

# Contents

- Chapter 1 Specification ..... 7**
  - 1-1 NF4-754RL Mainboard Layout.....8
  - 1-2 Mainboard Specification Table .....9
  - 1-3 Chipset System Block Diagram ..... 10
  - 1-4 Mainboard Specifications and Features ..... 11
    - 1-4.1 CPU Socket ..... 11
    - 1-4.2 System Chipset ..... 11
    - 1-4.3 Memory ..... 11
    - 1-4.4 BIOS ..... 11
    - 1-4.5 PCI Express Interface ..... 12
    - 1-4.6 AC'97 Audio Codec on board ..... 12
    - 1-4.7 Advanced System Power Management ..... 12
    - 1-4.8 SATA RAID Interface ..... 12
    - 1-4.9 Multi-I/O Functions ..... 13
    - 1-4.10 10/100Mb RTL8201CL PHYceiver on board ..... 13
    - 1-4.11 Hardware Monitor integrated ..... 13
    - 1-4.12 Form Factor ..... 13
- Chapter 2 Hardware Setup ..... 14**
  - 2-1 CPU Installation with Socket 754 ..... 15
  - 2-2 Memory Installation ..... 16
  - 2-3 PCI Express Slot Installation ..... 16
  - 2-4 IDE Connector Installation ..... 17
  - 2-5 SATA / RAID Connectors ..... 18
  - 2-6 Floppy Drive Installation ..... 19
  - 2-7 ATX Power Supply Installation ..... 20
  - 2-8 Jumper Setting ..... 21
    - 2-8.0 How to tackle the Jumpers: ..... 22
    - 2-8.1 JBAT1: Clear CMOS ..... 22
    - 2-8.2 JKB1 & J1: Keyboard/Mouse Wake-up ..... 23
  - 2-9 Other Connectors Configuration ..... 24
    - 2-9.1 On-board FAN Connectors ..... 24
    - 2-9.2 USB Ports and USB Pin-headers ..... 25

- 2-9.3. Back Panel Connectors ..... 26
- 2-9.4 PS/2 Mouse , PS/2 Keyboard and SPDIF-out port ..... 26
- 2-9.5 RJ45 Connector ..... 27
- 2-9.6 CD-ROM Audio Connectors (CD\_In) ..... 27
- 2-9.7 DIMM Powered-on Warning LED and Thermal Detector .. 28
- 2-9.8 JAUD1: External Audio Connector ..... 28
- 2-9.9 Complex Pin-header (Front Panel Connectors) ..... 29
- Chapter 3 Software Setup ..... 30**
- 3-1 To Open up the Support CD ..... 31
- 3-2 To Install DirectX9 ..... 32
- 3-3 To Install “nVIDIA nForce4 All-in-1 Driver” ..... 33
- 3-4 To Verify 8-channel Audio Configuration ..... 34
- 3-5 To Install Hardware Monitor Utility ..... 35
- 3-5.1 Installation ..... 35
- 3-5.2 Verification ..... 36
- 3-6 To Install USB 2.0 Driver for Windows 2000 or XP ..... 37
- 3-7 RAID Driver Installation ..... 37
- Chapter 4 BIOS Setup ..... 38**
- 4-1 About BIOS Setup ..... 39
- 4-2 To Run BIOS Setup ..... 39
- 4-3 About CMOS ..... 39
- 4-4 The POST ( Power On Self Test ) ..... 39
- 4-5 To Update BIOS ..... 40
- 4-6 BIOS SETUP --- CMOS Setup Utility ..... 43
- 4-6.1 CMOS Setup Utility ..... 43
- 4-6.2 Standard CMOS Setup ..... 45
- 4-6.3 Advanced BIOS Features ..... 48
- 4-6.4 Advanced Chipset Features ..... 51
- 4-6.5 Integrated Peripherals ..... 53
- 4-6.6 Power Management Setup ..... 58
- 4-6.7 PnP / PCI Configuration ..... 61
- 4-6.8 SmartDoc Anti-Burn Shield ..... 63
- 4-6.9 Frequency/Voltage Control ..... 64
- 4-6.10 Load Optimized Defaults ..... 65
- 4-6.11 Set Supervisor / User Password ..... 66
- 4-6.12 Save & Exit Setup ..... 67
- 4-6.13 Exit Without Saving ..... 67

- Chapter 5 nVIDIA RAID Setup ..... 69**
- 5-0 About Disk Array ..... 70
  - 5-0-1 Disk Array Interpretation ..... 70
  - 5-0-2 Disk Array Member ..... 70
  - 5-0-3 Disk Array Types Supported by nForce4-4X (CK804) ..... 70
- 5-1. Set up IDE RAID HDDs and SATA RAID HDDs ..... 71
- 5-2. Enable IDE SATA function in System BIOS ..... 72
- 5-3. Enter the NVRAID BIOS ..... 73
- 5-4. Configure the RAID Setup ..... 74
- 5-5. Finish the RAID Setup ..... 75
- 5-6 Install Win 2K/XP and nForce4-4X RAID Driver ..... 77

# Chapter 1 Specification

## Introduction

This mainboard features an integration of the powerful processors AMD Athlon 64 754 and the system chipset nVidia nForce4 CK804, with which the whole system performance supports HyperTransport Bus up to 800MHz.

nForce4 CK804 supports on-board AMD processor to provides the PCI Express interface up to x16 for various PCI Express cards (including the PCI Express-x16 Graphics card).

In addition, nForce4 CK804 also supports the LPC Super I/O, PCI interface (including 8-channel AC'97 Audio interface, and LAN interface), 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**

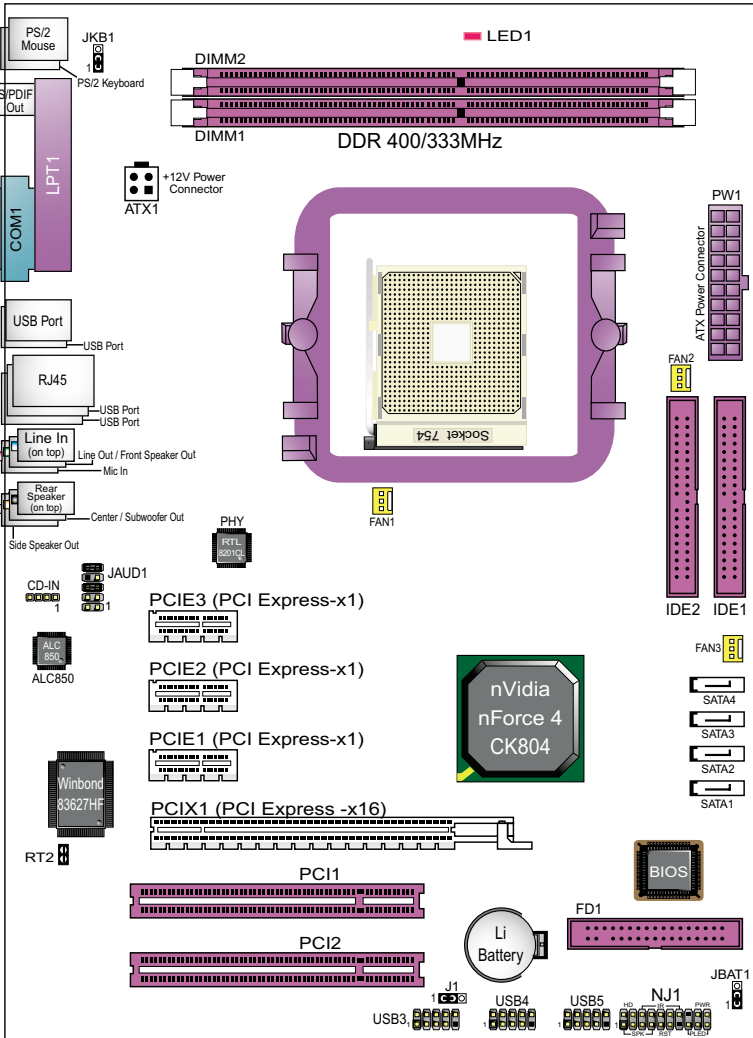
**1-2 Specification Table**

**1-3 Chipset System Block Diagram**

**1-4 Mainboard Specifications and Features**

**\*\* 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.**

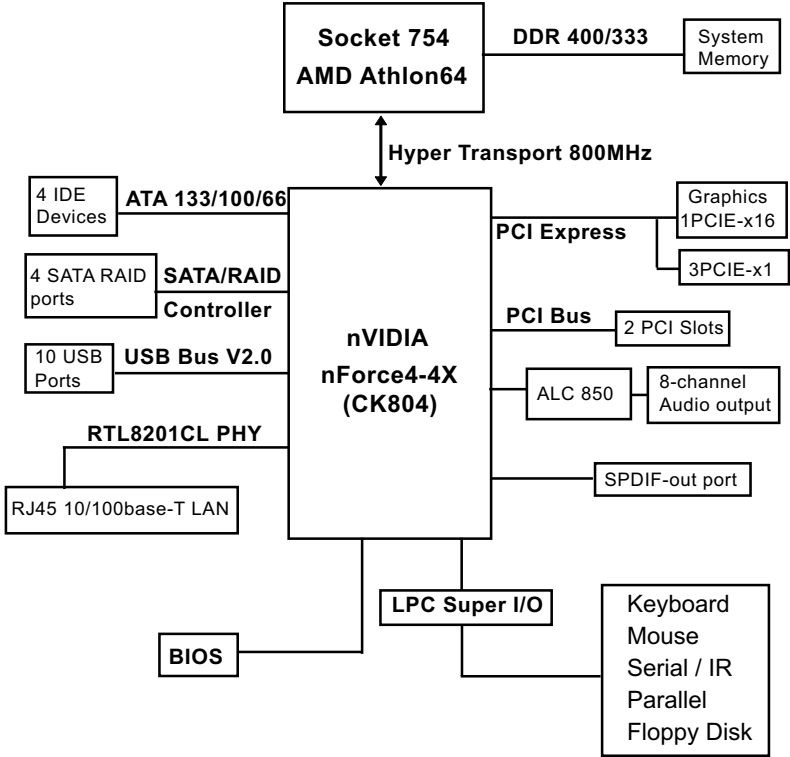
# 1-1 NF4-754RL Mainboard Layout



## 1-2 Mainboard Specification Table

NF4-754RL Specifications and Features	
CPU	Socket 754 for AMD Athlon 64 CPUs
System Chipset	nVidia nForce4 CK804, supporting up to 800MHz Hyper Transport (200MHz x 4)
Graphics Interface	PCI Express-x16
Memory	Supported by Athlon 64 CPU for DDR 400/333 SDRAM, up to 2GB in 2 DIMM slots
I/O Chip	Winbond W83627HF
PCI Express	1 PCI Express-x16 slot; 3 PCI Express-x1 slots
Audio	AC'97 Audio 2.3 compliant, 8-channel audio; 1xS/PDIF-out;
IDE Interface	2 ATA 133/100/66 IDE Connectors
Serial ATA/RAID Interface	4SATA / SATA RAID connectors supported by nForce4 CK804
VGA	Not integrated on board
Network	RT8201CL PHY supporting 10/100Mb LAN
PCI Slots	2 PCI Master slots on board
I/O Connectors	10 USB V2.0, 1 FDD port, 1 COM port, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse, 1 SPDIF-out
Other Common Feature	PS/2 Keyboard/ Mouse Wake up; Suspend to RAM mode (STR) supported;

### 1-3 Chipset System Block Diagram



Socket 754 + nVIDIA nForce4 CK804 Diagram  
on NF4-754RL

## **1-4 Mainboard Specifications and Features**

### **1-4.1 CPU Socket**

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 2000MT/s with a resulting bandwidth of up to 8 Gbytes/s and integrated Memory Controller supporting DDR 400/333MHz SDRAM.

