation guide will appear at the end of the submenu as below:

↑↓ ←→ :Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- (1) Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
  - (2) Press <Enter> to select item or option.
  - (3) +/- /PU/PD: To adjust or select value.
  - (4) F10: Save configuration.
  - (5) Esc: Press <Esc> key to get out of the menu on screen.
  - (6) F1: Press F1 to display General Help List.
  - (7) F5: Press F5 to restore the Previous Value.
  - (8) F6: Press F6 to load the Fail-Safe default values.
  - (9) F7: Press F7 to load the Optimized Default Values.
4. You may return to the Main Menu anytime by pressing <ESC>.
  5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

**Attention:** The BIOS Setup is subject to constant update without further notice to users. It is necessary for users to update the onboard BIOS by the latest BIOS version provided in our web site: [www.soltek.com.tw](http://www.soltek.com.tw)

### 4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:  
 Choose "Standard CMOS Setup" from the Main Menu. A screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility  
 Standard CMOS Features**

Date (mm:dd:yy)	Fri, Sep 5 2003	Item Help
Time (hh:mm:ss)	9 : 41 : 11	
▶ IDE Channel 0 Master	None	Menu Level ▶
▶ IDE Channel 0 Slave	None	
▶ IDE Channel 1 Master	None	Change the day, month, year and century
▶ IDE Channel 1 Slave	None	
▶ IDE Channel 2 Master	None	
▶ IDE Channel 3 Master	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All, But Keyboard	
Base Memory	640K	
Extended Memory	252928K	
Total Memory	253952K	

↑ ↓ ← → : Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help  
 F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**Date (mm:dd:yy)** The BIOS determines the day of the week from the other date information. This field is for information only.  
 Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

**Time (hh:mm:ss)** The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

**Channel 0 / 1/2 Master / Slave** This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drives.

Phoenix - AwardBIOS CMOS Setup Utility  
 IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Channel 0 Master Access Mode	Auto Auto	Menu Level ►
Capacity	40022MB	To auto-detect the HDD's size, head... on this channel
Cylinder	19158	
Head	16	
Precomp	0	
Landing Zone	19157	
Sector	255	

**Drive A / Drive B** Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:  
360KB, 5.25 in.  
1.2MB, 5.25 in.  
720KB, 3.5 in.  
1.44MB, 3.5 in.  
2.88MB, 3.5 in.  
None

**Video** Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

**Halt On** During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

**Base Memory** Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

**Extended Memory** Above the 1MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.

**Total Memory** This option shows system memory capacity.

### 4-6.3 Advanced BIOS Features

Advanced BIOS Features improves your system performance or sets up system features according to your preference.

Run the Advanced BIOS Features as follows:

Choose “Advanced BIOS Features” from the Main Menu and a screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility**  
**Advanced BIOS Features**

▶ Hard Disk Boot Priority	Press Enter	Item Help
Virus Warning	Disabled	Menu Level ▶
CPU Internal Cache	Enabled	
External Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	Hard Disk	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
OS Select For DRAM > 64MB	Non1-OS2	

↑↓←→ : Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**Hard Disk Boot Priority** Press <Enter> key to select Hard Disk Boot Device Priority. The hard disks installed on board will appear in the menu for priority choice.

▶ Hard Disk Boot Priority	Press Enter	Item Help
1. Ch1 M. : ST340810A		Menu Level ▶
2. Ch1 S. : Maxtor 90340D2		
3. Bootable Add-in Cards		

- Virus Warning** To enable/disable the virus warning feature for IDE Hard Disk boot sector. If enabled, BIOS will show a warning message on screen whenever writing data to this area is detected.
- CPU Internal / External Cache** Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type up contain internal cache memory (L1), and most, but not all, modern PCs have additional (external) cache memory (L2). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for faster access by the CPU.
- CPU L2 Cache ECC Checking** To enable/disable CPU L2 Cache Error Correcting Code Checking .
- Quick Power On Self Test** Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.
- First/Second/Third/Boot Other Device** The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The choices: Floppy; LS120; ZIP100; HDD; CDROM; USB-FDD; USB-ZIP; USB-CDROM; LAN; Disabled
- Swap Floppy Drive** When enabled, floppy drives A and B will be exchanging without any physical connection and modification on the cables.
- 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 270KB, 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 to save time.
- Boot Up NumLock Status** Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.

- Gate A20 Option** Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to *Fast*, the system chipset controls Gate A20. When set to *Normal*, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to *Fast* improves system speed, particularly with OS/2 and Windows.
- Typematic Rate Setting** When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.  
When *Enabled*, you can select a typematic rate and typematic delay.
- X Typematic Rate (Chars / Sec)** When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.
- X Typematic Delay (Msec)** Choices: 250; 500; 750; 1000. This option sets the time interval for displaying the first and the second characters. If enabled, the time interval is optional.
- Security Option** If you have set a password, select whether the password is required every time the System boots, or only when you enter setup.  
Choices: System; Setup(default)
- APIC Mode** To enable / disable APIC mode.
- OS Select For DRAM > 64MB** Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.  
Choices: Non-OS2; OS2

### 4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:

Choose “Advanced Chipset Features” from the Main Menu and a list of option will appear:

**Phoenix - AwardBIOS CMOS Setup Utility  
Advanced Chipset Features**

	Item Help
▶ DRAM Configuration	Press Enter
CPU Overclock in MHz	200
AGP Overclock in MHz	66
AGP Aperture Size (MB)	128M
x AGP 3.0 Speed	Auto
AGP 2.0 Speed	Auto
AGP Fast Write	Auto
AGP Sideband Address	Auto
HT Frequency	4X
Special I/O for PCI Card	Disabled
x Base I/O Address	0000
x I/O Length	1 Byte
System BIOS Cacheable	Disabled
	Menu Level ▶
	DRAM timing and control

▶ **DRAM Configuration:**

To press < Enter > on DRAM Configuration will reveal the following items.

- Max Memclock (Mhz)** Choose the max. memory clock.  
Choice: 100; 133; 166; Auto
- CAS# latency (Tcl)** Choose the CAS# latency feature.  
Choices: Auto; 2.0; 2.5; 3.0
- RAS# to CAS# delay (Trcd)** Choose the RAS to CAS delay time.  
Choices: Auto; 2; 3; 4; 5; 6; 7
- Min RAS# active time** Choose the minimum RAS active time.  
Choices: Auto; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15
- Row Precharge Time (Trp)** Choose the Row Precharge time.  
Choices: Auto; 2; 3; 4; 5; 6

- CPU OverClock in MHz** To select the CPU Overclock.  
Choices: 200~250MHz in 1MHz stepping
- AGP OverClock in MHz** To select the CPU Overclock.  
Choices: 66~100MHz in 1MHz stepping
- AGP Aperture Size (MB)** Options: 32; 64; 128; 256M; 512M. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S.
- AGP 3.0 Speed** To auto/manually set AGP speed.  
Choices: Auto; 4X; 4X/8X
- AGP 2.0 Speed** To auto/manual set AGP 2.0 speed.
- AGP Fast Write** To auto-enable / disable the support of AGP Fast Write.
- AGP Sideband Address** To auto-enable / disable the Sideband address
- HT Frequency** Allows you to set the ratio of HyperTransport.  
Choices: 1X; 2X; 3X; 4X; 5X
- Special I/O for PCI Card** To enable/disable the Special I/O for PCI card.
- x Base I/O Address** If Special I/O is enabled, use this item to set the Base I/O address between 0000 and FFFF.
- X I/O LENGTH** IF Special I/O is enabled, use this item to set the I/O length.  
Choices: 1 byte to 256 bytes in 2x stepping
- System BIOS Cacheable** Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFFh, resulting in better system performance.

