

XFx Motherboard Installation Manual

Version: 1.0



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Attention:**Safety Information**

- Make sure your power supply is turned off and disconnect the power cable from the electrical outlet before inserting or removing expansion cards or other peripherals, especially when you insert or remove a memory module. Failure to turn off the power supply may result in serious damage to your system or memory module.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- Keep paper clips, staples, or any conductive objects away from connectors, slots, sockets and the board to avoid short circuits.
- Make sure you attach the CPU and heatsink using thermally conductive compound to ensure full contact.
- It is suggested to select high-quality, certified fans in order to avoid damage to the motherboard and CPU due high temperatures. Never turn on the system if the CPU fan is not properly installed.

Attention:

- We cannot guarantee that your system will operate normally while over-clocked. Normal operation depends on the over-clock capacity of your device.
- Since BIOS programs are upgraded from time to time, the BIOS description in this manual is just for reference. We do not guarantee that the content of this manual will remain consistent with the actual BIOS version at any given time in the future.
- The pictures of objects used in this manual are just for your reference. Please refer to the physical motherboard.

Chapter 1

Product Introduction

Thank you for purchasing the **XFx PM102 C51/MCP55** motherboard. The motherboard delivers the latest technologies to offer superior performance. This chapter will describe the features and technology in the motherboard.

This chapter includes the following information:

- Highlight Features
- Main Features
- Layout
- Rear I/O Ports



Chapter 1: Product Introduction

Highlight Features

NVIDIA nForce® 590 SLI™

NVIDIA nForce® 590 SLI™ media and communication processors (MCPs) deliver the tools and performance enthusiasts demand. When combined with select NVIDIA GeForce graphics cards and other system components, you get automatic access to faster bus speeds. Ready for system overclocking and greater data throughput.

NVIDIA LinkBoost™ Technology

NVIDIA nForce 590 MCP automatically increases bandwidth when selected NVIDIA GeForce® graphics cards are detected.

NVIDIA® SLI™-Ready components

Look for other components including memory modules that are optimized for use with NVIDIA nForce 590 SLI MCP motherboards for maximum performance. These components automatically run at faster bus speeds and are ready for overclocking.

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Six SATA 3Gb/s Drives

Combine up to 6 SATA drives into one volume for bigger, faster RAID. More drives mean more configuration options such as 6 RAID 0 (striped) drives for maximum throughput, or Dual RAID 5 arrays. Take advantage of the latest SATA-2, 3Gb/s hard disk drives with full support for native and tagged command queuing and hot plug. Native command queuing provides higher disk performance in a multi-threaded environment by performing out-of-order disk accesses.

NVIDIA FirstPacket™ technology

Be the 'King of Ping' with NVIDIA FirstPacket technology. Get the crystal-clear phone conversations and online gaming performance you expect. NVIDIA FirstPacket technology assures your game data, VoIP conversations, and large file transfers are delivered according to preferences set by you in an intuitive wizard.

NVIDIA nTune™ 4.0 Utility

Now with access to more settings from this Windows-based utility. NVIDIA nTune performance manager allows automatic tuning for optimal performance and the ability to customize. Once configured, nTune automatically chooses the right system settings for the application that is being run based on your saved profiles and personal rules.

High Definition Audio (HDA)

High definition audio brings consumer electronics quality sound to the PC delivering high quality sound from multiple channels. Using HDA, systems can deliver 192 kHz/32-bit quality for eight channels, supporting new audio formats.

Chapter 1: Product Introduction

Main Features

Size

- ATX form factor of 12 inch x 9.6 inch

Microprocessor

- Supports AMD® Socket AM2 Athlon™ 64 X2 Dual-Core, Athlon™ 64 FX, Athlon™ 64 and Sempron™ processor
- Supports HyperTransport up to 2000MT/s

MCP

- NVIDIA nForce® 590 SLI MCP

System Memory

- Four 240-pin DIMM slots
- Supports Dual-Channel DDR2 533/667/800
- Supports up to 8GB DDR2 memory

USB 2.0 Ports

- Supports hot plug
- Ten USB 2.0 ports (six rear panel ports, two onboard USB headers providing four extra ports)
- Supports wake-up from S1 and S3 mode
- Supports USB 2.0 protocol up to 480Mbps transmission rate

Onboard Serial ATA II

- 300MBps data transfer rate
- Six Serial ATA II connectors
- NVIDIA MediaShield™ RAID with support for RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD
- Supports hot plug and NCQ (Native Command Queuing)

Dual Onboard LAN

- Two LAN interface built-in onboard
- Supports 10/100/1000 Mbit/sec Ethernet

Onboard 1394

- Support hot plug
- Two 1394a port with rate of transmission at 400 Mbps
- One 1394b port with rate of transmission at 800 Mbps

Onboard Audio

- Supports 8-channel audio
- Supports S/PDIF output
- Supports Jack-Sensing function

Chapter 1: Product Introduction

Dual PCI Express x16 Support

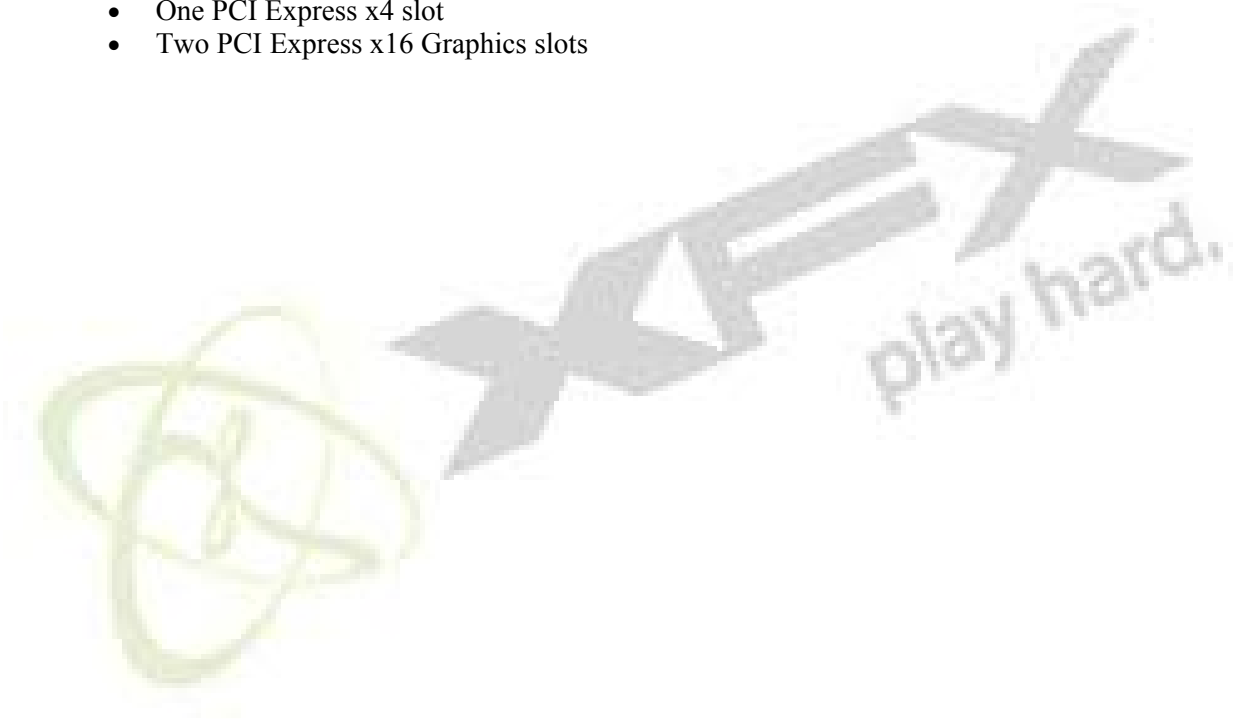
- Supports 4 GB/sec (8 GB/sec concurrent) bandwidth
- Low power consumption and power management features

Green Function

- Supports ACPI (Advanced Configuration and Power Interface)
- Supports S0 (normal), S1 (power on suspend), S3 (suspend to RAM), S4 (Suspend to disk - depends on OS), and S5 (soft - off)
- Supports AMD® Cool 'n' Quiet™ technology