### **1-4.2 System Chipset**

Single Chip nForce4-4X (CK804):

- Supporting 800MHz Hyper Transport Bus
- Supporting PCI Express up to x16 interface for PCI Express device cards ( including Graphics card)
- Supporting LPC Super I/O, PCI interface (including 8-channel Audio interface, and LAN interface), ATA133 interface, USB V2.0 interface, as well as SATA/SATA RAID interface

### **1-4.3 Memory**

2DDR DIMM 184-pin slots on board for non-ECC DDR 400/333 SDRAMs:

- Installation of mixed volumes yet same type of DDR SDRAM modules supported .

### **1-4.4 BIOS**

Flash Memory for easy upgrade, 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 IO,IRQ, DMA Assign. etc.)
- SmartDoc Anti-Burn Shield (CPU/System Temp.,Fan speed etc.)
- Frequency/Voltage (CPU clock, Voltage of CPU, DIMM, AGP etc.)



### **1-4.5 PCI Express Interface**

1 PCI Express-x16 slot integrated, supporting:

- a raw bit-rate of 2.5 Gb/s on the data pins, resulting in a real bandwidth per pair of 250MB/s.
- Enhanced Addressing Mechanism
- PCIE Graphics / LAN card etc. (not supporting AGP card)

3 PCI Express-x1 slots integrated supporting PCIE LAN card etc.

### **1-4.6 AC'97 Audio Codec on board**

AC'97 Audio Codec Realtek ALC850 on board

- Supporting 8-channel display of PCM audio output
- 8 channel audio consists of Front-Out, Surround-Out, Center-Out, Surround-Back-Out, Mic-In, Line-In, and Front-Mic-In for complete surround sound effect
- SPDIF Out connector integrated in Back Panel supported by nForce-CK804 for digital format output.
- AC'97 Audio Codec Driver enclosed in Support CD for user's installation.

### **1-4.7 Advanced System Power Management**

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

- ACPI 1.0 compliant (Advanced Configuration and Power Interface)
- APM V1.2 compliant (Legacy Power Management)
- ACPI Suspend function supported
- PS/2 Keyboard & Mouse Wake-up
- STR (Suspend to RAM) mode supported
- Real Time Clock (RTC) with date alarm, month alarm, and century field

### **1-4.8 SATA RAID Interface**

Serial ATA RAID Interface supported by nForce4-4X:

- Supporting 4 Serial ATA/RAID connectors for 4 SATA Hard Disks with 150Mb/s transfer rate
- Serial ATA RAID Drivers enclosed in Support CD for user's installation
- Supporting RAID 0,1, 0+1 configuration

**1-4.9 Multi-I/O Functions**

- IDE 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, supporting Windows 98 and later operating systems; USB drivers provided in Support CD for installation
  - 4 built-in USB connectors and 3 more USB pin-headers which require 3 optional USB cables to provide 6 more USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
  - 1 serial port (COM1) on board.

**1-4.10 10/100Mb RTL8201CL PHYceiver on board**

RTL8201CL on board:

- Supporting 10/100Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45 LAN Connector

**1-4.11 Hardware Monitor integrated**

- Hardware Monitor integrated, 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.

**1-4.12 Form Factor**

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

# 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.

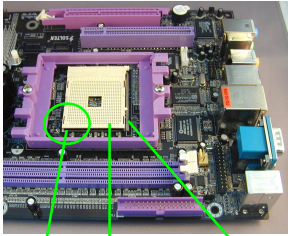
## The following topics are included in this chapter:

<b>2-1 CPU Installation with Socket 754 .....</b>	<b>15</b>
<b>2-2 Memory Installation .....</b>	<b>16</b>
<b>2-3 PCI Express Slot Installation .....</b>	<b>16</b>
<b>2-4 IDE Connector Installation .....</b>	<b>17</b>
<b>2-5 SATA / RAID Connectors .....</b>	<b>18</b>
<b>2-6 Floppy Drive Installation .....</b>	<b>19</b>
<b>2-7 ATX Power Supply Installation .....</b>	<b>20</b>
<b>2-8 Jumper Setting .....</b>	<b>21</b>
<b>2-8.0 How to tackle the Jumpers: .....</b>	<b>22</b>
<b>2-8.1 JBAT1: Clear CMOS .....</b>	<b>22</b>
<b>2-8.2 JKB1 &amp; J1: Keyboard/Mouse Wake-up .....</b>	<b>23</b>
<b>2-9 Other Connectors Configuration .....</b>	<b>24</b>

## 2-1 CPU Installation with Socket 754

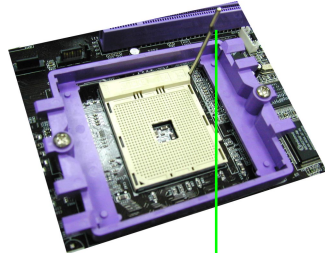
This series is built with CPU Socket 754 supporting the AMD CPUs Athlon 64:

1. Socket 754 supported by a cooling Fan Base.



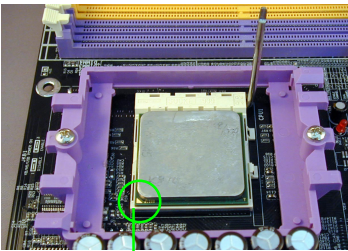
Socket 754  
Pin 1 position      Socket 754 Lever

2. Pull up the lever to release socket lock.



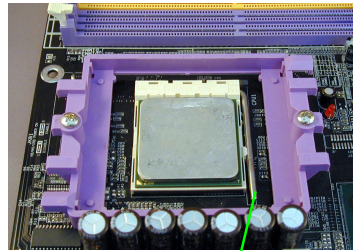
Pull up Lever

3. Insert CPU into Socket 754, CPU Pin1 to Socket Pin1.



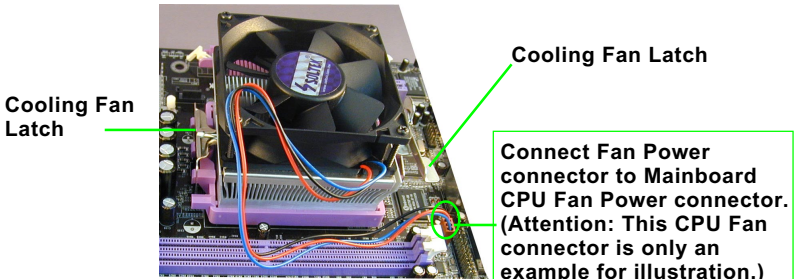
CPU Pin 1 to Socket Pin 1.

4. Pull down Lever to fix CPU to Socket 754



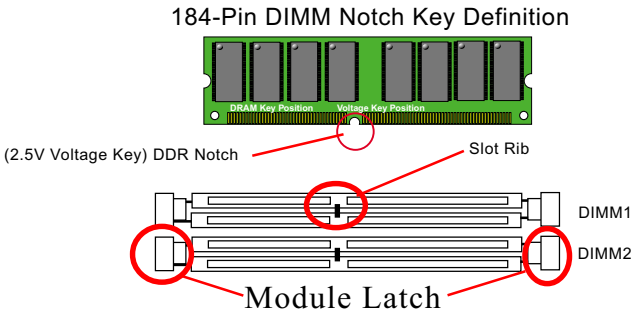
Pull down Lever to fix CPU.

5. Install cooling fan into Fan Base.



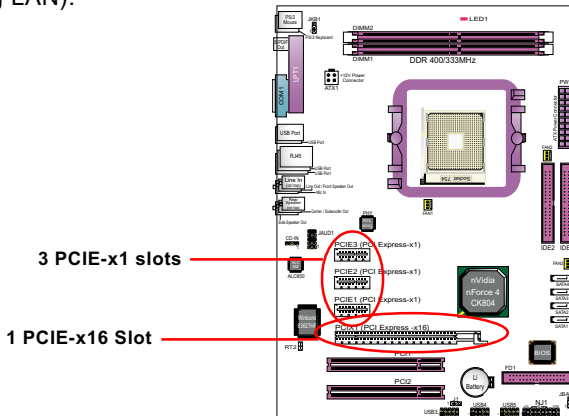
## 2-2 Memory Installation

- 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 in a socket improperly will damage the memory module and slot.
- Make sure you have the right type of memory module for your mainboard.