### 4-6.5 Integrated Peripherals

Integrated Peripherals option allows you to get some information inside your system when it is working.

Run the Integrated Peripherals as follows:

Choose “Integrated peripherals” from the Main Menu and a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility  
Integrated Peripherals**

		Item Help
▶ IDE Function Setup	Press Enter	
OnChip IDE Channel0	Enabled	
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
OnChip IDE Channel1	Enabled	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
Promise Function Select	RAID	
IDE Prefetch Mode	Enabled	
Init Display First	AGP	
OnChip USB	V1.1+V2.0	
USB KB/Storage Support	Disabled	
Serial-ATA 2(Internal PHY)	Enabled	
AC97 Audio	Auto	
MAC Lan(nVIDIA)	Auto	
IDE DMA transfer access	Enabled	
IDE HDD Block Mode	Enabled	
POWER ON Function	BUTTON ONLY	
x KB Power ON Password	Enter	
x Hot Key Power ON	Ctrl-F1	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	Auto	
Onboard Serial Port 2	Auto	
UART Mode Select	Normal	
x Rx/D , Tx/D Active	Hi, Lo	
x IR Transmission Delay	Enabled	
x UR2 Duplex Mode	Half	
x Use IR Pins	IR-Rx2Tx2	
Onboard parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
x EPP Mode Select	EPP1.9	
x ECP mode Use DMA	3	
PWRON After PWR-Fail	Off	

↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
                   F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

► **IDE Function Setup:**

To press < Enter > on this option will reveal the following items.

**IDE RAID** To enable / disable IDE RAID feature.

**IDE Channel 0 / 1  
Master/Slave RAID** To enable/disable IDE channel 0/1 RAID.

**SATA Primary/Secondary  
Master RAID** To enable/disable SATA Primary/Secondary Master RAID

**On-Chip IDE Channel  
0/1** The chipset contains a PCI IDE interface with support from two IDE channels. Select Enabled to activate the first and/or the second IDE interface. Select Disabled to inactivate an interface if you install a primary and/or second add-on IDE interface.

The choices: Enabled(default); Disabled

**Primary  
Master / Slave PIO  
Secondary  
Master / Slave PIO** Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.

The choices: Auto(default); Mode 0; Mode 1; Mode 2; Mode 3; Mode 4

**Primary  
Master / Slave UDMA  
Secondary  
Master / Slave UDMA** Ultra DMA33/66/100/133 implementation is possible only if your IDE hard drive supports it, if the operating environment includes a DMA drive, and if your system software supports Ultra DMA33/66/100/133. Select "Auto" to enable BIOS support.

The choices: Auto(default); Disabled

**IDE Prefetch Mode** The on-board IDE drive supports IDE prefetching for faster drive accesses. If the IDE device doesn't support prefetching, set this field to Disabled.

The choices: Enabled(default); Disabled

- Init Display First** Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.
- OnChip USB** Allows you to select the USB transfer rate mode. Usually USB2.0 is up to 480Mb/s, while USB1.1 is up to 12Mb/s.  
Choices: Disabled, V1.1+V2.0(default), V1.1
- USB KB Storage Support** To enable/disable the USB Keyboard/Storage device support.
- Serial-ATA (Internal PHY)** To enable/disable the Serial ATA (Internal PHY) support.
- AC97 Audio** Select "Enabled" to use the on-chip audio capability of your system. Most of the field do not appear when this field is "Disabled", for user who wants to use add-on sound card, this item must be disabled.
- MAC LAN(nVIDIA)** This option allows you to enable/disable the Onboard LAN Controller.  
The choices: Auto(default); Disabled
- IDE DMA transfer access** To enable/disable the IDE DMA transfer access function.
- IDE HDD Block Mode** Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.  
Choices: Enabled(default); Disabled
- POWER ON Function** Allows you to set the way to boot up the system.  
Choices: Password; Hot KEY; Mouse Left; Mouse Right; Any KEY; BUTTON ONLY(default); Keyboard

**KB Power On Password** If Keyboard Power-on function is set at "Password", this item shows up to allow you to type a password for the power-On function.  
Choices: N/A; Password

**Hot Key Power ON** Allows you to set the hot key to boot up the system.

**Onboard FDC Controller** Select Enabled if your system has a floppy drive controller (FDC) installing in the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled in this field.  
The choices: Enabled; Disabled

**Onboard Serial Port 1 / Port 2** Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.  
Choices: Disabled; Auto;  
3F8/IRQ4; 2F8/IRQ3;  
3E8/IRQ4; 2E8/IRQ3

**UART Mode Select** The serial port 2 on your system may offer a variety of infrared port modes. Click here for a description of various modes.  
The choices: Normal(default); IrDA; ASKIR

**RxD , TxD Active** The option controls the speed between receiving and transmitting of IrDA or ASKIR when using.  
Choices: Hi,Hi; Hi,Lo; Lo,Hi; Lo,Lo

**IR Transmission Delay** When UART Mode is selected in IrDA or ASKIR mode, it allows you to enable / disable IR Transmission Delay.

**UR2 Duplex Mode** This options controls the operating mode between receiving and transmitting of IrDA or ASKIR. The operating mode will be synchronous bi-directional transmission and reception when Full mode is selected. Nevertheless, the operating mode will be asynchronous bi-directional transmission and reception when Half mode is selected.  
The choices: Half; Full

**Use IR Pins** When UART Mode is selected in IrDA or ASKIR mode, this item allows you to select the IR Pins signal selection.  
The choices: IR-Rx2Tx2; Rx2, Tx2

**Onboard Parallel Port** This item allows you to determine onboard parallel port controller I/O address setting.  
The choices: 378H/IRQ7(default); 278H/IRQ5; 3BC/IRQ7; Disabled

**Parallel Port Mode** Select an operating mode for the on-board parallel (printer) port. Select Normal, Compatible, or SPP unless you are sure your hardware and software both support one of the other available modes.  
Choices: SPP(default); EPP; ECP; ECP+EPP; Normal

**EPP Mode Select** Select EPP Mode when you choose EPP or ECP+EPP mode in the Parallel Port Mode.  
Choices: EPP1.7; EPP1.9

**ECP mode Use DMA** Select a DMA channel for the port when you choose ECP or ECP+EPP mode for the Parallel Port Mode.  
Choices: 1; 3

**PWRON After PWR-Fail** This item is to set the mode to power on when power resumes after power fails.  
Choices: Off(default) ; On

### 4-6.6 Power Management Setup

Power Management Setup allows you to set the system’s power saving functions.