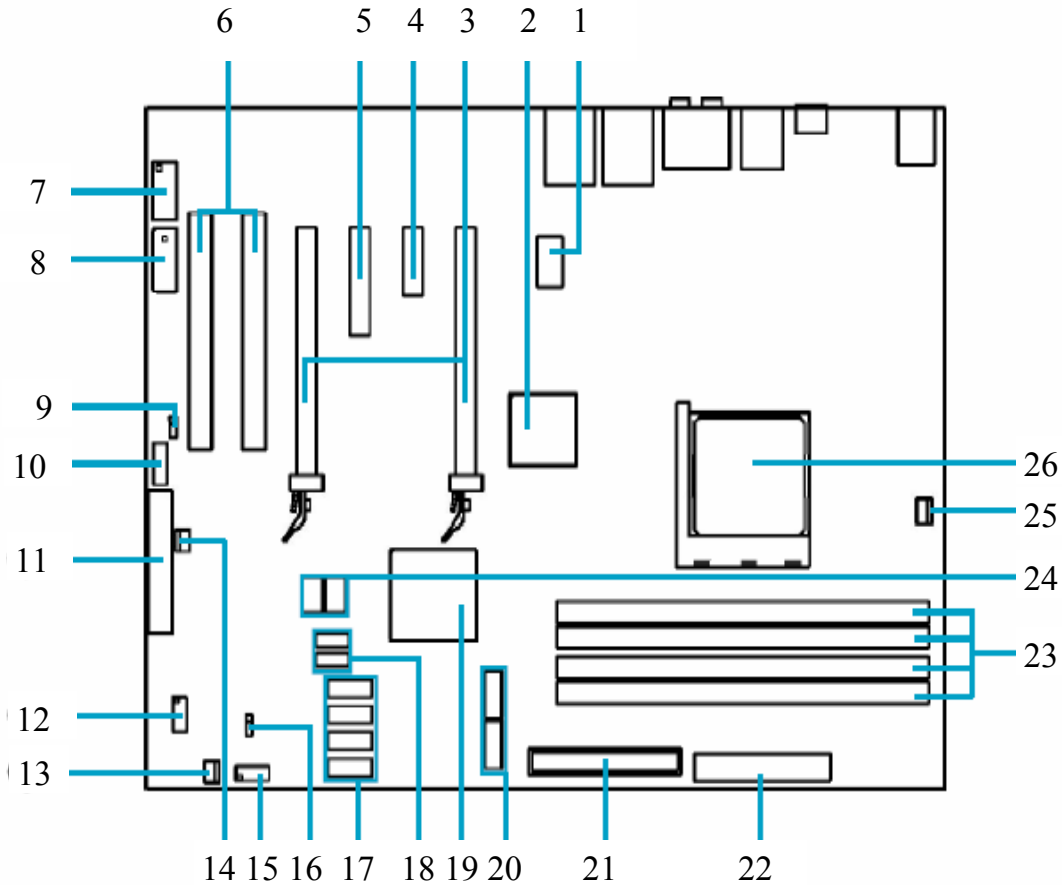
Expansion Slots

- Two PCI slots
- One PCI Express x1 slot
- One PCI Express x4 slot
- Two PCI Express x16 Graphics slots



Chapter 1: Product Introduction

Layout



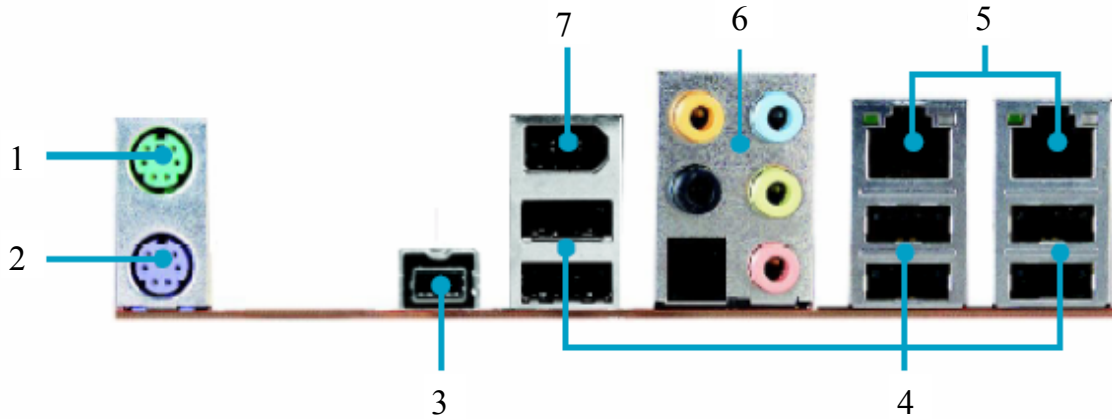
Note:

The above motherboard layout is for reference only, please refer to the physical motherboard

- | | |
|----------------------------------|----------------------------------|
| 1. 8-pin ATX_12V Power Connector | 14. MCP Fan Connector |
| 2. C51XE | 15. Front Panel Connector |
| 3. PCI Express x16 Slots | 16. Clear CMOS Jumper |
| 4. PCI Express x1 Slot | 17. Serial ATA II Connectors |
| 5. PCI Express x4 Slot | 18. USB Connectors |
| 6. PCI Slots | 19. MCP55P XE |
| 7. IEEE1394a Connector | 20. Serial ATA II Connectors |
| 8. Graphics PWR Connector | 21. ATA 133/100/66 IDE Connector |
| 9. Speaker Connector | 22. 24-pin ATX Power Connector |
| 10. Front Audio Connector | 23. DDR2 DIMM Slots |
| 11. FDD Connector | 24. Debug LED |
| 12. COM1 Connector | 25. CPU FAN Connector |
| 13. SYS Fan Connector | 26. Socket AM2 |

Chapter 1: Product Introduction

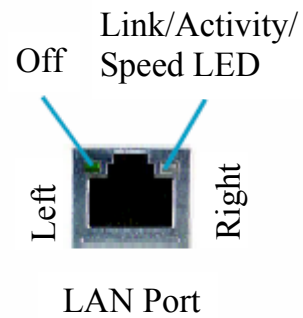
Rear I/O ports



- 1. PS/2 Mouse Port
- 2. PS/2 Keyboard Port
- 3. IEEE1394b Port
- 4. USB2.0 Ports
- 5. LAN Ports

The left LED as not functionality. The table below only describe the fuction of the LED on the right.

LAN LED Light Status	
Display	Description
Yellow	10Mbps mode
Yellow and Green	100Mbps mode
Green	1000Mbps mod
Lights up	Linked
Blinking	Activity



Chapter 1: Product Introduction

6. Line in, Line out, Microphone, Rear, LEF/CEN Jacks & Optical S/PDIF Out Port

Port	2-Channel	4-Channel	6-Channel	8-Channel
Blue	Line In	Line In	Line In	Line In
Green	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	-	-	Center/Subwoofer	Center/Subwoofer
Black	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out

Optical S/PDIF Out port is used to connect an external audio output device.

7. IEEE1394a Port



Chapter 2

Installation Instructions

This chapter introduces the hardware installation process, including the installation of the CPU, memory, power supply, slots, and pin headers, and the mounting of jumpers. Caution should be exercised during the installation of these modules.

This chapter includes the following information:

- CPU
- Memory
- Expansion Slots
- Connectors
- Power Supply
- Jumpers



Chapter 2: Installation Instructions

CPU

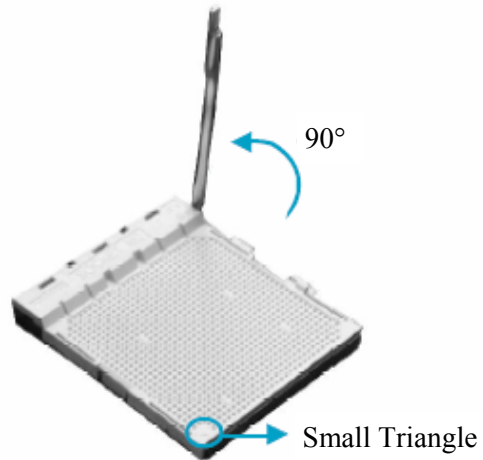
This motherboard supports AMD® Socket AM2 Athlon™ 64 X2 Dual-Core, Athlon™ 64 FX, Athlon™ 64 and Sempron™ processors with Hyper-Transport Technology.

Attention:

The CPU pins must be aligned with the hole in the socket. Improper placement may damage the CPU.

To install the CPU:

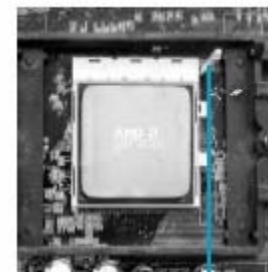
1. Unlock the socket by pressing the lever sideways, then lift it up to a 90° angle.



2. Position the CPU above the socket such that the golden triangle on the CPU matches the small triangle on the socket. Carefully insert the CPU into the socket until it fits in place.



Golden Triangle



Push down the socket lever to secure the CPU

3. When the CPU is properly placed, press it firmly on the socket while pushing down the socket lever to secure the CPU. The lever will click on the side to indicate that it is locked.