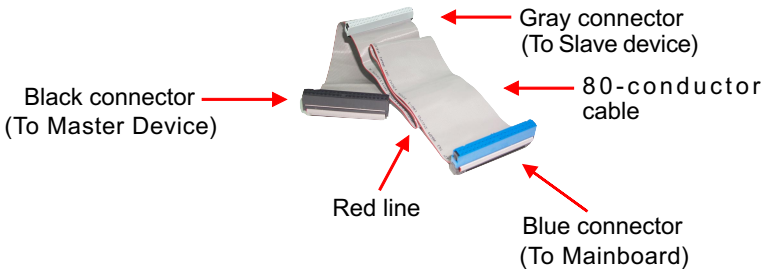
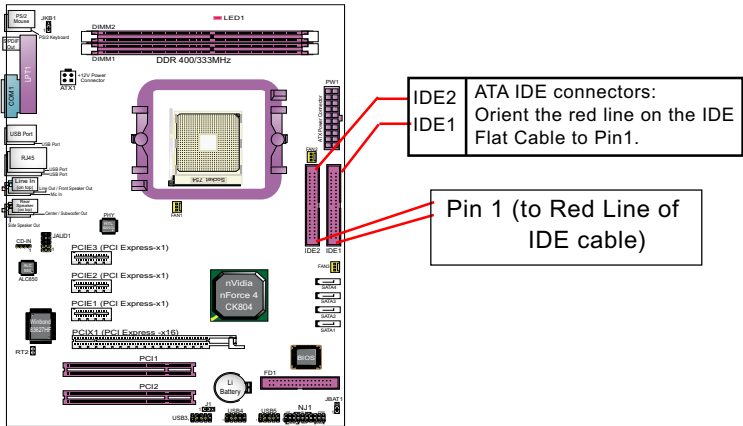
## 2-3 PCI Express Slot Installation

- 1) PCI Express-x16 Slot is built on board for PCI Express Graphics card application, supporting a raw bit-rate of 2.5Gb/s on the data pins. It does not support AGP 1X/2X/4X/8X card.
- 2) 3 PCIe-x1 slots are also supported by nForce4-4X, compliant with PCI Express Base Specification, Revision 1.0a for PCI Express cards (including LAN).



### 2-4 IDE Connector Installation

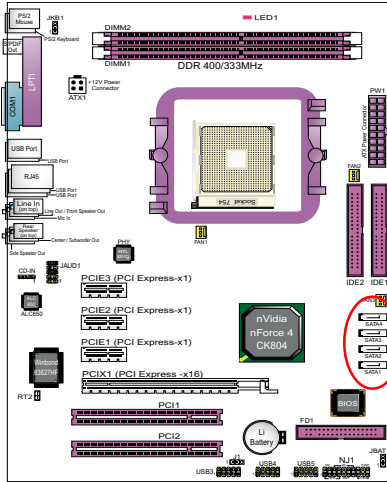
1. To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.
2. IDE1 and IDE2 are also supported by nForce4-4x to set up IDE RAID system with 2 to 4 IDE Hard disks.



### IDE Flat Cable

## 2-5 SATA / RAID Connectors

4 Serial ATA connectors for 4 SATA/RAID Hard Disks are supported by nForce4-4X chipset. Please see Chapter 5 Disk Array Installation for detailed RAID installation.

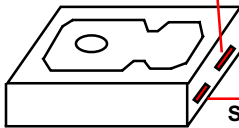


**Serial ATA Connectors**

4 SATA Connectors supported by nForce4-4X for 4 SATA / RAID Hard Disks setup.

- SATA4
- SATA3
- SATA2
- SATA1

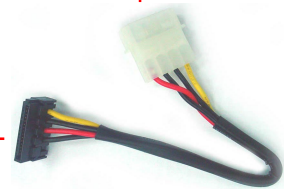
(optional)  
Serial ATA Cable



Serial ATA Hard Disk

SATA Power Connectors

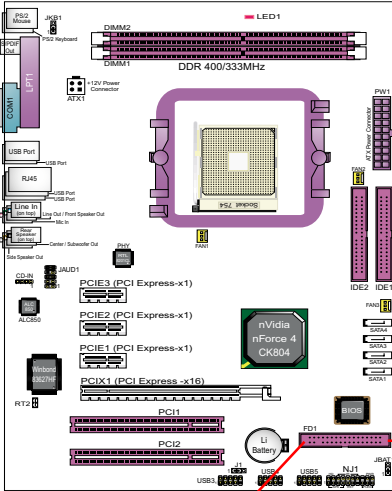
To Power Supply



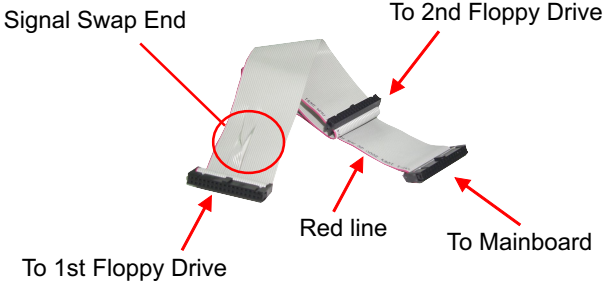
Serial ATA Power Cable (optional)

## 2-6 Floppy Drive Installation

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



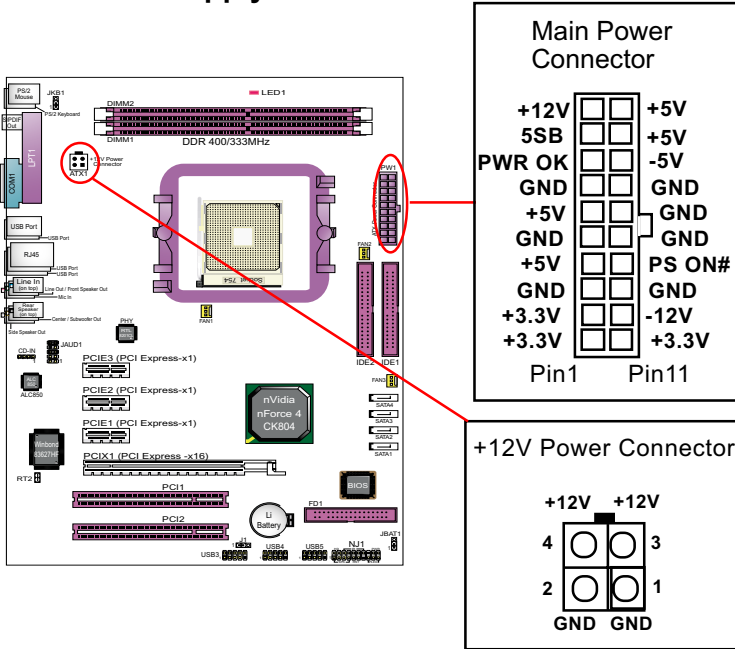
Pin 1 (to Red Line)



**FDD Cable**



## 2-7 ATX Power Supply Installation



ATX V2.03 Power Supply is strongly recommended for mainboard running with this mainboard.

To set up Power Supply on this mainboard:

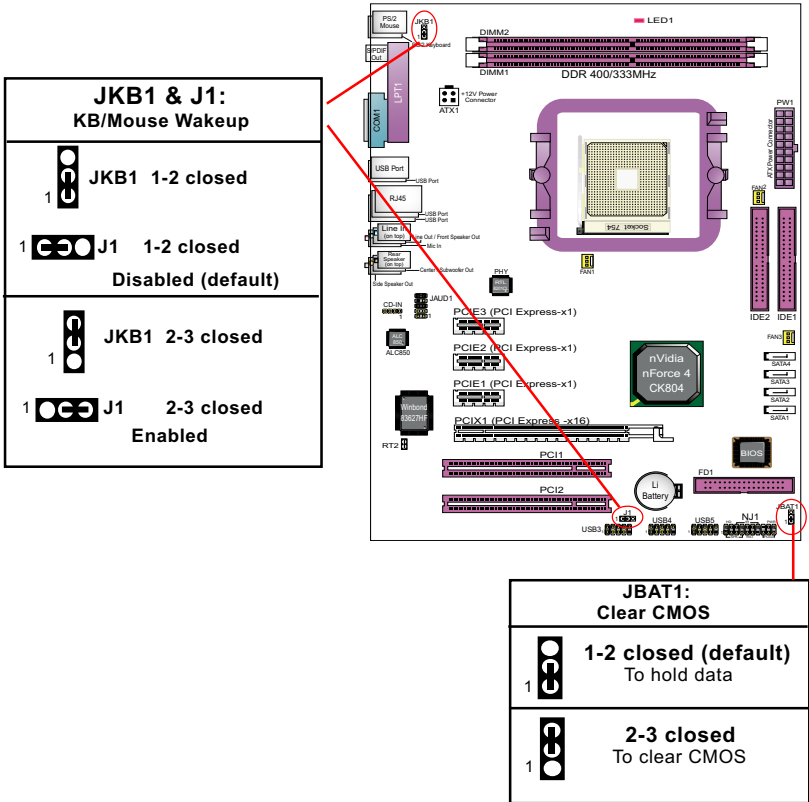
1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supply.

Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supply; otherwise, the system may either not start or be damaged.

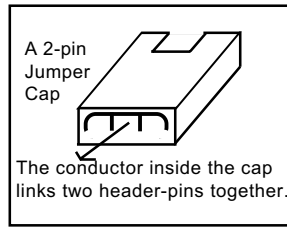
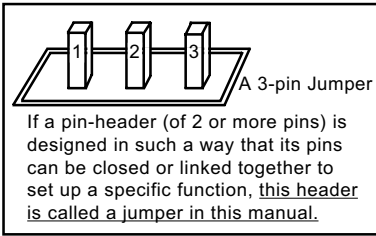
2. This ATX Power Supply should be able to provide at least 720mA/ +5V standby power for Wake On Lan function.

### 2-8 Jumper Setting

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



### 2-8.0 How to tackle the Jumpers:



- A Jumper is usually but not necessarily given a “JpX” legend.
- In the Jumper setting diagram, all jumper pins covered with black marks stand for closed pins with jumper cap.

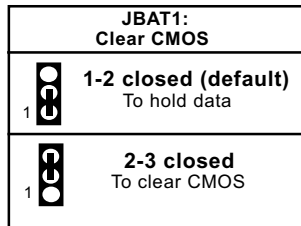


- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, mainboard could be damaged.

#### 2-8.1 JBAT1: Clear CMOS

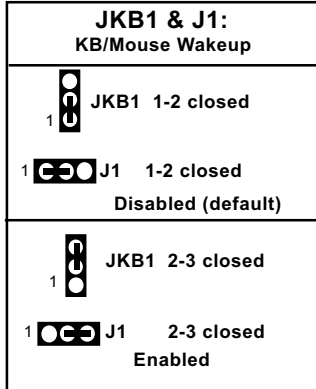
When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

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.