Run the Power Management Setup as follows:

Choose “Power Management Setup” from the Main Menu and a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility**  
**Power Management Setup**

		Item Help
ACPI function	Enabled	
ACPI Suspend Type	S1(POS)	
Power Management	User Define	
Video Off Method	DPMS Support	
HDD Power Down	Disabled	
HDD Down In Suspend	Disabled	
Soft-off by PBTN	Instant-off	
WOL(PME#) From Soft-off	Disabled	
WOR(RI#) From Soft-off	Disabled	
Power-On by Alarm	Disabled	
x Day of Month Alarm	0	
x Time(hh:mm:ss) of Alarm	0 : 0 : 0	
AMD KB Cool'n'Quiet control	Auto	

↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
 F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**ACPI Function** Select Enabled(default) only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification. Currently, Windows NT 5.0 ( Windows 2000 ) supports ACPI.

**ACPI Suspend Type** This item allows you to select the ACPI Suspend type. You can select S3(STR) for Suspending To RAM if your system supports this mode. Or you can select S1(POS) for Power On Suspend under ACPI mode.  
 Choices: S1(POS)(default);S3(optional); S1&S3 (Optional)

**Power Management** This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes.  
 This table describes each power management mode:

<b>Max Saving</b>	Maximum power savings. Inactivity period is 1 minute in each mode.
<b>User Define</b>	Set each mode in dividually. Select time-out period in the section for each mode stated below.
<b>Min Saving</b>	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

**Video Off Method** This determines the manner by which the monitor is blanked.

<b>V/H SYNC+Blank</b>	This selection will cause the system to turn off the vertical and horizontal sncronization ports and write blanks to the video buffer.
<b>Blank Screen</b>	This option only writes blanks to the video buffer.
<b>DPMS Support</b>	Select this option if your monitor supports the Display Power Management Singaling (DPMS) standard of the Video Electronics Standards to select video power management values.

**HDD Power Down** When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

**HDD Down In Suspend** Allows you to enable / disable(default) to power down HDD when suspend.

**Soft-Off by PBTN** When Enabled, turning the system off by pressing the on/off button places the system in a very low-power-usage state.

**WOL(PME#) From Soft-Off** Allows you to enable / disable(default) the Wake on Lan(PME#) function.

**WOR(RI#) From Soft-Off** Allows you to enable / disable(default) the Wake on Ring Signal function.  
An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) awakens the system from a soft off state.

**Power-On by Alarm** Allows you to enable / disable(default) the Power-On by Alarm function.

**Day of Month Alarm** If Resume On Power-On by Alarm is enabled, this field allows you to set the Alarm Day of Month.  
Day Choices: 1 ~ 31

**Time of Alarm (Hour / Minute / Second)** If Resume On Power-On by Alarm is enabled, this field allows you to set the Alarm Hour, Minute and Second.  
Hour Choices: 00 ~ 23  
Minute Choices: 00 ~ 59  
Second Choices: 00 ~ 59

**AMD K8 Cool'n' Quiet Control** To enable/disable AMD K8 cool and quiet control.  
Choices: Auto; Disabled

### 4-6.7 PnP / PCI Configuration

PnP/PCI Configuration allows you to modify the system's power saving functions.

Run the PnP/PCI Configuration as follows:

1. Choose "PnP/PCI Configuration" from the Main Menu and a screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility**  
**PnP PCI Configurations**

		Item Help
Reset Configuration Data	Disabled	
Resources Controlled by	Auto(ESCD)	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

- <F1>: "Help" gives options available for each item.
- <F5>: Get the previous values. These values are the values with which the user starts the current session.
- <F6>: Load all options with the BIOS default values.
- <F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

**PNP OS Installed** Allows you to configure the PNP devices by BIOS or O/S.

Choices: No(by BIOS); Yes(by O/S)

**Reset Configuration Data** Normally, you leave this Disabled(default). Select Enabled to reset Extended System Configuration Data (ESCD), when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

**Resource Controlled By** The Plug and Play Award BIOS can automatically configure all the boot and Plug and Play compatible devices. If you select *Auto*, all the interrupt request (IRQ) and DMA assignment fields will not appear, as the BIOS automatically assigns them. If you select *Manual*, the IRQ Resources item will appear for your configuration (see below).

**IRQ Resources** Press Enter. Please refer to the list below:

Phoenix - AwardBIOS CMOS Setup Utility  
**IRQ Resources**

		Item Help
IRQ-3 assigned to	PCI Device	
IRQ-4 assigned to	PCI Device	
IRQ-5 assigned to	PCI Device	
IRQ-7 assigned to	PCI Device	
IRQ-9 assigned to	PCI Device	
IRQ-10 assigned to	PCI Device	
IRQ-11 assigned to	PCI Device	
IRQ-12 assigned to	PCI Device	
IRQ-14 assigned to	PCI Device	
IRQ-15 assigned to	PCI Device	

↑↓←→ : Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
 F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**PCI/VGA Palette Snoop** This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used a MPEG card.

### 4-6.8 SmartDoc Anti-Burn Shield

This section helps you to get more information about your system including CPU temperature, FAN speed and voltage. It is recommended that you contact your mainboard supplier to get proper values about the setting of the CPU temperature.

Run the “SmartDoc Anti-Burn Shield” as follows:

Choose “SmartDoc Anti-Burn Shield” from the Main Menu and a screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility  
SmartDoc Anti-Burn Shield**

		Item Help
System Temp.	25°C/ 75°F	
CPU Temp.	46°C/ 114°F	
FAN1 Speed	5232 RPM	
FAN2 Speed	0 RPM	
FAN3 Speed	0 RPM	
CPU Vcore	1.79 V	
3.3V	3.26 V	
+5V	5.02V	
+12V	11.75V	
-12V	-11.74V	
-5V	-5.25V	
VBAT(V)	1.53V	
5VSB(V)	5.05V	

↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**System Temp.** Shows current system temperature.

**CPU Temp.** Shows current CPU external temperature.

**FAN 1/2/3 Speed** These fields display the current speed of the CPU / System fan.

**CPU Vcore** Shows CPU core actual voltage value.

**3.3V, +5V, +12V, -12V, -5V, 5VSB** Shows actual voltage value of all these default voltage value on board.

**VBAT** Shows voltage value of the battery on board.

### 4-6.9 Frequency/Voltage Control

Run the “Frequency/Voltage Control” as following:

Choose “Frequency/Voltage Control” from the Main Menu and a screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility  
Frequency/Voltage Control**

		Item Help
CPU Ratio	StartUp	
CPU Vcore Select	Default	
AGP Voltage Select	1.5V	
DIMM Voltage Select	2.6V	
Chipset Vcore	1.6V	

↑↓←→: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    Esc: Exit    F1: General Help  
 F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults

**CPU Ratio** To choose CPU frequency ratio.  
 Choices: StartUp; X4 ~ X20 with 200MHz

**CPU Vcore Select** Allows you to configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU.  
 Choices: Default; 0.800V ~ 1.550V in 0.025V stepping