Chapter 2: Installation Instructions

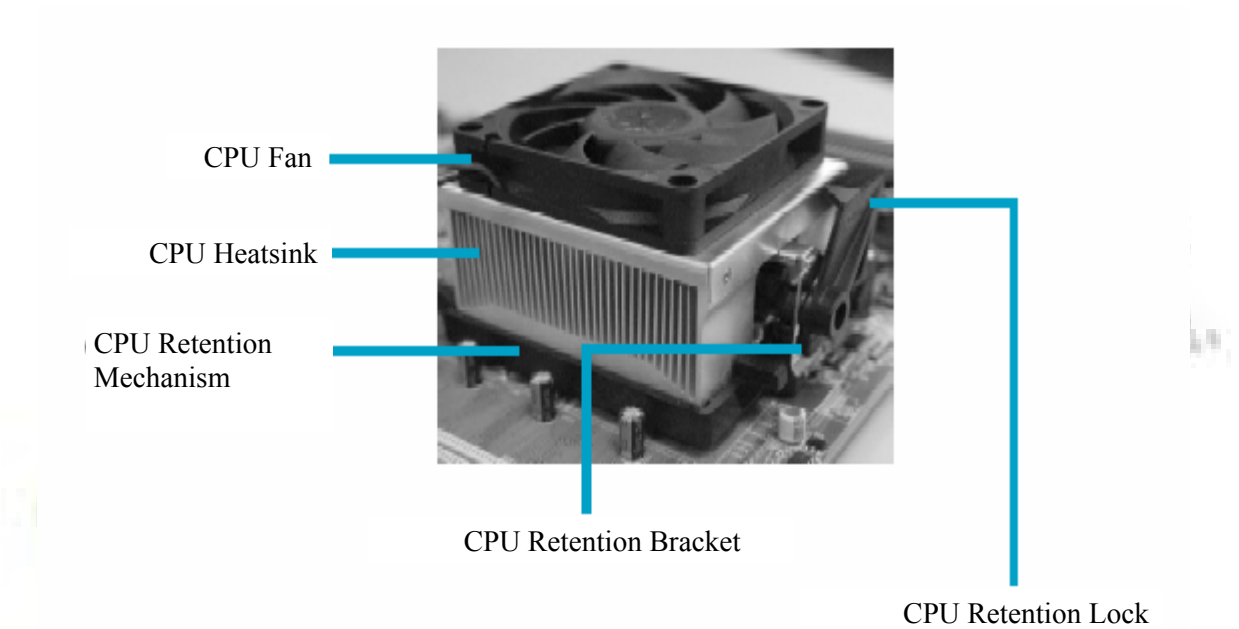
Installing the Heatsink and Fan

The AMD® Socket AM2 Athlon™ 64 X2 Dual-Core, Athlon™ 64 FX, Athlon™ 64 and Sempron™ requires a specially design heatsink and fan assembly. The following procedure is provided for reference only, please refer to your CPU heatsink and fan user guide for the actual procedure.

Note:

Make sure you only AMD-certified heatsink and fan assembly.

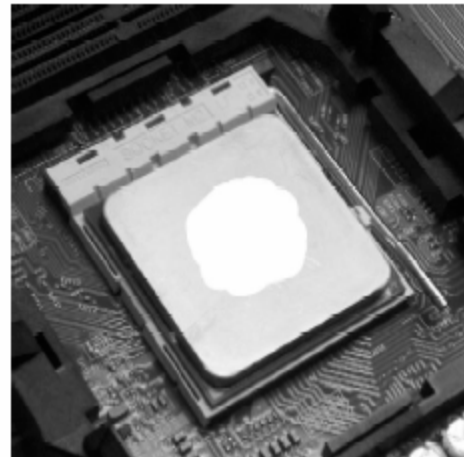
Attention:



Never turn on the system if the CPU fan is not properly installed.

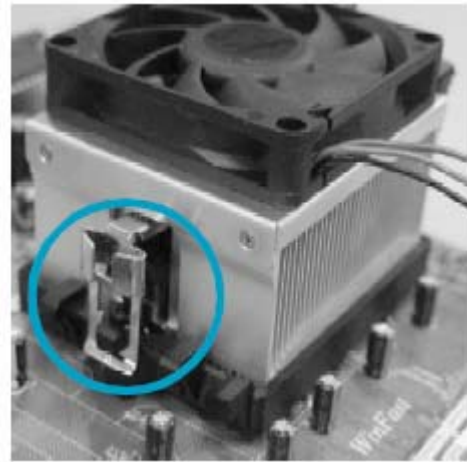
To install heatsink and fan assembly:

1. Locate the CPU retention mechanism base (the bracket surrounding the CPU socket)
2. Apply a light coat of thermal compound on the CPU.
Note: The CPU heatsink have a pre-applied thermal compound, if that's the case additional thermal compound is not required.

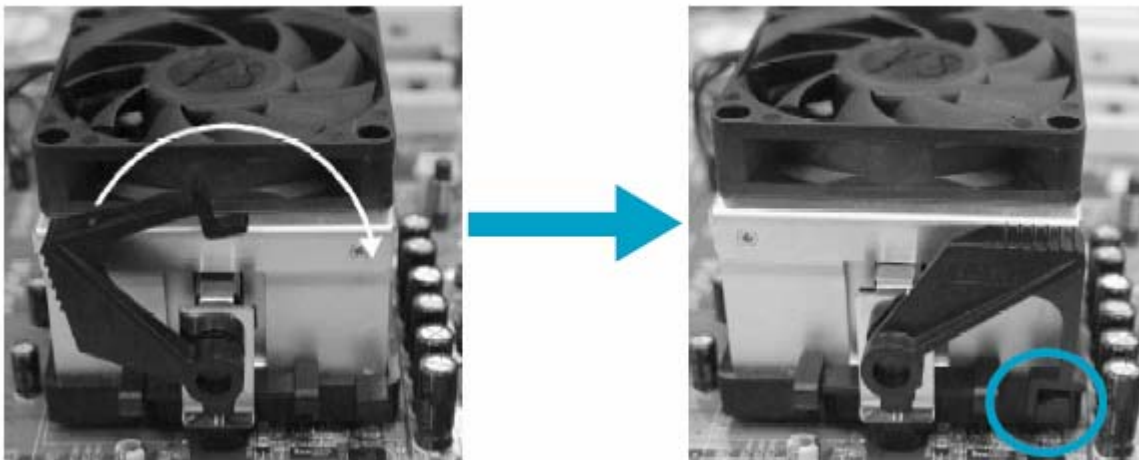


Chapter 2: Installation Instructions

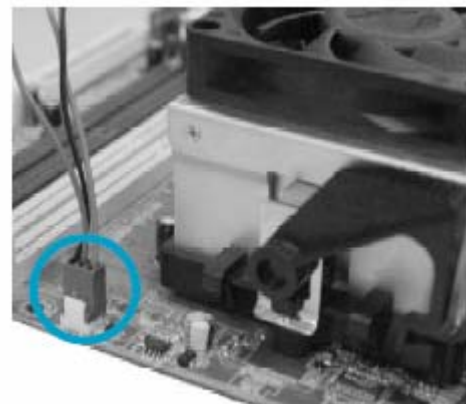
3. Place the heatsink onto the retention mechanism. Align the other end of the retention bracket to fasten the heatsink on top of the retention mechanism.



4. Push down the retention bracket to lock on the retention mechanism to secure the heatsink and fan on to the retention bracket.



5. Connect the fan's power cable to the CPU fan power connector on the motherboard.



Chapter 2: Installation Instructions

Memory

The motherboard comes with four 1.8V 240-pin slots for DDR2 memory. These slots supports 256 MB, 512 MB, 1 GB, and 2 GB unbuffered ECC/non-ECC DDR2 DIMMS into the DIMM sockets.

Note:

Due to the limitation of 32-bit version Operating system, we recommend that you install no more than 3GB of physical memory. However this motherboard does support up to 8 GB (2 GB per slot) of physical memory on the following operating system listed below.

32-bit	64-bit
Windows 2000 Advance Server	Window Vista
Windows Server 2003 Enterprise Edition	Windows Server 2003 Standard x64 Edition
	Windows XP Professional x64 Edition
	Windows Server 2003 Enterprise x64 Edition

Recommended Memory Configurations

Model	Configuration	DIMM1	DIMM2	DIMM3	DIMM4
Single Channel	1	Populated			
	2		Populated		
	3			Populated	
	4				Populated
Dual Channel	5	Populated		Populated	
	6		Populated		Populated
	7	Populated	Populated	Populated	Populated

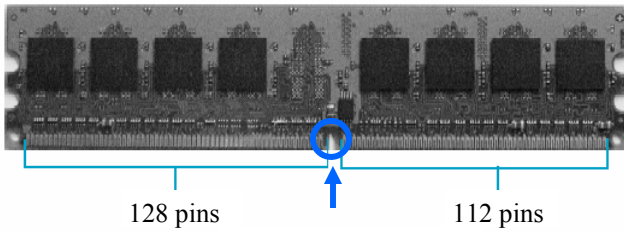
The following table list is the recommended memory configurations.