### 2-8.2 JKB1 & J1: Keyboard/Mouse Wake-up

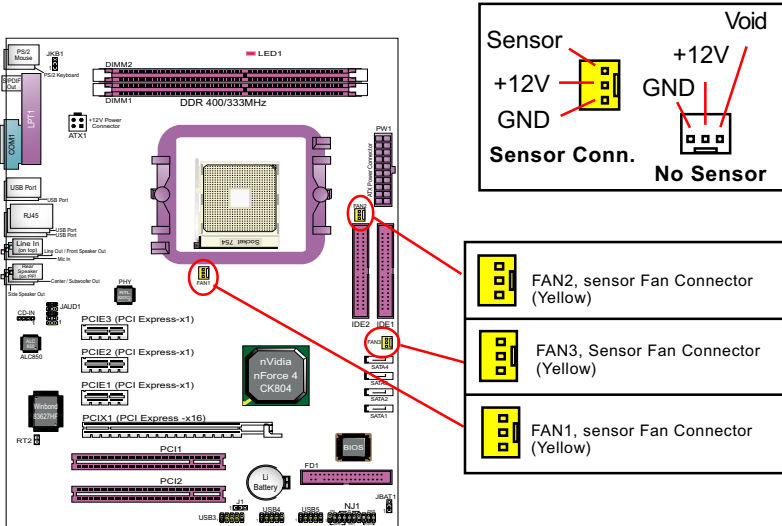
JKB1 with J1 is design on board for the “ Wake up system from suspend mode” function with the PS/2 keyboard/mouse. Yet user should still enter “BIOS Setup” to choose the Wake-up/Power-on mode.



## 2-9 Other Connectors Configuration

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

### 2-9.1 On-board FAN Connectors



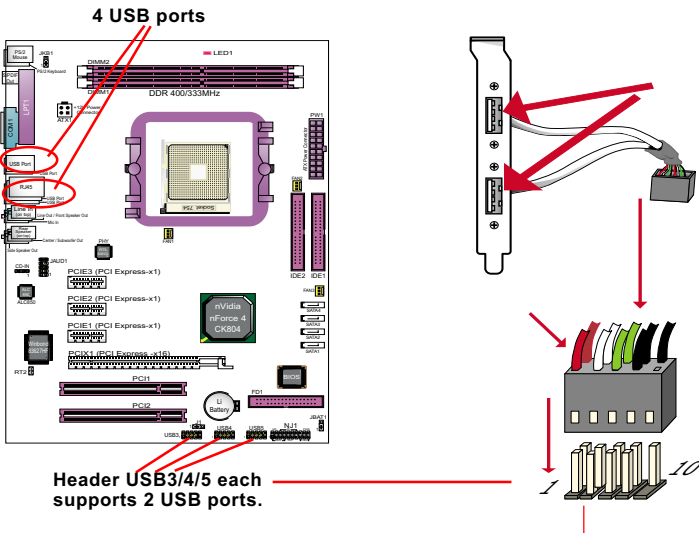
All FAN1, FAN2 and FAN3 are Sensor Fan Connectors supporting CPU/Add-on-card/System cooling fan with +12V mode. A Hardware Monitor chipset is on board, with which users can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan. Otherwise, users can read the fan speed from the “Hardware Monitor Status” via BIOS.

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

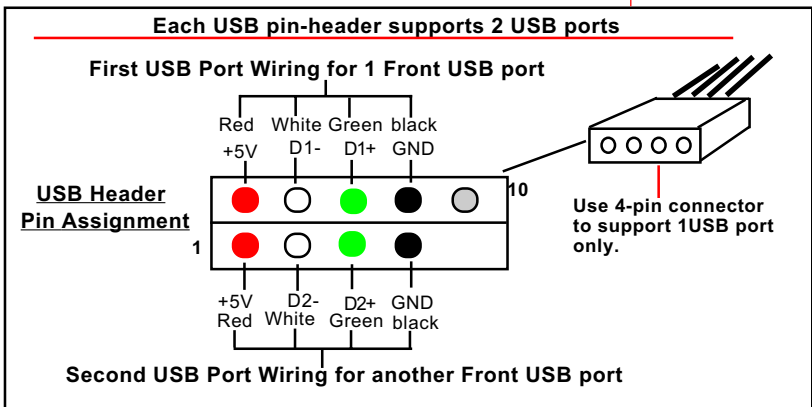
### 2-9.2 USB Ports and USB Pin-headers

This Mainboard provides 4 USB ports on board supporting various USB devices. In addition, 3 USB pin-headers are added on board to provide expansion of 6 more optional USB ports by using 3 additional USB Cables. User can order the optional USB cables from your mainboard dealer or vender.

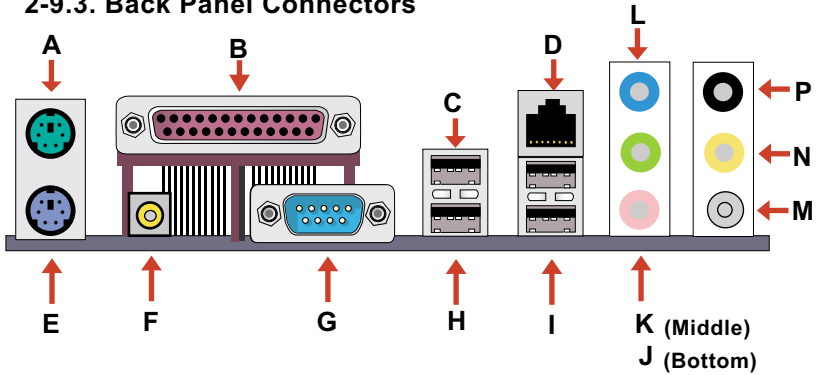
All 10 USB ports are compliant with 1.0 / 2.0 USB Bus. USB 2.0 supports Windows 98 and above. USB 1.0 / 2.0 drivers are provided in Support CD for user's installation.



Header USB3/4/5 each supports 2 USB ports.

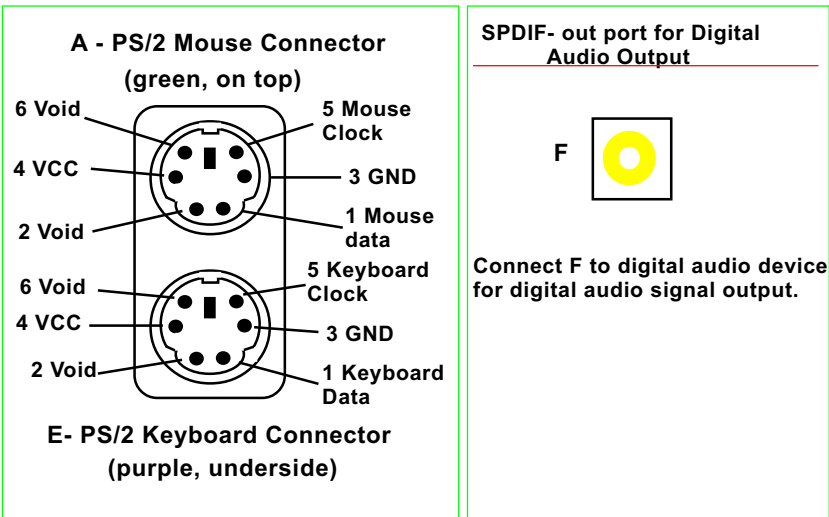


2-9.3. Back Panel Connectors



- A : PS/2 MOUSE
- B : LPT1 Printer PORT
- C : USB port
- D : RJ45
- E : PS/2 KEYBOARD
- F : SPDIF-out port
- G : COM 1
- H : USB port
- I : 2 USB Ports
- J : Microphone-in
- K : Line-out / Front Speaker
- L : Line-in
- M : Side Speaker Out
- N : Center/Subwoofer out
- P : Rear Speaker Out

2-9.4 PS/2 Mouse , PS/2 Keyboard and SPDIF-out port



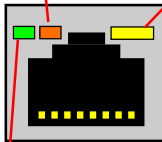
### 2-9.5 RJ45 Connector

One RJ45 connector is on board for LAN connection, supporting 10/100Mb data transfer (and 1000Mb when Gigabit LAN is supported).

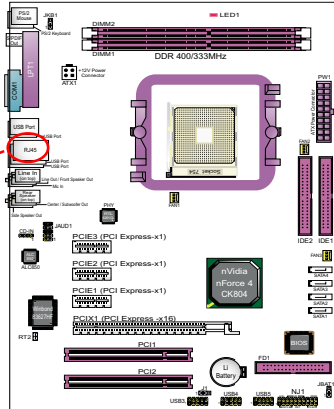
Orange LED blinks to indicate that data transmission is undergoing in 1000 Base T mode (only when 1000Mb is supported).

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

F (in Back Panel):

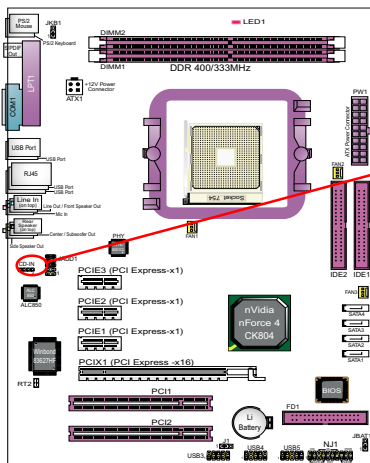


Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



### 2-9.6 CD-ROM Audio Connectors (CD\_In)

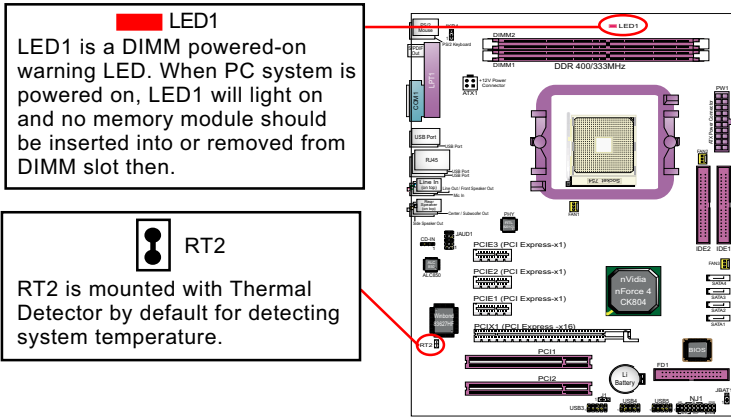
CD-In is an audio connector connecting CD-ROM audio to mainboard.