**AGP Voltage Select** Allows you to configure the AGP Voltage.  
 Choices: 1.5V; 1.6V; 1.7V; 1.8V

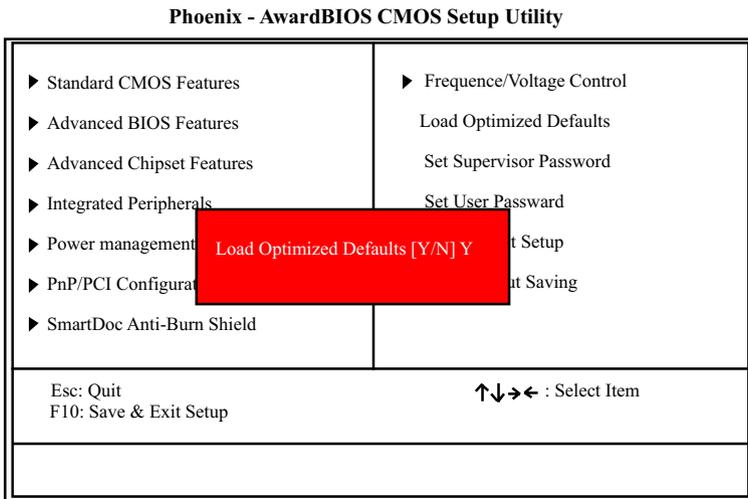
**DIMM Voltage Select** Allows you to configure the DIMM Voltage.  
 Choices: 2.60V; 2.70V; 2.80V

**VDD Voltage Select** Allows you to configure the VDD Voltage.  
 Choices: 1.60 V; 1.70 V; 1.80 V; 1.90 V

### 4-6.10 Load Optimized Defaults

When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

**" Load Optimized Defaults (Y / N) ? N "**



"Y" is for "Yes", and "N" is for "No".

Pressing "Y" loads the BIOS Optimized default values to restore the BIOS to its original status.

### 4-6.11 SET SUPERVISOR / USER PASSWORD

These two options allow you to set your system passwords. Normally, the supervisor has a higher priority to change the CMOS setup option than the users. The way to set up the passwords for both Supervisor and Users are as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. Then following message appears:

**"Enter Password : "**

2. The first time you run this option, enter your password up to 8 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears prompting you to confirm the password:

**"Confirm Password : "**

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you have entered before.
7. Move the cursor to Save & Exit Setup to save the option you have just configured; otherwise the old password will still be there the next time you turn your system on.
8. Press <Enter> to exit to the Main Menu.

**RxD , TxD Active** The option controls the speed between receiving and transmitting of IrDA or ASKIR when using.  
Choices: Hi,Hi; Hi,Lo; Lo,Hi; Lo,Lo

**IR Transmission Delay** When UART Mode is selected in IrDA or ASKIR mode, it allows you to enable / disable IR Transmission Delay.

**EPP Mode Select** Select EPP Mode when you choose EPP or ECP+EPP mode in the Parallel Port Mode.  
Choices: EPP1.7; EPP1.9

#### **4-6.12 SAVE & EXIT SETUP**

SAVE & EXIT SETUP allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

```
  "SAVE to CMOS and EXIT (Y/N) ?  Y "
```

"Y" is for "Yes", and "N" is for "No".

Press <Enter> key to save the configuration changes.

#### **4-6.13 EXIT WITHOUT SAVING**

EXIT WITHOUT SAVING option allows you to exit the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

```
  "Quit Without Saving (Y/N) ?  N "
```

"Y" is for "Yes", and "N" is for "No".

You may change the prompt to "Y" and press <Enter> key to leave this option .

# **Memo**

# Chapter 5 nVIDIA RAID Setup

## **nVIDIA RAID Controller nForce3 250Gb & RAID Driver**

nVIDIA RAID (Redundant Array of Independent Disks) Controller nForce3 250Gb is built in this series of mainboards to provide RAID configuration of RAID 0, RAID 1, RAID 0+1 and JBOD modes. RAID Drivers are enclosed in a Driver CD as well as a Floppy diskette to support various RAID systems (Windows 2000/XP) setup.

**This Chapter is to introduce the SATA RAID Configurations with nForce3 250Gb :**

<b>5-0 About Disk Array .....</b>	<b>77</b>
<b>5-0-1 Disk Array Interpretation .....</b>	<b>77</b>
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<b>5-1. SATA 1/2 on SL-K8AN2-GR/K8AN2E-GR .....</b>	<b>78</b>
<b>5-2. Enable RAID function in the BIOS .....</b>	<b>78</b>
<b>5-3. Enter the NVRAID BIOS .....</b>	<b>79</b>
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## 5-0 About Disk Array

### 5-0-1 Disk Array Interpretation

A “Disk Array” is formed from a group of 2 or more disk drives with the RAID (Redundent Array of Independent Disks) technology. The aim of a Disk Array is to provide better performance and/or data fault tolerance.

### 5-0-2 Disk Array Member

The individual disk drive in an array is called a “member”. Each member of a specific disk array is coded in their “reserved sector” with configuration information that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the system.

### 5-0-3 Disk Array Types Supported by nForce3 250Gb

nForce3 250Gb on this mainboard supports four types of Disk Arrays: RAID 0, RAID 1, RAID 0+1.

1. RAID 0 (or Striping mode):

RAID 0 is a group of 2 to 4 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, it affects the entire array. The disk array size is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1.2GB drives will form a 4GB (4x1GB) disk array.

2. RAID 1 (or Mirroring mode):

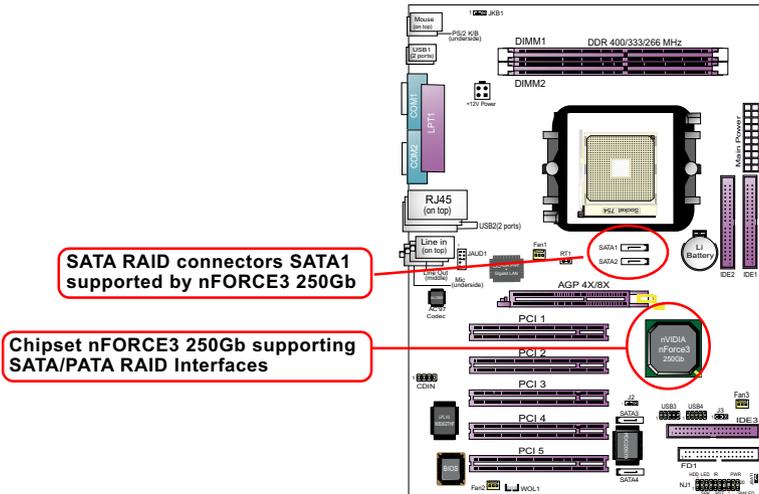
RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond, the remaining drive will continue to function. This is called Fault Tolerance.

The drive capacity of RAID 1 is half the total drive capacity of two equal-size drive.

3. RAID 0+1 (Mirror/Stripe):

RAID 0+1 is formed by a RAID 0 member mirrored to another RAID member to establish a RAID 0+1 Array. RAID 0+1 requires at least 4 disk drives to set up the RAID 0+1 configuration.

## 5-1. SATA 1/2 on SL-K8AN2-GR/K8AN2E-GR



## 5-2. Enable RAID function in the BIOS

1. Start the system, press < Delete > key to enter BIOS Setup. Choose “Integrated Peripherals” and select “IDE function Setup”, then press enter. The IDE function Setup windows appears.