Chapter 2: Installation Instructions

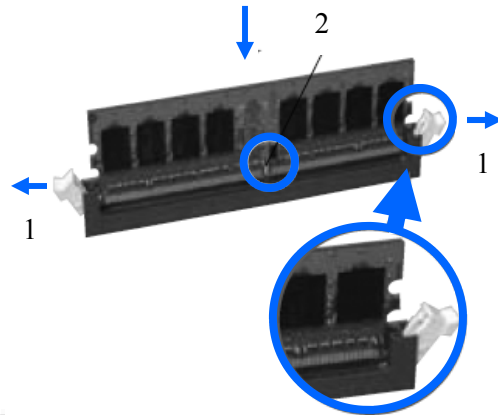
Installing DDR2 Memory

Warning:

Make sure your power supply is turned off and disconnect the power cable from the electrical outlet before inserting or removing the memory module. Failure to turn off the power supply



may result in serious damage to your system and/or memory module.



Unlocked retaining clip

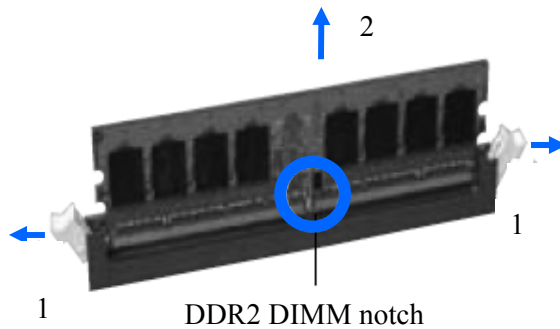
To install memory module:

1. Unlock a DIMM slot by pressing the retaining clip outward.
2. Align the memory module to the DIMM slot by matching up with the notch on memory to the break on the DIMM slot. Insert vertically into the DIMM slot.
3. If the memory module is insert properly, the retaining clips on both sides will automatically lock on to the memory module.

Removing a memory module

To remove a memory module:

1. Simultaneously press the retaining clips outward to unlock the memory module.
2. Remove the memory module.



DDR2 DIMM notch

Chapter 2: Installation Instructions

Installing Expansion cards

The Motherboard has two 32-bit master PCI bus slots, one PCI Express x1 slot, one PCI Express x4 slot and two PCI Express x16 slots.

PCI Slots

PCI slots support cards such as LAN card, USB card, Firewire card, SCSI cards and other cards that has a PCI interface.

PCI Express x1 and x4 slots

PCI Express x1 and x4 slots are designed for less bandwidth-intensive cards, such as modem and LAN cards.

PCI Express x16 slots

The two PCI Express x16 slots supports NVIDIA's SLI™ (Scalable Link Interface) technology which allows two SLI-ready graphics cards to be installed.

Warning:

Make sure your power supply is turned off and disconnect the power cable from the electrical outlet before inserting or removing expansion cards or other peripherals. Failure to turn off the power supply may result in physical injuries and serious damage to your system.

The following procedure is provided for reference only, please refer to the user guide of the product that's you are installing for the actual procedure.

To install expansions cards:

1. Remove that bracket opposite of the slot that you instead to use. If the bracket is fastened with a screw, keep the screw for later use.
2. Align the card connector with the slot and press firmly until the care is completely seated on the slot.
3. Secure the card to the chassis with the screw was removed earlier.

Chapter 2: Installation Instructions

Connectors

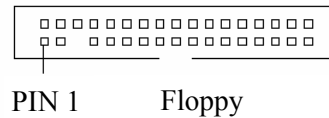
The motherboards include common connectors such as FDD, IDE, Serial ATA, USB ports and many other ports.

Attention:

Disk drives such as FDD, and IDE use directional ribbon cables, therefore make sure that the red line (or dotted red line) is matched with pin 1 on the connector.

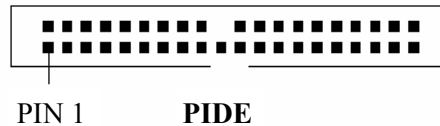
FDD Connector: Floppy

The motherboard includes a standard FDD connector, supporting 360K, 729K, 1.2M, 1.44M and 2.88M FDDs



IDE Connector: PIDE

The IDE connector supports Ultra ATA 133/100/66 IDE disk drives. If you install two hard disks, you must configure the jumpers on the hard disk accordingly. Please refer to your hard disk user guide from hard disk manufacture for proper jumper configuration.



Front Panel Connector: FP1

The motherboard includes one connector for connecting the front panel switch and LED indicators.

HDD LED Connector (HDD-LED)

This connector is for the hard drive indicator LED to show hard drive activity.

Reset Switch (RESET)

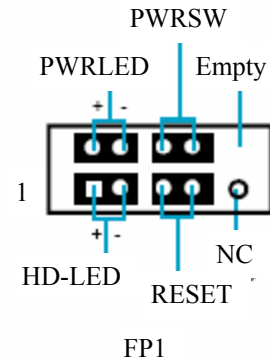
Reset switch connector for the reset button on the case.

Power LED connector (PWRLED)

Connector for the power LED indicator to show system's status.

Power Switch Connector (PWRSW)

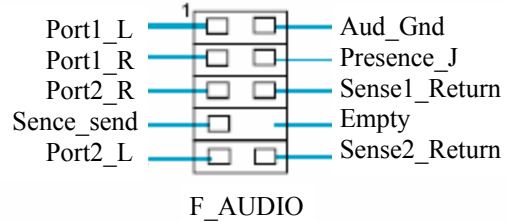
This is the connector for the power connect for the case. This button will slow the system to be turned OFF or turned ON.



Chapter 2: Installation Instructions

Audio Connector: F_AUDIO

The audio connector supports HD audio standard. The front audio connector allows the user to have access to audio jacks from the back or from the front.



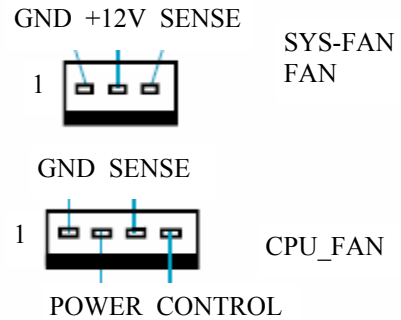
Serial ATA II Connectors: SATA_1, SATA_2, SATA_3, SATA_4, SATA_5, SATA_6

The Serial ATA II connector is used to connect the Serial ATA II device to the motherboard. These connectors support the thin Serial ATA II cables for primary storage devices. The current Serial ATA II interface allows up to 300MB/s data transfer rate. These six serial ATA are capable for the following configurations: RAID 0, RAID 1, RAID 5, RAID 0+1 and JBOD.



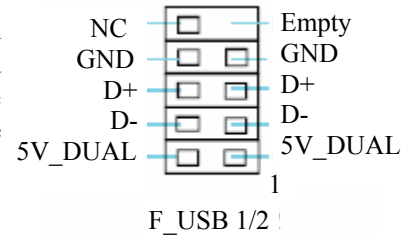
Fan Connectors: CPU_FAN, SYS_FAN, FAN

The fan speed can be detected and viewed in “PC Health Status” section of the CMOS setup. These fans will automatically turn off after the system enters S3, S4, and S5 modes.



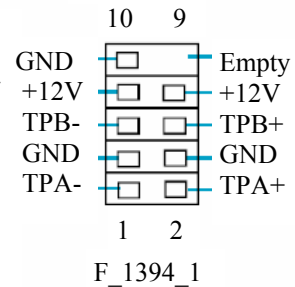
USB Headers: F_USB1, F_USB2

Besides six USB ports on the rear panel, there are also two 10-pin headers on the board with may connect to either the front (provided that the front panel of your chassis is equipped with the appropriate interface) or connect to a rear panel USB cable (optional) to provide additional four USB ports.



IEEE 1394a Connector: F_1394_1

The 1394 expansion can be connected to either the front (provided that the front panel of your chassis is equipped with the appropriate interface) or connected to a rear panel 1394 cable (optional).



Chapter 2: Installation Instructions

Power Supply

The motherboard uses an ATX power supply. In order to avoid damage, make sure that the power supply is connected properly before connecting the power cable to the power supply.

Attention:

Power supply plugs are designed to fit these connectors in only one orientation.

24-pin ATX power connector: PWR1

PWR1 is the ATX power connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly push the power cable into the connector and make sure it is secure.