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



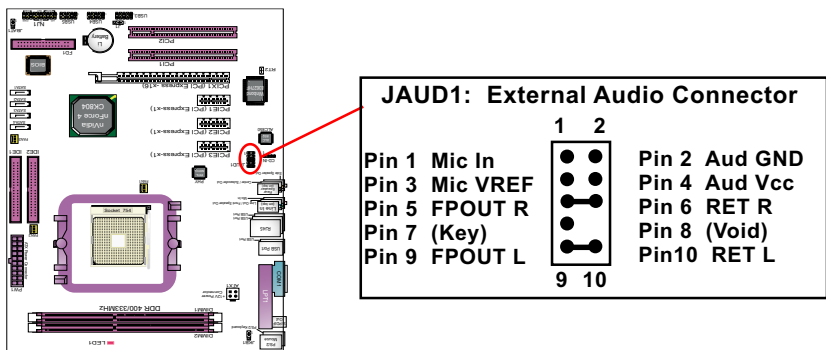
### 2-9.7 DIMM Powered-on Warning LED and Thermal Detector



### 2-9.8 JAUD1: External Audio Connector

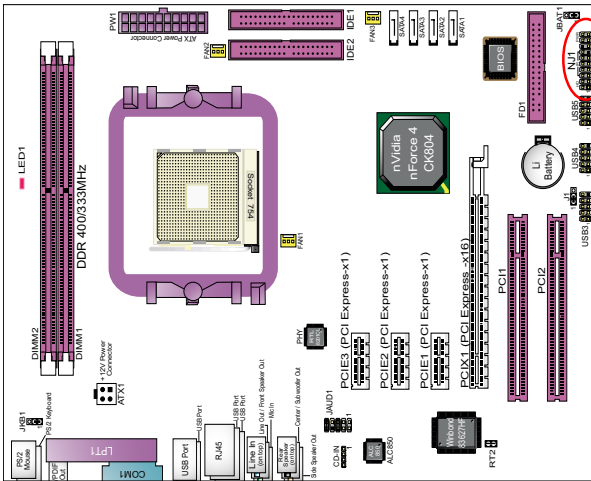
This Mainboard is designed with a External Audio connector “JAUD1” which provides connection to your audio connectors on the Front Panel of the PC case.

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 External Audio Connector, please open all pins of JAUD1 and connect it to the Front Panel Audio Connector.

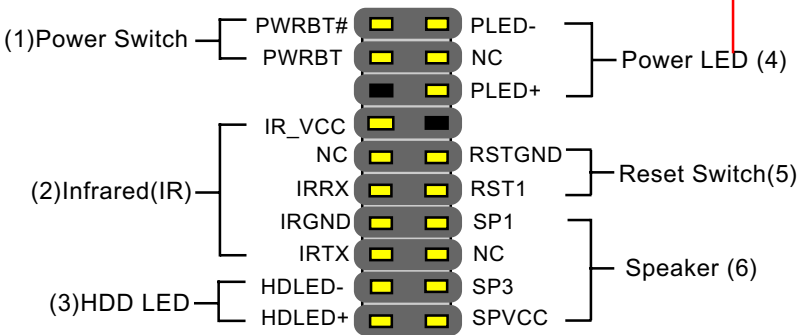


### 2-9.9 Complex Pin-header (Front Panel Connectors)

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.



**Connect these connectors to PC Front Panel**



# 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.

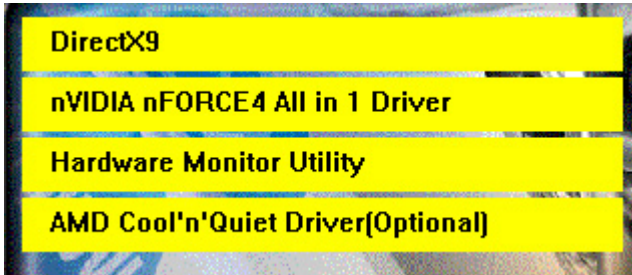
The priority of drivers to be installed should also be noted. Users are recommended to take the following installation orders :

**The following topics are included in this chapter:**

- 3-1 To Open up the Support CD ..... 31**
- 3-2 To Install DirectX9 ..... 32**
- 3-3 To Install “nVIDIA nForce4 All-in-1 Driver” ..... 33**
- 3-4 To Verify 8-channel Audio Configuration ..... 34**
- 3-5 To Install Hardware Monitor Utility ..... 35**
  - 3-5.1 Installation ..... 35**
  - 3-5.2 Verification ..... 36**
- 3-6 To Install USB 2.0 Driver for Windows 2000 or XP ..... 37**
- 3-7 RAID Driver Installation ..... 37**

### 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)

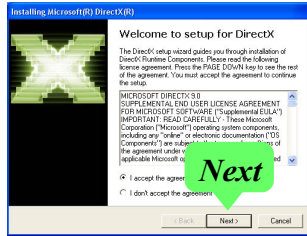
3. Drivers will be updated from time to time in our web site. If you are installing a newer driver than the one illustrated in this chapter, please be aware that the illustration pictures might be different.

### 3-2 To Install DirectX9

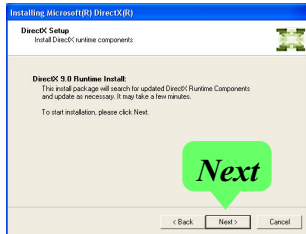
Please open the Support CD with your CD-ROM to enter the Main Installation Menu.

Then click to “Install DirectX9”. DirectX 9 should be installed before installing other drivers.

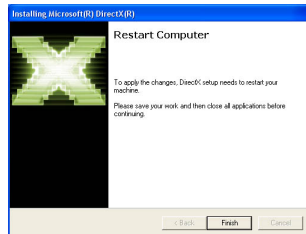
1. When the screen of “Installing Microsoft DirectX ” appears, please select “ I accept the agreement” and press “Next” button to continue.



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

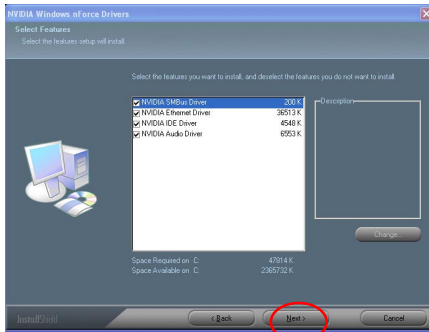


3. After all the setup procedures have completed, click to “Finish” button to exit the Installation program and restart your system.

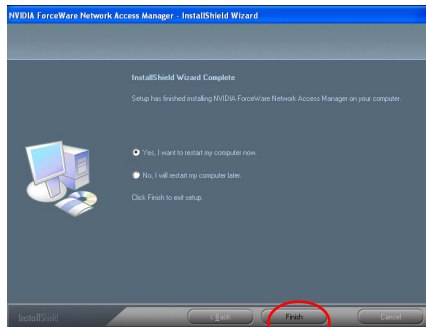


### 3-3 To Install “nVIDIA nForce4 All-in-1 Driver”

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 nForce4 All-in-1 Driver” to proceed.
3. The nVIDIA InstallShield Wizard will pop up to guide you to set up nForce4 Drivers. This All-in-1 Driver will first start to install System Management Bus driver, and then nVidia Ethernet LAN driver , nVidia IDE driver, and then Audio driver. Click on Next to continue.



4. 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 8-channel Audio Configuration

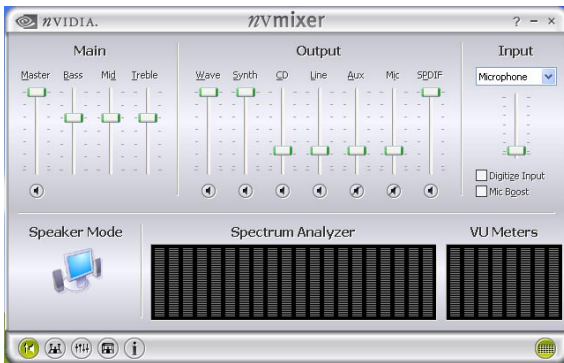
After installation of AC'97 8-channel Codec, you must configure the 7.1 Speaker connection to enable the 8-channel audio.

1. After Connection is done, start your Windows system and double click the nVMixer icon to enter nVidia 8-channel configuration:



**Double Click**

2. On the nVMixer Panel, user can adjust the Main volume, Output volume, Input volume, and Speaker mode etc.



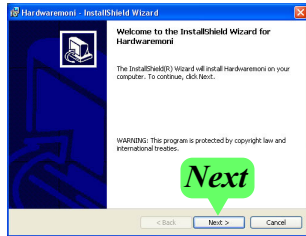
### 3-5 To Install Hardware Monitor Utility

#### 3-5.1 Installation

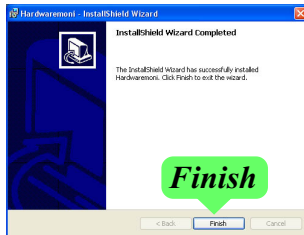
Hardware Monitor is built on this mainboard. Its installation is programmed to a fully automated mode on Windows 9X/Me/2000/XP. Users can follow the model installation below for its installation on various Windows System.

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.



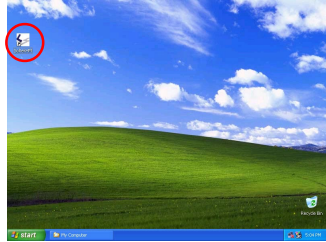
3. In a few seconds, installation completes. After all the setup process is finished, click “Finish” to exit the wizard.





### 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.

Showing the temperature(s), the function of which is supported by the mainboard.

Showing the Fan Speed(s) that is supported by the mainboard.

Click on “Soltek” button to display the function menu.

Showing the Voltage(s) that is supported by the mainboard.