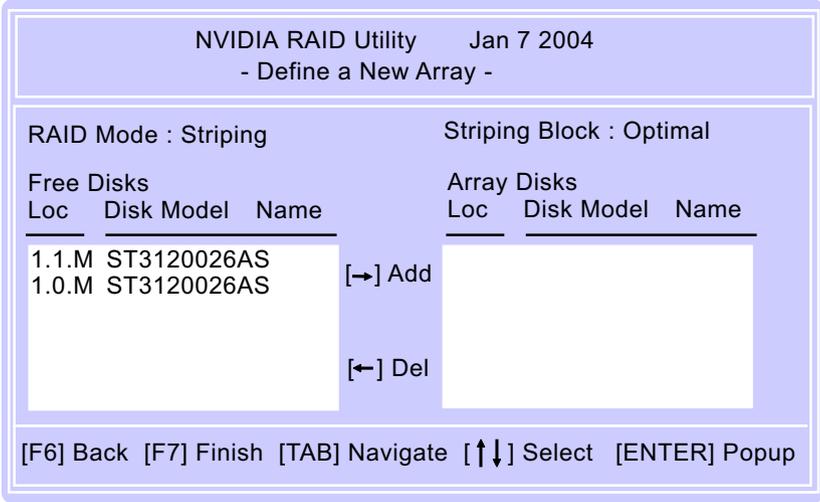
Phoenix - AwardBIOS CMOS Setup Utility  
IDE Function Setup

		Item Help
IDE RAID	Enabled	
x IDE Channel0 Master RAID	Enabled	
x IDE Channel0 Slave RAID	Enabled	
x IDE Channel1 Master RAID	Enabled	
x IDE Channel1 Slave RAID	Enabled	
x SATA Primary Master RAID	Enabled	
x SATA Secondary Master RAID	Enabled	

2. Enable “IDE RAID” and enable the disks that you want to set as RAID disks. ( If RAID 0+1 mode is to be set, please enable SATA drives.)
3. Then press F10 to save the change and exit the BIOS. The PC reboots.

### 5-3. Enter the NVRAID BIOS

1. Enter the RAID BIOS by pressing F10 when prompted after rebooting the system.
2. The NVIDIA RAID Utility - Define A New Array windows appears.



#### Definiton of New Array

Typically a system contains a controller and multiple channels, and each channel has a slave and a master except for SATA drives.

The status of the new array lists the information as below.

1.0.M	Parallel ATA
<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid red; height: 100px; margin-right: 5px;"></div> <div style="margin-left: 5px;"> <p>M: Master S: Slave</p> <p>Controller</p> </div> </div>	<p><b>0.0.M</b> Channel 0, Controller 0, Master</p> <p><b>0.0.S</b> Channel 0, Controller 0, Slave</p> <p><b>0.1.M</b> Channel 0, Controller 1, Master</p> <p><b>0.1.S</b> Channel 0, Controller 1, Slave</p>
	Serial ATA
<p>Channel - Channel 0 stands for Parallel ATA drives while Channel 1 stands for Serial ATA drives.</p>	<p><b>1.0.M</b> Channel 1, Controller 0, Master</p> <p><b>1.1.M</b> Channel 1, Controller 1, Master</p>

## 5-4. Configure the RAID Setup

### The RAID Mode Selection

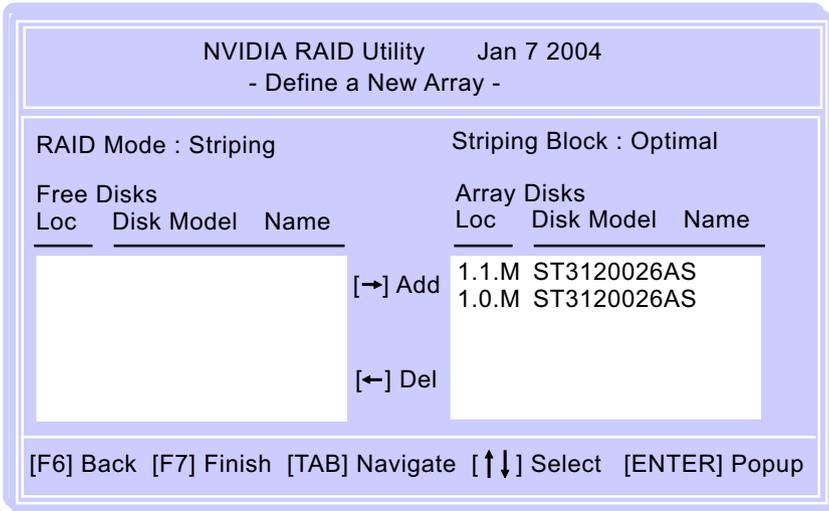
There are four modes to choose - Striping (RAID 0), Mirroring (RAID 1), Stripe Mirroring (RAID 0+1), Spanning (JBOD). To change to a different RAID mode, press the arrow key up or down until the mode you want appears in the screen.

### The Striping Block Size Selection

Striping Block Size affects how data is arranged on the disk. It is recommend to leave this value at default.

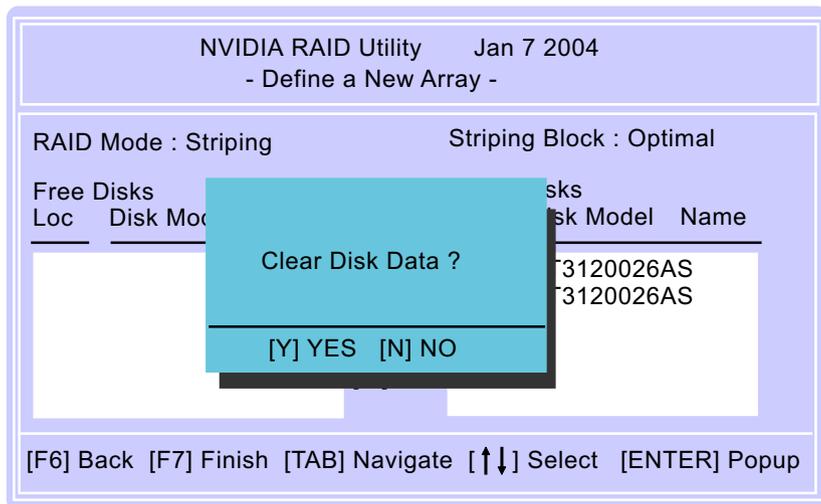
### Create the New Array

1. Press tab key to Free Disks section.
2. Move the disks appearing in this block (the disks are enabled from the IDE Function Setup of BIOS) to the Array Disks block by pressing the right arrow key.



## 5-5. Finish the RAID Setup

1. Press F7 after configuring the RAID array disks. A dialog windows appears.



2. Press Y to delete all the disk data from the RAID array you have just built, otherwise press N. Then the Array List windows appears, from which you can view the information about the RAID arrays you have configured.



3. Press Enter to show the RAID array details from the respective disks such as RAID mode, Striping Block, Striping Width, Disk Model Name, and Disk Capacity.
4. Finally press Enter again to return the previous screen and press [Ctrl+X] to exit and reboot the system.

Array 2 : NVIDIA STRIPE      223.58G  
- Array Detail -

RAID Mode : Striping  
Striping Width: 2                      Striping Block: 32K

<u>Adapt</u>	<u>Channel</u>	<u>M/S</u>	<u>Index</u>	<u>Disk Model Name</u>	<u>Capacity</u>
1	1	Master	0	ST3120026AS	111.79GB
1	0	Master	1	ST3120026AS	111.79GB

[R] Rebuild   [D] Delete   [C] Clear Disk   [ENTER] Return

Note:

In the above screen, you can press [R] to rebuild the disk data if you have built the RAID array as Mirroring Mode. Also, you can press [D] to delete the RAID array or press [C] to clear disk data.