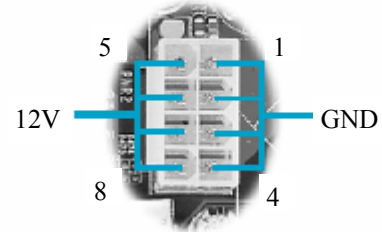
24	23	22	21	20	19	18	17	16	15	14	13
GND	+5V	+5V	+5V	RSVD	GND	GND	GND	PS-ON	GND	-12V	+3.3V
+3.3V	+12V	+12V	+5V_AUX	PWROK	GND	+5V	GND	+5V	GND	+3.3V	+3.3V
12	11	10	9	8	7	6	5	4	3	2	1

24-pin ATX power Connector

8-pin ATX_12V Power Connector: PWR2

The 8-pin ATX 12V power supply connects to PWR2 and provides power to the CPU.

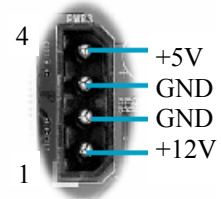
8-pin ATX_12V Power Connector



Graphics Power Connector

Graphics Power Connector: PWR3

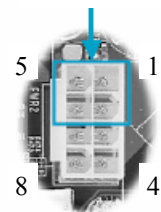
This connector is an auxillary power connector for graphics card. It provide additional power for graphic cards configuration such as SLI.



Note:

It is recommended that you use an 8-pin 12V connector. If the power supply only comes with a 4-pin connector, connect the 4-pin as shown.

4-pin configuration









Chapter 2: Installation Instructions

Jumpers

This section explains how to use the various functions of the motherboard by changing the jumper settings.

Descriptions of Jumpers

Pin 1 on the jumpers is identified with a solid triangle “Δ” next to the pin. In this manual Pin 1 is labeled as “1”. The following tables provide the version jumper configurations.

Jumpers	Configuration	Jumper setting	Description
1 		1 and 2	Sets pin 1 and pin 2 closed
		2 and 3	Sets pin 2 and pin 3 closed
1 		open	No jumper on the pins
		closed	Jumpers connecting both pins

Clear CMOS Jumper: CLR_CMOS

The motherboard uses a CMOS chip to store all motherboard BIOS configurations. The CMOS can be cleared by removing the CMOS jumper.

Warning:

Disconnect the power cable from the power supply before adjusting jumpers. Never clear CMOS while the system is ON.

To clear CMOS:

1. Turn off the AC power supply and connect pins 1 and 2 together using the jumper cap.
2. After 1 to 2 minutes, return the jumper back to pins 2 and 3 for normal operations.
3. Plug power cable back to the power supply and turn ON the system.

Normal Operation position (Default)



1 2 3

Clear CMOS position



1 2 3

Chapter 3

BIOS Setup

This chapter tells how to change system settings through the BIOS Setup menus. Detailed description of the BIOS parameters are also provided.

This Chapter includes the following information:

- Enter BIOS setup
- Main Menu
- Standard CMOS Features
- Advance BIOS Features
- Advance Chipset Features
- Integrated Peripherals
- Power Management Setup
- PnP/PCI Configurations
- System Monitor
- Load Defaults
- Set Password
- Set Username
- Save & Exit Setup
- Exit Without Saving



Chapter 3: BIOS Setup

Enter BIOS setup

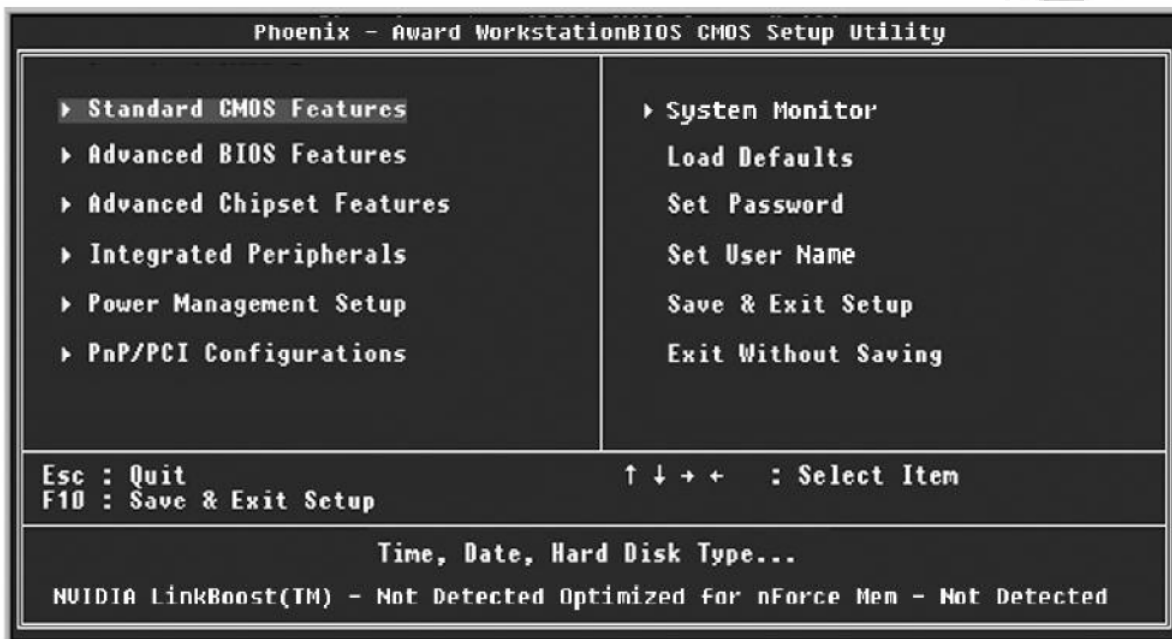
The BIOS is the communication bridge between hardware and software. Correctly setting up the BIOS parameters is critical to maintain optimal and stable system performance. To enter the BIOS power the system. When the you see “**Press DEL to enter SETUP...**” at the bottom of the screen. Press the key enter the BIOS.

Note:

It is recommended that the default settings in the BIOS are not changed. The user accepts all responsibility for any damage that results from changing the default settings.

Main Menu

The main menu allows you to select from a list of function and two exit choices. Use the arrow keys to



select among the items and press <ENTER> ^{Main Menu} to accept or go to the sub-menu.

The items in the main menu are:

Standard CMOS Features

The basic system configuration can be setup through this menu.

Advance BIOS Features

The advance system features and boot sequence can be setup through this menu.

Chapter 3: BIOS Setup

Advance Chipset Features

Optimize system performance through this menu. Configure clocks, voltages, memory timings, and more.

Integrated Peripherals

Onboard peripherals such as RAID, USB, and MAC control can be setup through this menu.

Power Management Setup

Configure power management, power-on, and sleep features through this menu.

PnP/PCI Configurations

The system's Plug-and-Play and PCI configurations can be modified through this menu.

System Monitor

Monitor the real-time system status of your PC, including temperature, voltage, and fan speed.

Load Defaults

Load the NVIDIA LinkBoost™ Technology settings for LinkBoost™ enabled systems. Load default system settings for standard systems.

Set Password

Set the password to access the BIOS menu.

Set User Name

Set the BIOS Welcome screen name.

Save & Exit Setup

Save settings and exit setup.

Exit Without Saving

Abandon all setting changes and exit setup.

NVIDIA LinkBoost™ <STATUS>

This status appears at the bottom of the BIOS screen. <STATUS> can be:

Detected: System detects an LinkBoost capable components.

Not Detected: The LinkBoost components are not detected.

SLI-Ready Memory <STATUS>

This status appears at the bottom of the BIOS screen. <STATUS> can be:

Enabled: SLI-Ready memory detected and enabled.