Status-Warning LED

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

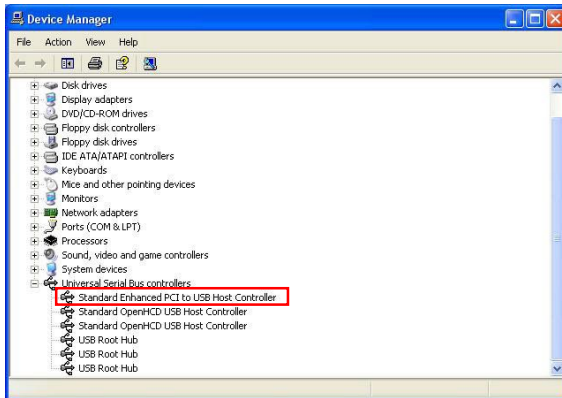
VOLTAGE			
CPU Voltage	1.712	12V	12.098
DRAM Voltage	2.512	-12V	-12.944
3.3V	3.298	5VSB	4.914
5V	4.919	Battery	7.080

\*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 nForce4 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.



### 3-7 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 of this User Manual introduces the configuration of RAID system and then the installation of RAID Driver. Please refer to Chapter 5 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.

**The following topics are included in this chapter:**

**4-1 About BIOS Setup ..... 39**

**4-2 To Run BIOS Setup ..... 39**

**4-3 About CMOS ..... 39**

**4-4 The POST ( Power On Self Test ) ..... 39**

**4-5 To Update BIOS ..... 40**

**4-6 BIOS SETUP --- CMOS Setup Utility ..... 43**

**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.

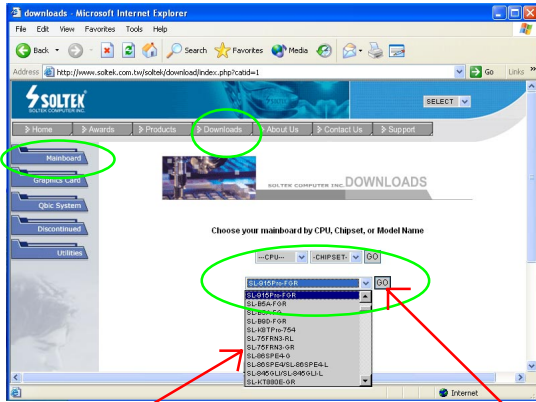
## **4-4 The POST ( Power On Self Test )**

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 Update BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to update BIOS without the need to replace an EPROM component.
- The Update Utility should be loaded on a floppy diskette for updating, saving, and verifying the system BIOS.
- **Please follow the steps below for updating the system BIOS:**

Step 1. Please visit Soltek website: [www.soltek.com.tw](http://www.soltek.com.tw), download the .zip files of the latest BIOS and BIOS-update utility into your hard disk for your mainboard.



Choose the Model you want to update here.

Click on "Go" to download the BIOS and BIOS-update Utility to your hard disk first.

- Step 2. Create a bootable diskette. Then copy the BIOS file and BIOS-Update utility (an execution file) into the diskette.
- Step 3. Insert the diskette into drive A, boot your system from the diskette.
- Step 4. Under "A" prompt, type on the DOS screen the BIOS-Update Execution file name and the BIOS file name with a space between them and then press <Enter> to run BIOS update program.

```
A:\> BIOS-update Execution file name | BIOS file name.Extension
```

Should type a space here

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 
<input type="checkbox"/> Write OK <input checked="" type="checkbox"/> No Update <input type="checkbox"/> 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 
<input type="checkbox"/> Write OK <input checked="" type="checkbox"/> No Update <input type="checkbox"/> 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>
<p>Esc: Quit <span style="float: right;">↑↓←→ : Select Item</span>  F10: Save &amp; Exit Setup</p>	
<p>Time, Date, Hard Disk Type...</p>	



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	Menu Level ▶
▶ IDE Channel 0 Master	None	Change the day, month, year and century
▶ IDE Channel 0 Slave	None	
▶ IDE Channel 1 Master	None	
▶ IDE Channel 1 Slave	None	
▶ IDE Channel 2 Master	None	
▶ IDE Channel 3 Master	None	
▶ IDE Channel 4 Master	None	
▶ IDE Channel 5 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 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.

**Channel 2/3/4/5 Master** This field records the specifications for all SATA 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. 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	
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ▶
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	Non-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> to reveal the hard disk list. Then press Up/Down Arrow key to select a hard disk, and then press<+>/<-> key to move it up or down the list so as to set up the boot priority.

1. Ch1 M. : Maxtor xxxxxxxx	Item Help
2. Chi S. : STxxxxxxxxxxx	
3. Bootable Add-in Cards	Menu Level ▶

**Virus Warning** If enabled, BIOS will show a warning message on screen whenever anyone attempts to write data into HDD boot sector.

- 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.
- 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** To select the Gate A20 Control.  
Choices: Fast; Normal

- 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 the 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.

### 4-6.4 Advanced Chipset Features

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

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

CPU Frequency	200.0	Item Help
HT Frequency	4x	Menu Level ▶
HT Width	↓16 ↑16	DRAM timing and control
▶ DRAM Configuration	Press Enter	
CPU Spread Spectrum	Disabled	
SATA Spread Spectrum	Disabled	
PCIE Spread Spectrum	Disabled	
System BIOS Cacheable	Disabled	

**CPU Frequency** To select the CPU Frequency.  
Choices: 200~250MHz ( in 0.5MHz stepping from 200 to 210, in 1.0MHz stepping from 211 to 230, in 2.0MHz stepping from 230 to 250 )

**HT Frequency** Allows you to set the ratio of HyperTransport.  
Choices: 1X; 2X; 3X; 4X; 5X

**HT Width** Allows you to set the width of HyperTransport.  
Choices: ↓ 8 ↑ 8 ; ↓16 ↑ 8  
                  ↓ 8 ↑ 16       ↓16 ↑16

▶ **DRAM Configuration:**

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

**DRAM Configuration**

Timing Mode	Auto	Item Help
x Memclock Index Value (MHz)	200Mhz	
x CAS# Latency (Tcl)	2.5	
x Min RAS# active time(Tras)	8T	
x RAS# to CAS# Delay (Trcd)	4T	
x Row precharge Time (Trp)	2T	
x Row to Row Delay (Trrd)	2T	
User Config Mode	Auto	
x 1T/2T Memory Timing	2T	
x Read Preamble value	6ns	
x Async Latency value	6ns	
MTRR Mapping Mode	Continuous	



**DRAM Configuration:**

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

- Timing Mode** To select the DRAM timing mode.  
Choices: Auto; Manual
- x Memclock index value (Mhz)** If timing mode is manual, select memclock value manually.  
Choices: 100Mhz; 133Mhz; 166Mhz; 200Mhz
- x CAS# Latency (Tcl)** If timing mode is manual, select CAS latency time manually.  
Choices: 2; 2.5; 3
- x Min RAS# active time (Tras)** If timing mode is manual, select Tras manually.  
Choices: Auto; 5T ~ 11T
- x RAS# to CAS# delay (Trcd)** If timing mode is manual, select Trcd manually.  
Choices: Auto; 2T ~7T
- x Row Precharge Time (Trp)** If timing mode is manual, select Trp manually.  
Choices: Auto; 2T ~7T
- x Row to Row delay (Trrd)** If timing mode is manual, select Trrd manually.  
Choice: Auto; 2T; 3T; 4T
  
- User Config Mode** To select the User Configuration mode.  
Choice: Auto; Manual
- x 1T/2T Memory Timing** If User Config mode is manual, select the DRAM time manually.  
Choice: 1T; 2T
- x Read Preamble Value** If User Config mode is manual, select the Read Preamble value.  
Choices: 2.5ns ~6ns in 0.5 stepping.
- x Async Latency** If User Config mode is manual, select the Async Latency value manually.  
Choice: 2ns ~9ns in 1ns stepping.
  
- MTRR mapping Mode** To select the MTRR mapping mode.  
Choices: Continuous; discrete

**CPU Spread Spectrum** To select CPU Spread Spectrum mode.  
Choices: Disabled; Center Spread

**SATA Spread Spectrum** To select SATA Spread Spectrum mode.  
Choices: Disabled; Down Spread

**PCIe Spread Spectrum** To select PCIe Spread Spectrum mode.  
Choices: Disabled; Down Spread

**System BIOS Cacheable** To enable/disable System BIOS Cacheable.

### 4-6.5 Integrated Peripherals

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	
▶ RAID Config	Press Enter	
OnChip USB	V1.1+V2.0	
USB Memory Type	SHADOW	
USB Keyboard Support	Disabled	
AC97 Audio	Auto	
MAC Lan	Auto	
MAC Media Interface	Pin Strap	
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 IDE Function Setup will reveal the following items.

Phoenix - AwardBIOS CMOS Setup Utility  
IDE Function Setup

OnChip IDE Channel0	Enabled	Item Help
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	
IDE DMA transfer access	Enabled	
Serial-ATA 1	Enabled	
Serial-ATA 2	Enabled	
IDE Prefetch Mode	Enabled	

**On-Chip IDE Channel 0/1** To enable / disable the Primary / Secondary IDE channel.

The choices: Enabled; 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; 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; Disabled

**IDE DMA Transfer Access** To enable / disable the IDE DMA transfer access. The choices: Enabled; Disabled

**Serial-ATA1/2** To enable / disable the Serial-ATA interface 1/2. Choices: Enabled; 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; Disabled

►RAID Config:

To press< Enter > on RAID Config will reveal the following items.

Phoenix - AwardBIOS CMOS Setup Utility		Item Help
RAID Config		
RAID Enable	Disabled	
x IDE Primary Master RAID	Disabled	
x IDE Primary Slave RAID	Disabled	
x IDE Secondary Slave RAID	Disabled	
x IDE Secondary Master RAID	Disabled	
x SATA 1 Primary RAID	Disabled	
x SATA 1 Secondary RAID	Disabled	
x SATA 2 Primary RAID	Disabled	
x SATA 2 Secondary RAID	Disabled	

**RAID Enable** To enable / disable the RAID interface.

**IDE Primary/Secondary-Master/Slave RAID** If RAID interface is enabled, you may enable / disable the IDE Primary/Secondary Master/Slave RAID.

**SATA 1/2 Primary/Secondary RAID** If RAID interface is enabled, you may enable / disable the SATA 1/2 Primary/Secondary RAID.