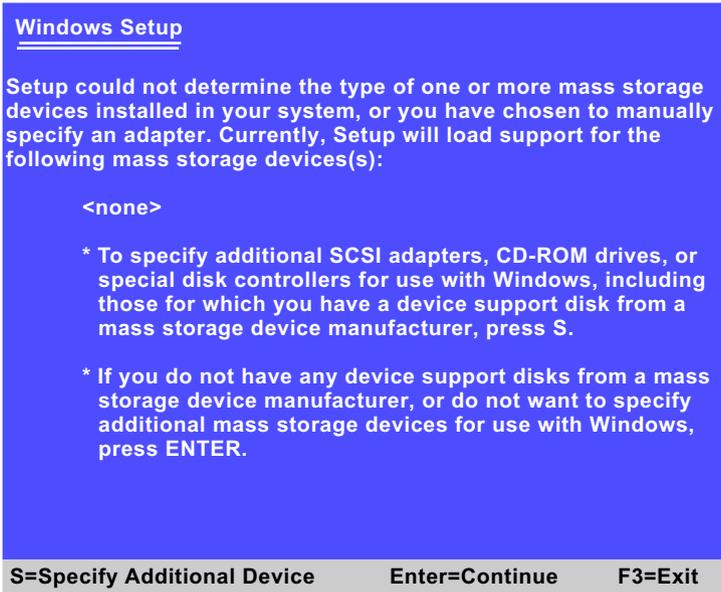
## 5-6 Install nVIDIA RAID Driver for Windows 2000/XP

nVIDIA RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for Windows 2000/XP.

- (1) Get ready the Floppy Diskette holding the RAID Driver.  
(This Driver Diskette should have been enclosed in the mainboard Package.)
- (2) Check that Hard Disks are connected properly to the RAID connectors.
- (3) Start your PC system and use RAID BIOS Setup Utility to configure RAID 0 / 1/ 0+1 to the hard disks.
- (4) Restart System and apply the Windows 2000/XP CD to CD-ROM for operating system installation.
- (5) On the Windows 2000/XP Setup screen, press "F6" key for RAID driver setup.



(6) On next screen press “S” to confirm the mass storage device setup.



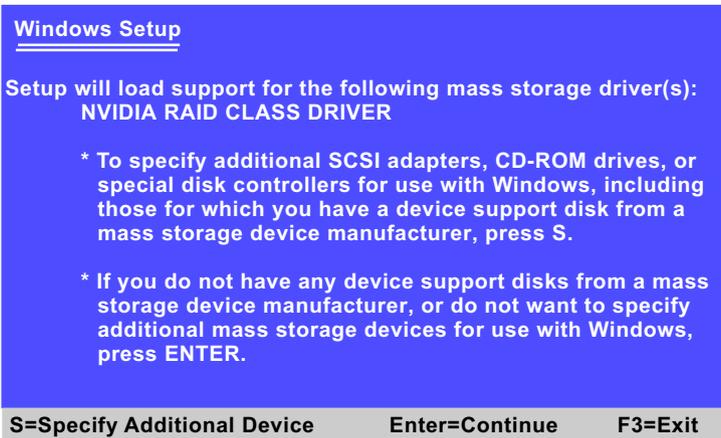
(7) On next screen appearing, insert the RAID Driver Diskette to Drive “A” and then press <Enter>.



- (8) On the next screen, you are prompted to install the “NVIDIA RAID CLASS DRIVER” and “NVIDIA NForce Storage Controller”. Please note that you should install both items. So, first press <Enter> on “NVIDIA RAID CLASS DRIVER” to continue.



- (9) When the following screen appears, press S again to specify an additional device and press <Enter> to continue.



- (10) You will be prompted to insert the driver disk into CD\_ROM drive again. After you have inserted the driver disk, press Enter to continue.

- (11) You will be prompted to insert the driver disk into CD\_ROM drive again. After you have inserted the driver disk, press Enter to continue.
- (12) On the next screen, press Enter on the marked-up item to continue.



- (13) Next screen will show that you have chosen two device drivers to set up. Press Enter to continue, and the Installation Program will then guide you through the rest of system setup.



- (14) When the system is completely installed, the RAID driver will also be installed into the system.

# Memo

# Chapter 6 PDC20579 RAID Driver

## Promise RAID Controller PDC20579

Promise RAID (Redundant Array of Independent Disks) Controller PDC 20579 is to provide RAID configuration of RAID 0, RAID 1, and RAID 0+1 modes, while it also support. RAID Drivers are enclosed in a Driver CD as well as a Floppy diskette to support various RAID systems (Windows 98SE/Me/2000/XP) setup.

**This Chapter is to introduce the SATA RAID / SATA + PATA RAID Configurations with PDC20579 :**

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<b>6-0-1 Disk Array Interpretation .....</b>	<b>89</b>
<b>6-0-2 Disk Array Member .....</b>	<b>89</b>
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## **6-0 About Disk Array**

### **6-0-1 Disk Array Interpretation**

A “Disk Array” is formed from a group of 2 or more disk drives with the RAID (Redundent Array of Independent Disks) technology. The aim of a Disk Array is to provide better performance and/or data fault tolerance.

### **6-0-2 Disk Array Member**

The individual disk drive in an array is called a “member”. Each member of a specific disk array is coded in their “reserved sector” with configuration information that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the system.

### **6-0-3 Disk Array Types Supported by PDC20579**

1. RAID 0 (or Striping mode):

RAID 0 is a group of 2 to 4 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, it affects the entire array. The disk array size is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1.2GB drives will form a 4GB (4x1GB) disk array.

2. RAID 1 (or Mirroring mode):

RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond , the remaining drive will continue to function. This is called Fault Tolerance.

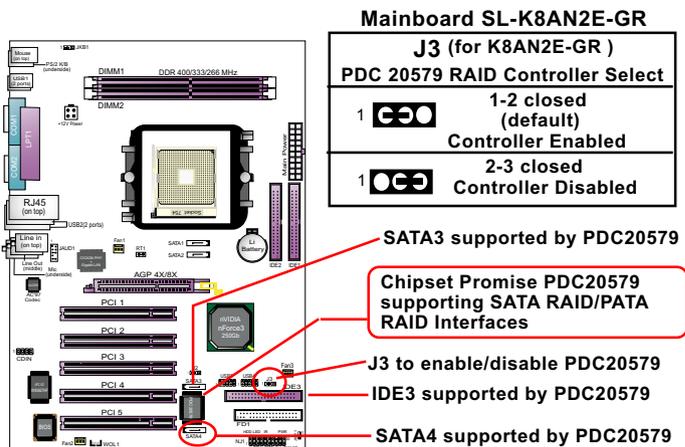
The drive capacity of RAID 1 is half the total drive capacity of two equal-size drive.

3. RAID 0+1 (Mirror/Stripe):

RAID 0+1 is formed by a RAID 0 member mirrored to another RAID member to establish a RAID 0+1 Array. RAID 0+1 requires at least 4 disk drive to set up the RAID 0+1 configuration.