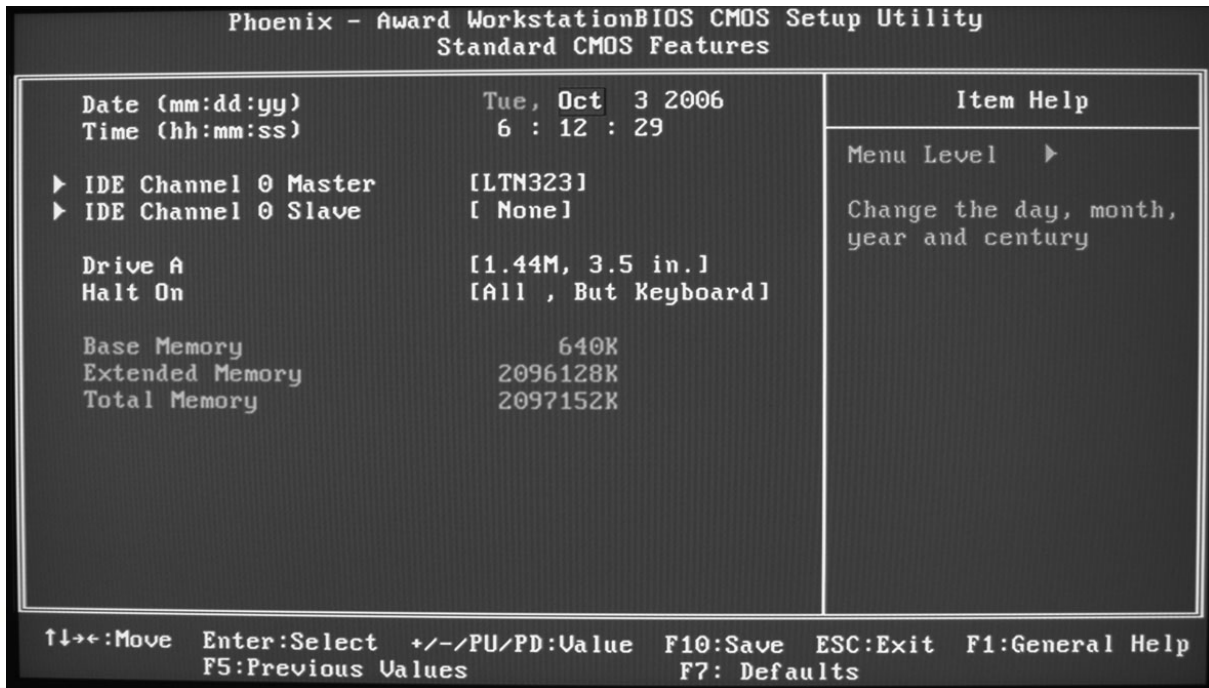
Disabled: SLI-Ready memory detected but disabled.

Not Detected: SLI-Ready memory not detected.

Chapter 3: BIOS Setup

Standard CMOS Features

This sub-menu is used to set up the standard CMOS features, such as the date, time, HDD model and so on. Use the arrow keys select the item to set up, and then use the <PgUp> or <PgDn> keys to choose the



Standard CMOS Features Menu

setting values.

Date

This option allows you to set the desired date (usually as the current day) with the <day><month><date><year> format.

Day—weekday from Sun. to Sat., defined by BIOS (read-only).

Month—month from Jan. to Dec..

Date—date from 1st to 31st, can be changed using the keyboard.

Year—year, set up by users.

Time

This option allows you to set up the desired time (usually as the current time) with <hour><minute><second> format.

IDE Channel 0 Master/Slave

These categories identify the HDD types of 1 IDE channel installed in the computer system. There are three choices provided for the Enhanced IDE BIOS: None, Auto, and Manual. “None” means no HDD is installed or set; “Auto” means the system can auto-detect the hard disk when booting up; by choosing “Manual” and changing Access Mode to “CHS”, the related information should be entered manually. Enter the information directly from the keyboard and press < Enter>.

Chapter 3: BIOS Setup

Note:

It is recommended to use “Auto” for any HDD configuration and only use “Manual” if the user is experiencing problems with “Auto”.

Cylinder	Number of cylinders	Head	Number of Heads
Precomp	Write pre-compensation	Landing Zone	Landing zone (can't be edited)
Sector	Number of sectors		

Here are some of the information that needs to be entered if using “Manual” configuration. Please refer to you HDD manufacturer’s user guide for such information.

Award (Phoenix) BIOS can support 3 HDD modes: CHS, LBA and Large or Auto mode.

CHS	For HDD<528MB
LBA	For HDD>528MB & supporting LBA (Logical Block Addressing)
Large	For HDD>528MB but not supporting LBA
Auto	Recommended mod

Drive A

This option allows you to select the kind of FDD to be installed, including “None”, [360K, 5.25 in], [1.2M, 5.25 in], [720K, 3.5 in], [1.44M, 3.5 in] and [2.88 M, 3.5 in].

Note:

If the you do not have a FDD installed, select “None”, otherwise select to FDD is that is installed.

Halt On

This category determines whether or not the computer will stop if an error is detected during powering up.

All Errors	Whenever the B IOS detects any error, the system will stop and you will be prompted.
No Errors	Then system boots will not stop for any errors that my be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; but will stop for all other errors.
All, But Diskette	The system boot will not stop for a diskette error; but it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for an keyboard or disk error, but will stop for all other errors.

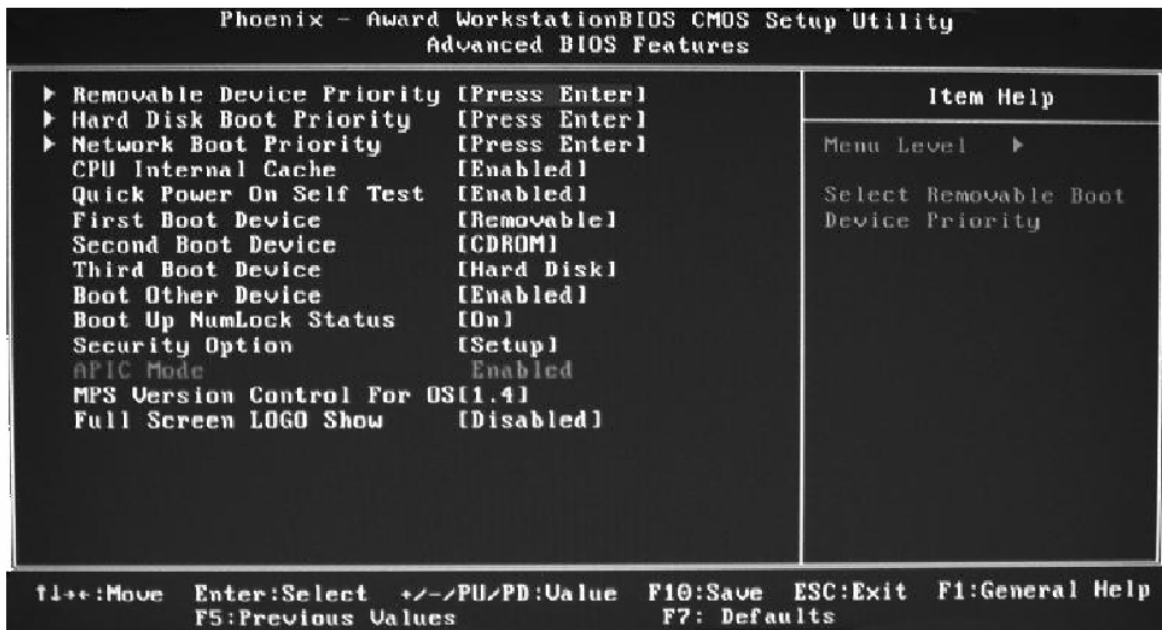
Chapter 3: BIOS Setup

Memory

Base Memory	The BIOS POST will determine the amount of base (or conventional) memory installed in the system.
Extended Memory	The BIOS determines how much extended memory is present during the POST.
Total Memory	Total memory of the system.

This is a Display-Only Category, determined by POST (Power On Self Test) of the BIOS.

Advance BIOS Features



Advance BIOS Features Menu

Removable Device Priority [Press Enter]

This option is used to select the priority for removable device startup. After pressing <Enter>, you can select the removable device using the <PageUp>/<PageDn> or Up/Down arrow keys, and change the removable device priority using <+> or <->; you can exit this menu by pressing <Esc>.

Hard Disk Boot Priority [Press Enter]

This option is used to select the priority for HDD startup. After pressing <Enter>, you can select the HDD using the <PageUp>/<PageDn> or Up/Down arrow keys, and change the HDD priority using <+> or <->; you can exit this menu by pressing <Esc>.

Chapter 3: BIOS Setup

Network Boot Priority [Press Enter]

This option is used to select the priority for network startup. After pressing <Enter>, you can select the network using the <PageUp>/<PageDn> or Up/Down arrow keys, and change the network boot priority using <+> or <->; you can exit this menu by pressing <Esc>.

CPU Internal Cache [Enable] by Default

This option is used to enable or disable the CPU internal cache.

Quick Power On Self Test [Enable] by Default

Enable to reduce the time for power on self test.

First/Second/Third Boot Device [Removable] [CDROM] [Hard Disk] by Default

This option allows you to set the boot device's sequence.

Boot Other Device [Enable] byby Default

With this function set to enable, the system will boot from some other devices if the first/second/third boot devices failed.

Boot Up NumLock Status [On] by Default

This item defines if the keyboard Num Lock key is active when your system is started.

Security Option [Setup] by Default

When it is set to "Setup", a password is required to enter the CMOS Setup screen; When it is set to "System", a password is required not only to enter CMOS Setup, but also to start up your PC.

APIC Mode

This option is used to enable or disable APIC function.