**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, V1.1

**USB Memory Type** To select the USB Memory Type.  
Choices: Shadow; Base Memory (640K)

**USB KB Support** To enable/disable the USB Keyboard support.

**AC97 Audio** To enable / disable the on-board AC'97 Audio.

**MAC LAN** This option allows you to enable/disable the Onboard LAN Controller.  
The choices: Auto; Disabled

- MAC Media Interface** This option allows you to MAC Media interface.  
The choices: Pin Strap; MII; RGMII
- 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; 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; Keyboard 98
- x 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
- x 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.  
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; IrDA; ASKIR

- x 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
- x IR Transmission Delay** When UART Mode is selected in IrDA or ASKIR mode, it allows you to enable / disable IR Transmission Delay.
- x 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
- x Use IR Pins** When UART Mode is selected in IrDA or ASKIR mode, select the IR Pins signal selection.  
The choices: IR-Rx2Tx2; RxD2, TxD2
- Onboard Parallel Port** This item allows you to determine onboard parallel port controller I/O address setting.  
The choices: 378H/IRQ7; 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; EPP; ECP; ECP+EPP; Normal
- x EPP Mode Select** Select EPP Mode when you choose EPP or ECP+EPP mode in the Parallel Port Mode.  
Choices: EPP1.7; EPP1.9
- x 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; 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 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);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 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 the Wake on Lan (PME#) function.
- WOR(RI#) From Soft-Off** Allows you to enable / disable 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 the Power-On by Alarm function.
- x 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
- x 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:

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
Init Display First	PCI Slot	
Reset Configuration Data	Disabled	
Resources Controlled by x IRQ Resources	Auto(ESCD) Press Enter	
PCI/VGA Palette Snoop	Disabled	
** PCI Express relative items **		
Maximum Payload Size	4096	

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

**Init Display First** To select the initial display interface.  
Choices: PCI slot; PCIEx

**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).

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

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

IRQ-3 assigned to	PCI Device	Item Help
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.

**\*\* PCI Express relative items \*\***

**Maximum Payload Size** Set maximum TLP payload size for the PCI Express devices. The unit is byte.  
 Choices: 128; 256; 512; 1024; 2048; 4096

### 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
CPU Internal Temp.	50°C/ 122°F	
System Temp.	25°C/ 75°F	
FAN1 Speed	5232 RPM	
FAN2 Speed	0 RPM	
FAN3 Speed	0 RPM	
Vcore	1.79 V	
3.3V	3.26 V	
+5V	5.02V	
+12V	11.75V	
-12V	-12.03V	
VBAT(V)	3.0V	
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

**CPU Internal Temp.** Shows current CPU internal temperature.

**System Temp.** Shows current system 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, VBAT, 5VSB** Shows actual voltage value of all these default voltage value 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	
DIMM Voltage Select	2.60V	
Chipset Vcore	1.60V	

↑↓←→: 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** Allows you to select CPU clock Ratio.  
 Choices: Startup; x4 800MHz  
 x5 1000MHz; x6 1200MHz;  
 x7 1400MHz; x8 1600MHz;  
 x9 1800MHz

**CPU Vcore** Allows you to configure the CPU Voltage. Usually,  
**Select** 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 step-  
 ping

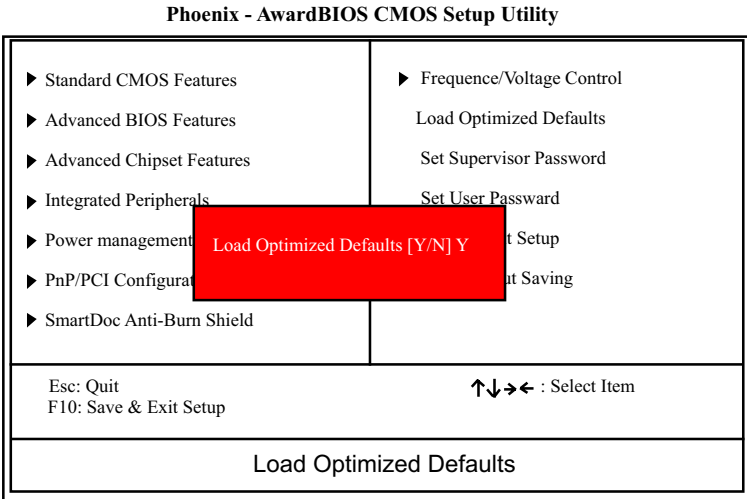
**DIMM Voltage** Allows you to configure the DIMM Voltage.  
**Select** Choices: 2.60V; 2.70V; 2.80V

**Chipset Vcore** Allows you to configure the VDD Voltage.  
 Choices: 1.50V; 1.60 V; 1.70 V; 1.80 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.

#### **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 nForce4-4X integrated with RAID Controller

nVIDIA RAID (Redundant Array of Independent Disks) Controller is integrated in nVidia nForce4-4X to support IDE RAID and SATA RAID configurations of RAID 0, RAID 1, and RAID 0+1 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 IDE RAID / SATA RAID Configurations with nForce4-4X :**

- 5-0 About Disk Array ..... 70**
  - 5-0-1 Disk Array Interpretation..... 70**
  - 5-0-2 Disk Array Member ..... 70**
  - 5-0-3 Disk Array Types Supported by nForce4-4X (CK804) ..... 70**
- 5-1. Set up IDE RAID HDDs and SATA RAID HDDs ..... 71**
- 5-2. Enable IDE SATA function in System BIOS ..... 72**
- 5-3. Enter the NVRAID BIOS ..... 73**
- 5-4. Configure the RAID Setup..... 74**
- 5-5. Finish the RAID Setup ..... 75**
- 5-6 Install Win 2K/XP and nForce4-4X RAID Driver ..... 77**

## 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 nForce4-4X (CK804)

nForce4-4X on this mainboard supports three 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):

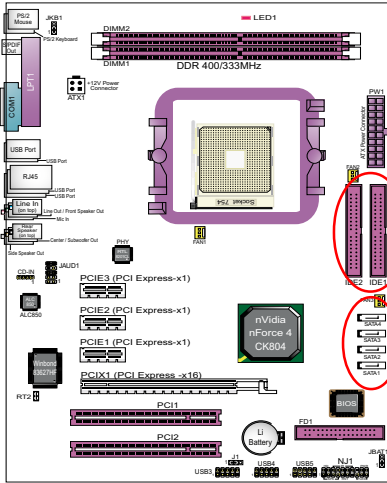
RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond, the remaining 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. Set up IDE RAID HDDs and SATA RAID HDDs

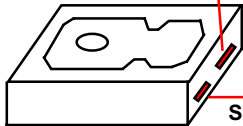
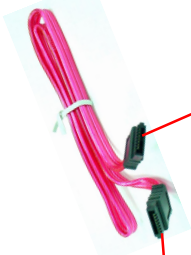


IDE1 and IDE2 are supported by nForce4-4X to set up RAID system with up to 4 IDE hard disks.

**Serial ATA Connectors**  
4 SATA Connectors supported by nForce4-4X for 4 SATA / RAID Hard Disks setup.



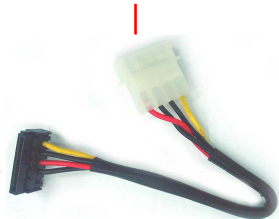
(optional)  
Serial ATA Cable



SATA Power Connectors

Serial ATA Hard Disk

To Power Supply



Serial ATA Power Cable (optional)

## 5-2. Enable IDE SATA function in System 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 window appears.

Phoenix - AwardBIOS CMOS Setup Utility  
IDE Function Setup

OnChip IDE Channel0	Enabled	Item Help
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	
IDE DMA transfer access	Enabled	
Serial-ATA 1	Enabled	
Serial-ATA 2	Enabled	
IDE Prefetch Mode	Enabled	

**On-Chip IDE Channel** To enable IDE channel.

0/1

**Serial-ATA1/2** To enable Serial-ATA interface 1/2. SATA 1 interface controls 2 SATA connectors. SATA 2 interface controls another 2 SATA connectors.

2. Choose “Integrated Peripherals” again and select “RAID Config”, then press enter. The RAID Config window appears.

RAID Config

RAID Enable	Enabled	Item Help
x IDE Primary Master RAID	Enabled	
x IDE Primary Slave RAID	Enabled	
x IDE Secondary Slave RAID	Enabled	
x IDE Secondary Master RAID	Enabled	
x SATA 1 Primary RAID	Enabled	
x SATA 1 Secondary RAID	Enabled	
x SATA 2 Primary RAID	Enabled	
x SATA 2 Secondary RAID	Enabled	

**RAID Enable** To enable the RAID interface.

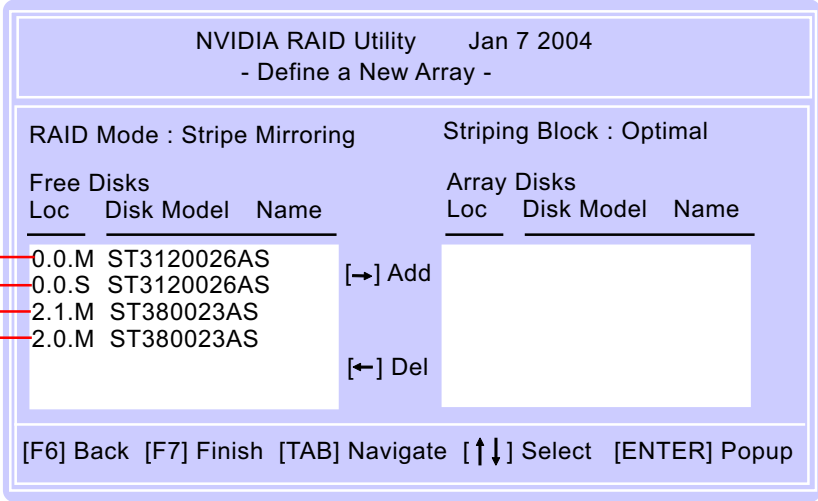
**IDE Primary/Secondary Master/Slave RAID** If RAID interface is enabled, you should enable the IDE Primary/Secondary Master/Slave RAID.

**SATA 1/2 Primary/Secondary RAID** If RAID interface is enabled, you should enable the SATA 1/2 Primary/Secondary RAID.

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.



4 free Hard Disks detected by RAID Utility

#### 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



M: Master S: Slave

Controller

0.0.M Channel 0, Controller 0, Master

0.0.S Channel 0, Controller 0, Slave

0.1.M Channel 0, Controller 1, Master

0.1.S Channel 0, Controller 1, Slave

Serial ATA

Channel - Channel 0 stands for Parallel ATA drives while Channel 1 stands for Serial ATA drives.