### 6-1. SATA RAID and PATA RAID with PDC20579

PDC20579 is on board. It supports 2xSATA RAID Disk Drives and 2xPATA (IDE) RAID Disk Drives (and that is why PDC20579 supports RAID 0+1). First enable PDC20579 with J3 1-2 closed.

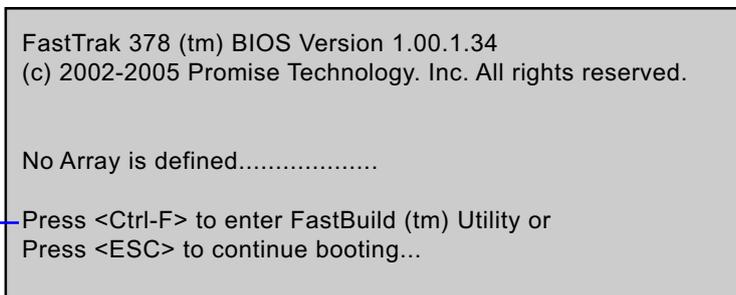


### 6-2. First Step to Set up RAID - Populate Disk Drives

1. Connect 1 SATA Disk Drive to ATA1 and 1 SATA Disk Drive to ATA2.
2. Connect 1 or 2 PATA Disk Drives to IDE3.
3. 3 Disk drives can be set up into RAID 0 or 1 or 0+1 Array.

### 6-3. To Enter RAID BIOS

At booting system, the following screen will appear after "POST".

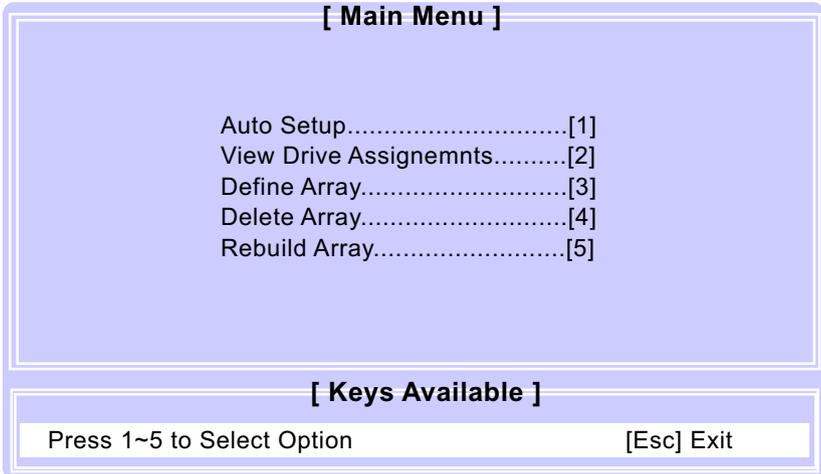


Following the instruction on the screen, press <Ctrl-F> to enter the FastBuild (tm) Utility.

## 6-4. To Enter the Main Menu of FastBuild Utility

The Main Menu will pop out as below:

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.



1. Auto Setup.....[1]  
Press figure “1” on keyboard to enter Auto Setup of RAID.”Auto Setup” is available only if there are free disk drive detected in system.
2. View Drive Assignment.....[2]  
Press figure “2” on keyboard to view the drive assignment detected in system.
3. Define Array.....[3]  
Press figure “3” on keyboard to view the defined Array already set up in system.
4. Delete Array.....[4]  
Press figure “4” on keyboard to enter the “Delete Array” field for deleting Array already set up in system.
5. Rebuild Array.....[5]  
Press figure “5” on keyboard to enter the “Rebuild Array” field for rebuilding a defective array or RAID member. “Rebuild Array” is available for “RAID 1 (Mirror)” or “RAIA 0+1 (Mirror/Stripe)” mode.

### 6-5. View Drive Assignment before RAID Setup

Press “2” to enter “View Drive Assignment” so that you can see the status of all disk drives detected by RAID BIOS.

FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.

**[ View Drives Assignments ]**

Channel:ID	Drive Model	Capacity (MB)	Assignment	Mode
1:	Mas ST380023AS	80026	Free	U5
2:	Mas ST380023AS	80026	Free	U5
3:	Mas QUANTUM FIREBALLP AS3	30020	Free	U2
3:	Mas ST330620A	30020	Free	U2

**[ Keys Available ]**

[Esc] Exit
MODE (D = DMA, U = UDMA)

**Press Esc key to return to Main Menu**

**Two drives are detected in one channel 3 as free drives (available for RAID setup)**

**Two drives are detected in channel 1 and 2 as free drives (available for RAID setup)**

**Totally 4 drives are detected by RAID BIOS**

### 6-6. Enter “Auto Setup” for RAID Setup

On the Main Menu press “1” to enter “Auto Setup” and choose your RAID mode. If you choose “Performance” and save your choice now, your RAID is Stripe mode. Since 4 drives are installed, you can also choose “Security” for your RAID mode.

**[ Auto Setup Options Menu ]**

Optimize Array for: Performance Press “ <--- “ key to change RAID option.

**[ Array Setup Configuration ]**

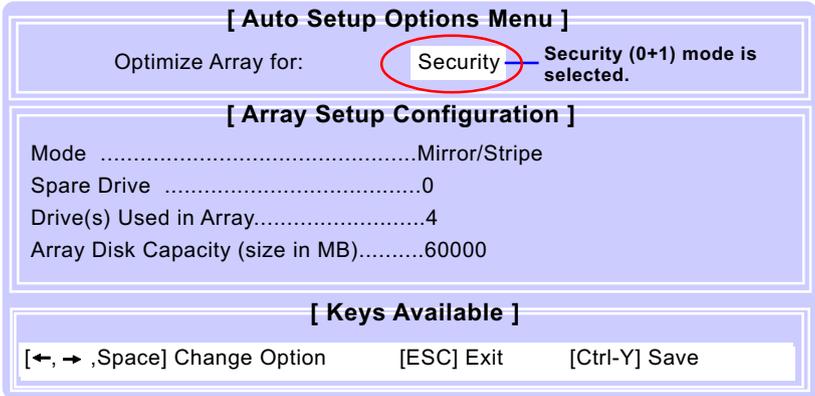
Mode .....Stripe  
 Spare Drive .....0  
 Drive(s) Used in Array.....4  
 Array Disk Capacity (size in MB).....120080

**[ Keys Available ]**

[←, →,Space] Change Option
[ESC] Exit
[Ctrl-Y] Save

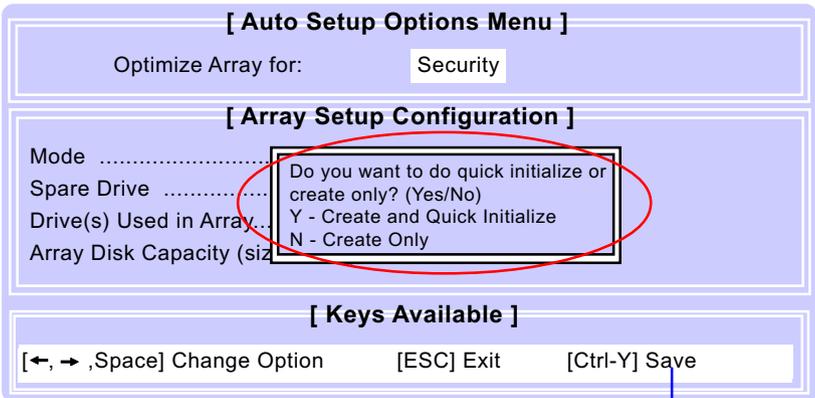
### 6-7. Choose “ Security” for RAID 0+1 (Stripe/Mirror)

Inside Auto Setup menu Press “ ← ” key to choose “Security” mode for your RAID.