MPS Version Control For OS [1.4] by Default

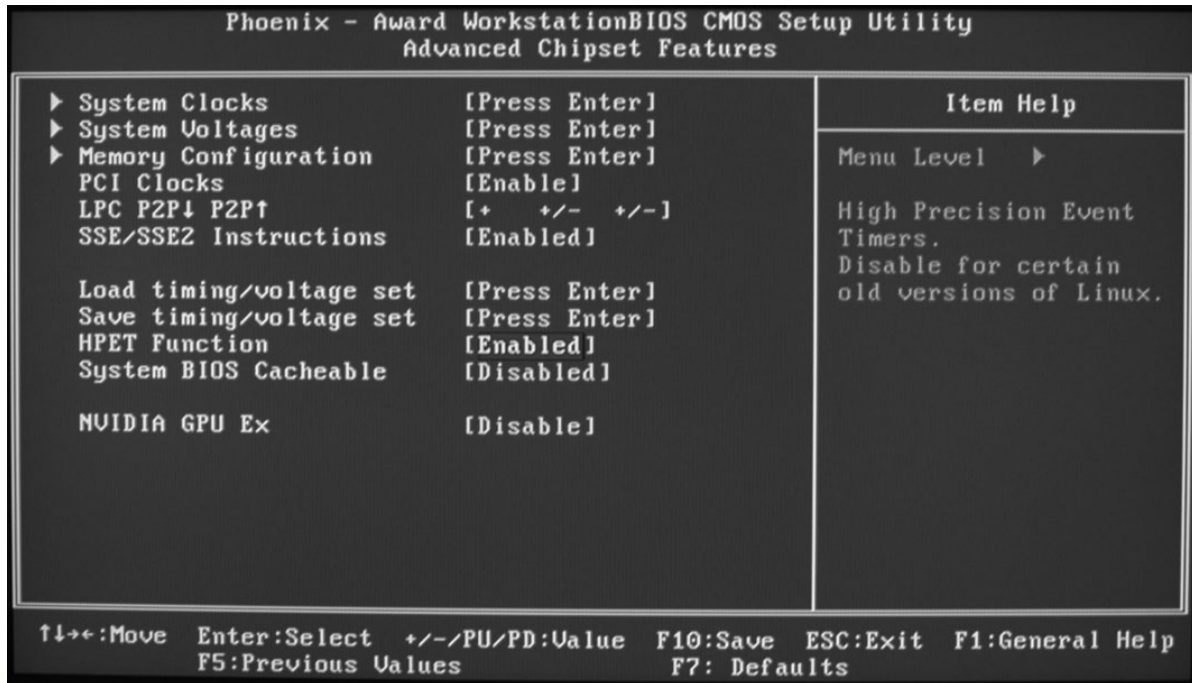
This option is used to set up the version of MPS Table used in NT4.0 OS.

Full Screen LOGO Show [Disable] by Default

This option allows you to enable or disable the full-screen logo.

Chapter 3: BIOS Setup

Advance Chipset Features



Advance Chipset Features Menu

Use this section is used to set clocks, voltages, and memory timings. chipset features, specifically

System Clocks [Press Enter]

Use this menu to set system clocks.

System Voltages [Press Enter]

Use this menu to set system voltages.

Memory Configuration [Press Enter]

Use this menu to set memory settings.

PCI Clocks [Enable] by Default

Use this menu to turn off the PCI clock on the unused PCI slot.

LPC P2P ↓ P2P ↑ [+ +/- +/-] by Default

Decoding mode for LPC and P2P.

Chapter 3: BIOS Setup

SSE/SSE2 Instructions [Enable] by Default

Enable or disable Stream SIMD Extensions.

Load timing/voltage settings [Press Enter]

Load timing and voltage settings from a profile.

Save timing/voltage settings [Press Enter]

Save timing and voltage settings to a profile.

HPET Function [Enable] by Default

High performance event timers. Use for synchronizing multimedia streams, providing smooth playback and reducing the need to use other timestamp calculations. For older version of Linux this feature is disabled.

System BIOS Cacheable [Disable] by Default

Enable the memory cache function for BIOS.

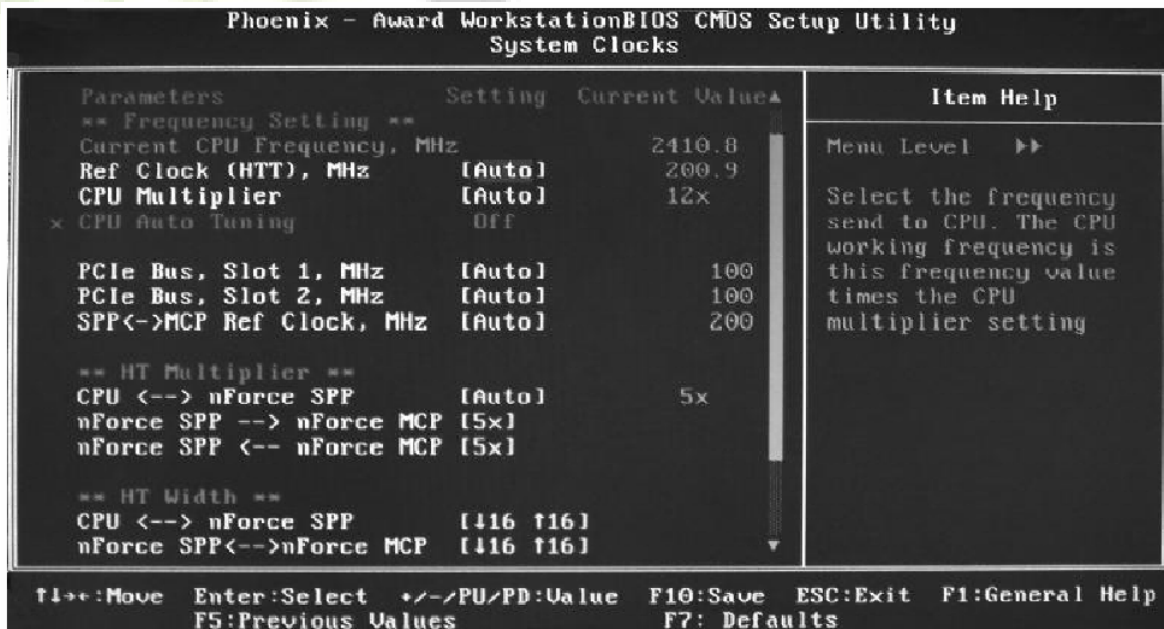
Nvidia GPU EX [Disable] by Default

This allows you to enhance the performance of you PCI Express graphics card.

Frequency Settings

Note:

It is recommend that all configurations in the following sections should be set to “Auto”. Improper configuration may lead to system instability and possible damage the motherboard and



System Clocks Menu

other components in the system.

Chapter 3: BIOS Setup

Ref Clock (HTT) [Auto] by Default

Reference clock frequency.

CPU Multiplier [Auto] by Default

The value of the CPU multiplier.

PCIe Bus, Slot 1 [Auto] by Default

The frequency of the PCI-Express Bus, Slot 1.

PCIe Bus, Slot 2 [Auto] by Default

The frequency of the PCI-Express Bus, Slot 2.

SPP ← → MCP Ref Clock [Auto] by Default

The frequency of the reference clock between SPP and MCP chips.

HT Multiplier

CPU ← → nForce SPP [Auto] by Default

The HT multiplier between the CPU and the SPP.

nForce SPP → nForce MCP [5x] by Default

The HT multiplier from the SPP to the MCP.

nForce SPP ← nForce MCP [5x] by Default

The HT multiplier from the MCP to the SPP.

HT Width

CPU ← → nForce SPP [↓16 ↑16] by Default

The HT width between the CPU and the SPP.

Force SPP ← → nForce MCP [↓16 ↑16] by Default

The HT width between the SPP and the MCP.