1.0.M Channel 1, Controller 0, Master

1.1.M Channel 1, Controller 1, Master

### 5-4. Configure the RAID Setup

#### The RAID Mode Selection

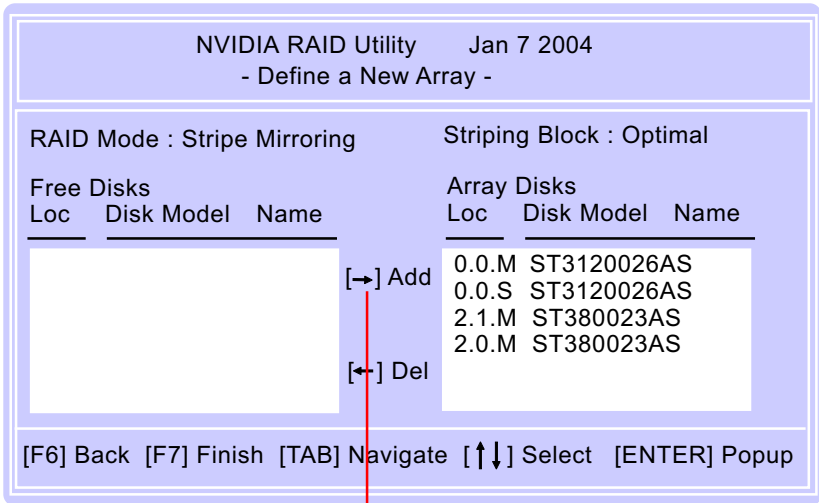
There are four modes to choose - Striping (RAID 0), Mirroring (RAID 1), Stripe Mirroring (RAID 0+1), Spanning (JBOD). To change to a different RAID mode, press the arrow key up or down until the mode you want appears in the screen.

#### The Striping Block Size Selection

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

#### Create the New Array

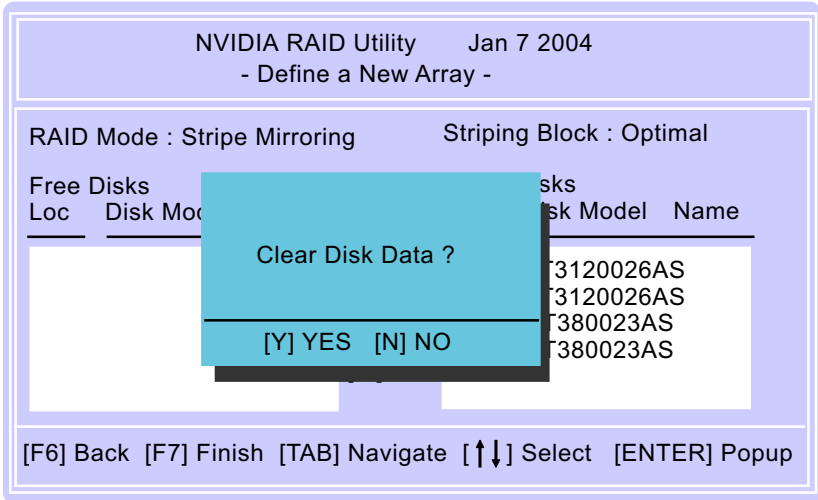
1. Press tab key to Free Disks section.
2. Move the disks appearing in this block (the disks are enabled from the IDE Function Setup of BIOS) to the Array Disks block by pressing the right arrow key.



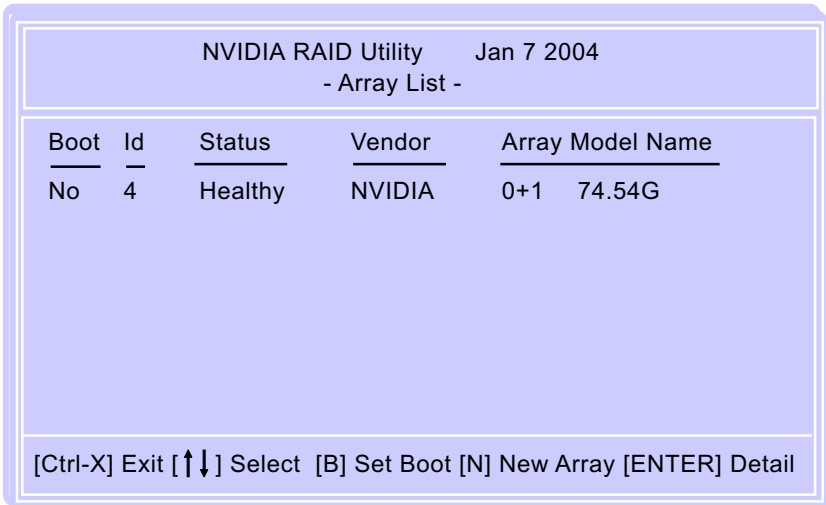
Press the Right Arrow to add all 4 Hard Disks Array Disks column for Stripe Mirroring setup.

### 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.

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>
0	0	Master	0	ST340810A	37.27GB
0	0	Slave	1	ST340810A	37.27GB
2	1	Master	2	ST380023AS	74.53GB
2	0	Master	2	ST380023AS	74.53GB

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

4. Finally press Enter again to return the previous screen and press [Ctrl+X] to exit and reboot the system.

Congratulations! RAID mode 0+1 with 2xIDE Hard Disks and 2xSATA Hard Disks is successfully built in the Array Disks.

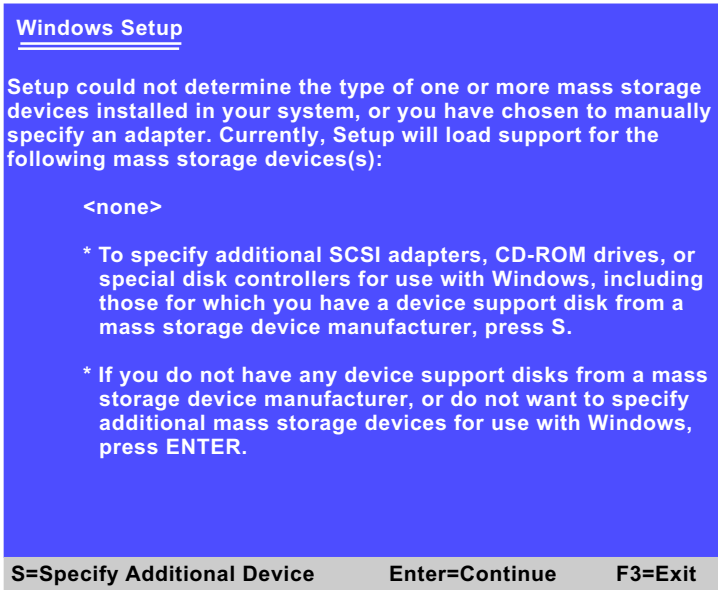
## 5-6 Install Win 2K/XP and nForce4-4X RAID Driver

nForce4-4X RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for Windows 2000/XP only.

- (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.



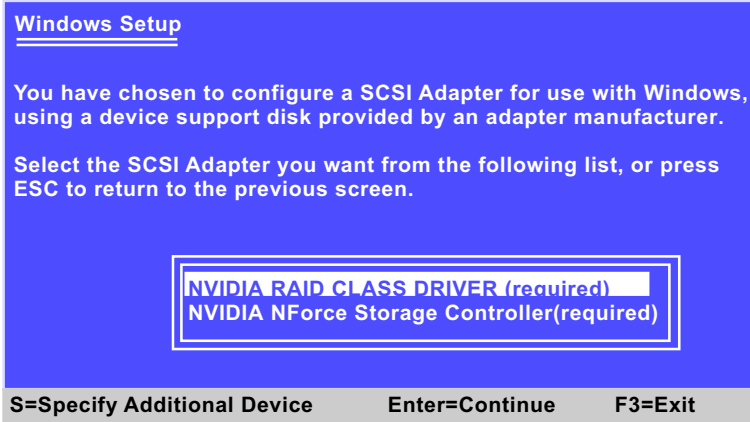
(6) On next screen press “S” to confirm the mass storage device setup.



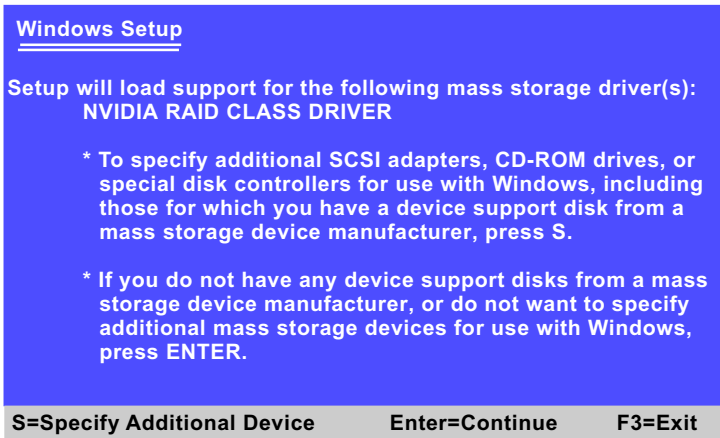
(7) On next screen appearing, insert the RAID Driver Diskette to Drive “A” and then press <Enter>.



- (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.

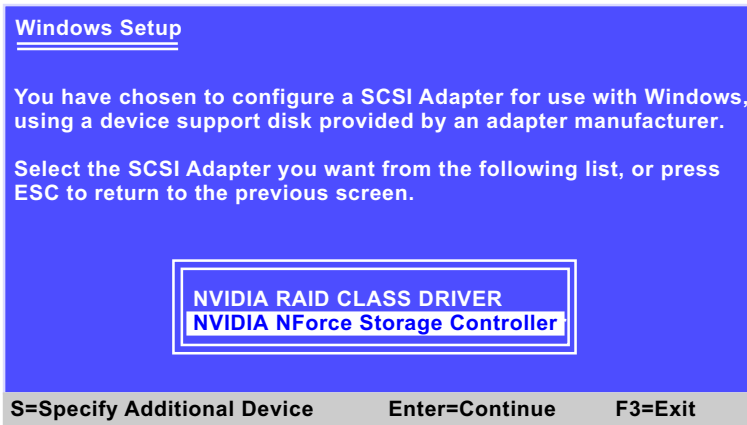


- (9) When the following screen appears , press S again to specify an additional device and press <Enter> to continue.



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

(11) On the next screen, press Enter on the marked-up item to continue.



(12) 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.



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