### 6-8. Press <Ctrl-Y> to Save the Choice

When a RAID mode is chosen, press < Ctrl-Y> to save the choice. Then select Y for “Create and Quick Initialize; or select N for “Create only”.



Press <Ctrl-Y> to save choice.



### 6-11. Enter [Define Array] to see the RAID Mode

You can also press “3” on the Main Menu to enter the [Define Array]} so that you can see the RAID mode just set up by yourself.

FastBuild (tm) Utility 2.02 (c) 2003-2005 Promise Technology, Inc.

[ Define Array Menu ]				
Array No	RAID Mode	Total Drv	Capacity(MB)	Status
Array 1	Mirror/Stripe	4	120080	Functional
Array 2				
Array 3				
Array 4				

Halt On Error : Disable

### 6-12. After Array creation, Press [Esc] to exit

After Array creation, you can now press “Esc” on the Main Mrenu and exit RAID setup.

Congratulation!

Your system is now ready for operating system installation and RAID Driver Setup.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[ Main Menu ]	
Auto Setup.....[1]	
View Drive Assignemnts.....[2]	
Define Array.....[3]	
Delete /	
Rebuild	This will EXIT FastBuild! Are You Sure? Y - Yes / Any key - Back

[ Keys Available ]	
Press 1~5 to Select Option	[Esc] Exit

## 6-13. To Install Promise RAID Driver

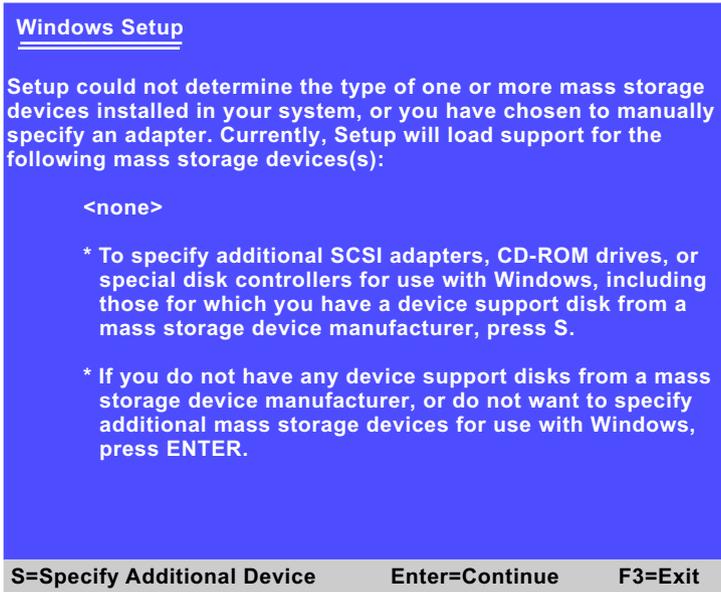
Promise RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for Windows 2000/XP/2003.

### To Install RAID Driver on Windows 2000/XP/2003

- (1) Get ready the Floppy Diskette holding the RAID Driver.  
(This Driver Diskette should have been enclosed in the mainboard Package.)
- (2) Check that Hard Disks are connected properly to the RAID connectors.
- (3) Start your PC system and use RAID BIOS Setup Utility to configure RAID 0 / 1/ 0+1 to the hard disks.
- (4) Restart System and apply the Windows 2000/XP/2003 CD to CD-ROM for operating system installation.
- (5) On the Windows 2000/XP/2003 Setup screen, press "F6" key for RAID driver setup.



- (6) On next screen press "S" to confirm the mass storage device setup.



- (7) On next screen appearing, insert the RAID Driver Diskette to Drive "A" and then press <Enter>.



- (8) On next screen, choose the driver suitable for your operating system and press <Enter> to continue.



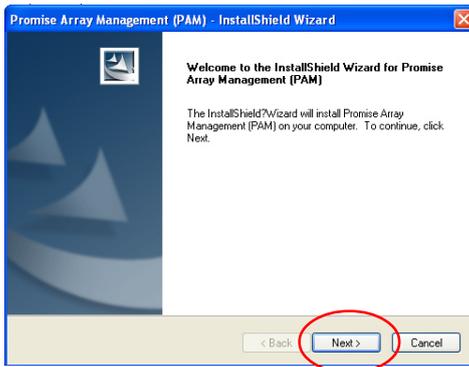
**Choose the 579 Controller driver for your system and press<Enter>**

After selecting the proper driver for your system, the Installation Program will then guide you through the rest of system setup. The RAID driver will then be installed into your system.

## 6-14. To Install Promise Array Management (PAM)

Promise Array Management utility is incorporated in Support CD for user's installation. This utility is intended for disk array management in Windows 98se/Me/2000/XP/2003.

- (1) Get ready the Support CD for PAM installation.
- (2) Open the Support CD and take the following path to start PAM setup:  
(Support CD) Driver\Promise\PDC20579\PAM 400\Setup.exe
- (3) Mouse click on Setup.exe to start PAM setup.  
Instantly, the Install wizard for Promise Array Management pops out. Click Next button to continue.



- (4) If your system prompts you to create a User account and a password for it, you should follow the instructions to do so.



- (5) After creating a User Account for PAM, click Next to continue setup. Follow the instructions on the subsequent screens and get on the PAM setup until you see the InstallShield Wizard Complete screen appear. You can create the PAM Program shortcut on your desktop before clicking on the Finish button.

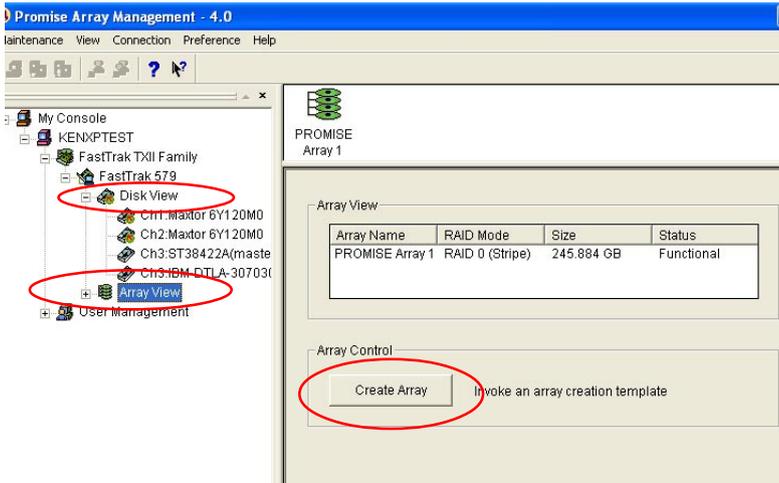


### **6-15. To manage Array System by PAM**

- (1) If you have installed PAM and created a shortcut on your desktop, click on the PAM icon on your desktop to start PAM.



(2) After you have entered your account password, you would be able to enter Fastrak 579 and then enter Disk View and Array View.



(3) If you have added an additional hard disk into your system, you can also click on Array View to create a new array.