SATA Spread Spectrum [Enable] by Default

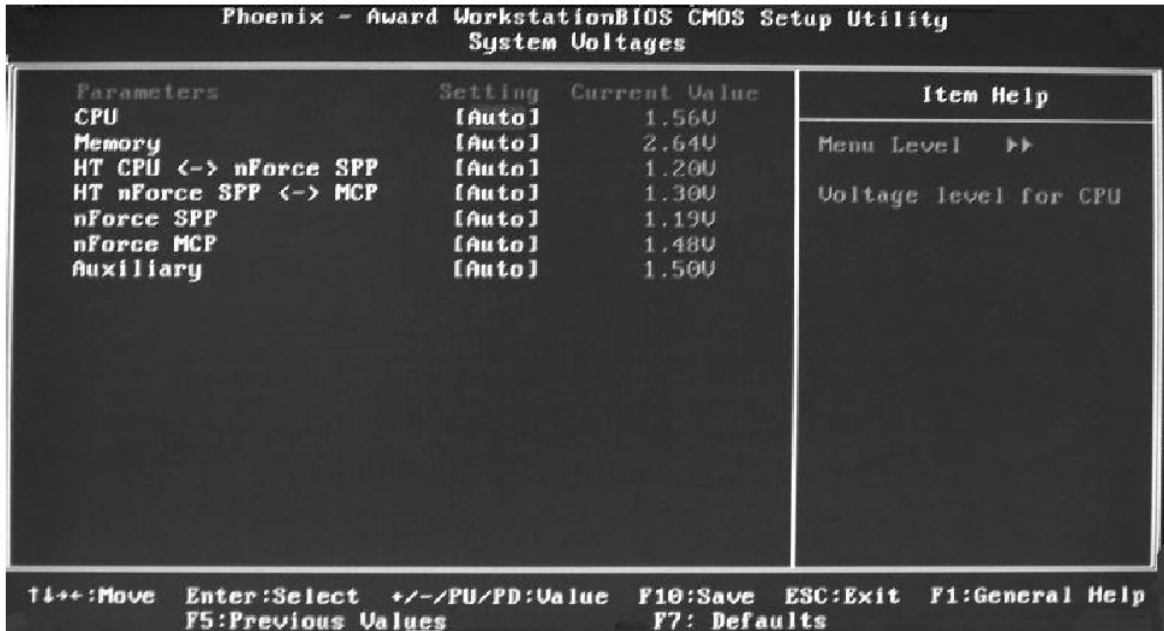
Sets the SATA Spread Spectrum option.

Chapter 3: BIOS Setup

System Voltages

Warning:

Exceeding the maximum recommended voltage maybe permanently affect the stability and reliability of the device.



Parameters	Setting	Current Value	Item Help
CPU	[Auto]	1.56V	
Memory	[Auto]	2.64V	Menu Level >>
HT CPU <-> nForce SPP	[Auto]	1.20V	
HT nForce SPP <-> MCP	[Auto]	1.30V	Voltage level for CPU
nForce SPP	[Auto]	1.19V	
nForce MCP	[Auto]	1.48V	
Auxiliary	[Auto]	1.50V	

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

System Voltage Menu

CPU [Auto] by Default

Voltage to the CPU

Memory [Auto] by Default

Voltage to the DRAM

HT CPU ← → nForce SPP [Auto] by Default

Voltage of the HT link between the CPU and the SPP

HT nForce SPP ← → MCP [Auto] by Default

Voltage of the HT link between the SPP and the MCP

nForce SPP [Auto] by Default

Voltage of the nForce SPP

nForce MCP [Auto] by Default

Voltage of the nForce MCP

Auxiliary [Auto] by Default

Voltage of the SPP auxiliary

Chapter 3: BIOS Setup

Memory Configuration

SLI-Ready Memory [Disable] by Default

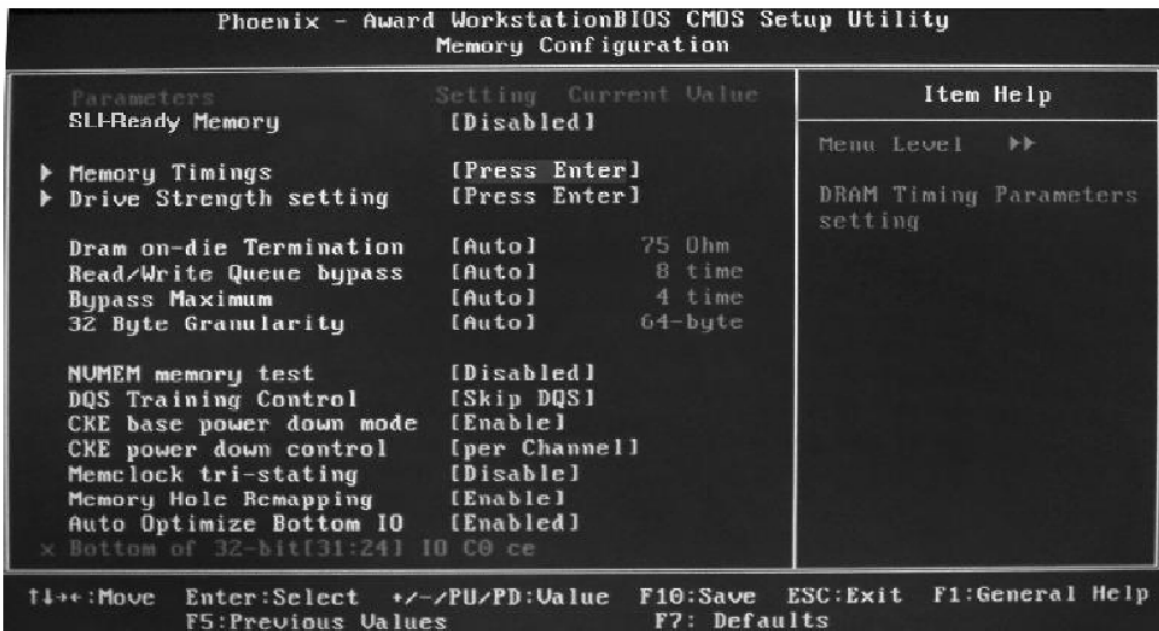
Enable memory settings that are SLI-Ready (only functional with DRAM that is SLI-Ready).

Memory Timings [Press Enter]

Use this menu to control memory timings (see Memory Timings section below).

Drive Strength setting [Press Enter]

Use this menu to control drive strength settings (see Drive Strength settings section below).



Memory Configuration Menu

Dram on-die termination [Auto] by Default

Resistance of the on-die termination resistors.

Read/Write queue bypass [Auto] by Default

Number of times to bypass the read/write queue.

Bypass Maximum [Auto] by Default

Max number of times that the oldest memory access request can be bypassed.

32 Byte Granularity [Auto] by Default

32/64 byte DRAM access granularity.

Chapter 3: BIOS Setup

NVMEM memory test [Disable] by Default

Run NVIDIA memory testing module during POST.

DQS Training Control [Skip DQS] by Default

Perform/Skip DQS training.

CKE base power down mode [Enable] by Default

Enable or disable CKE base power down mode.

CKE power down control [Per Channel] by Default

CKE power down mode selection. It should be set to “per channel” for non mobile systems.

Memclock tri-stating [Disable] by Default

Memclock tri-stating during C3 and Alt VID.

Memory Hole remapping [Enable] by Default

Enable or disable memory hole remapping.

Auto Optimize Bottom IO [Enable] by Default

Auto optimize maximum DRAM size when kernel assigns PCI resources done.

Chapter 3: BIOS Setup

Phoenix - Award Workstation BIOS CMOS Setup Utility			
Memory Timings			
Parameters	Setting	Current Value	Item Help
Timing Mode	[Auto]		
x Memory Clock Limit	DDR2 400		Menu Level >>>>
tCL (CAS Latency)	[Auto]	4 clock	Auto, no user limit
tRCD	[Auto]	4 clock	MaxMemClk, limit by
tRP	[Auto]	4 clock	Memory Clock value
tRAS	[Auto]	11 clock	
Command Per Clock (CMD)	[Auto]	2 clock	
== Advanced Memory Settings ==			
tRRD	[Auto]	2 clock	
AsynCLat	[Auto]	4 nS	
tRC	[Auto]	15 clock	
tWR	[Auto]	4 clock	
tRWT	[Auto]	4 clock	
tWTR	[Auto]	2 clock	
tREF	[Auto]	7.8 uS	
Read DQS Skew	[Auto]		
Read delay from Rx FIFO	[Auto]	2.5 clock	
↑↓: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F7: Defaults			

Memory Timing Menu

Standard Memory Settings

Timing mode [Auto] by Default

Select automatic or manual set memory timing.

tCL (CAS Latency) [Auto] by Default

CAS Latency (CAS# to read data valid).

tRCD [Auto] by Default

RAS# to CAS# delay for a RD/WR command to the same bank.

tRP [Auto] by Default

Row Precharge time Precharge-to-Active or Auto-Refresh of the same bank.

tRAS [Auto] by Default

Minimum RAS# active time

Command Per Clock (CMD) [Auto] by Default

Command timing setting (per clock unit).

Advance Memory Settings

tRRD [Auto] by Default

RAS# to RAS# delay of different banks.

Chapter 3: BIOS Setup

AsyncLat [Auto] by Default

Max round trip latency from the CPU to the DRAM.

tRC [Auto] by Default

RAS# to RAS# or auto refresh time of the same bank.

tWR [Auto] by Default

Write recovery time.

tRWT [Auto] by Default

Minimum read to write turnaround time.

tWTR [Auto] by Default

Minimum write to read delay with same chip select.

tREF [Auto] by Default

DRAM refresh rate.

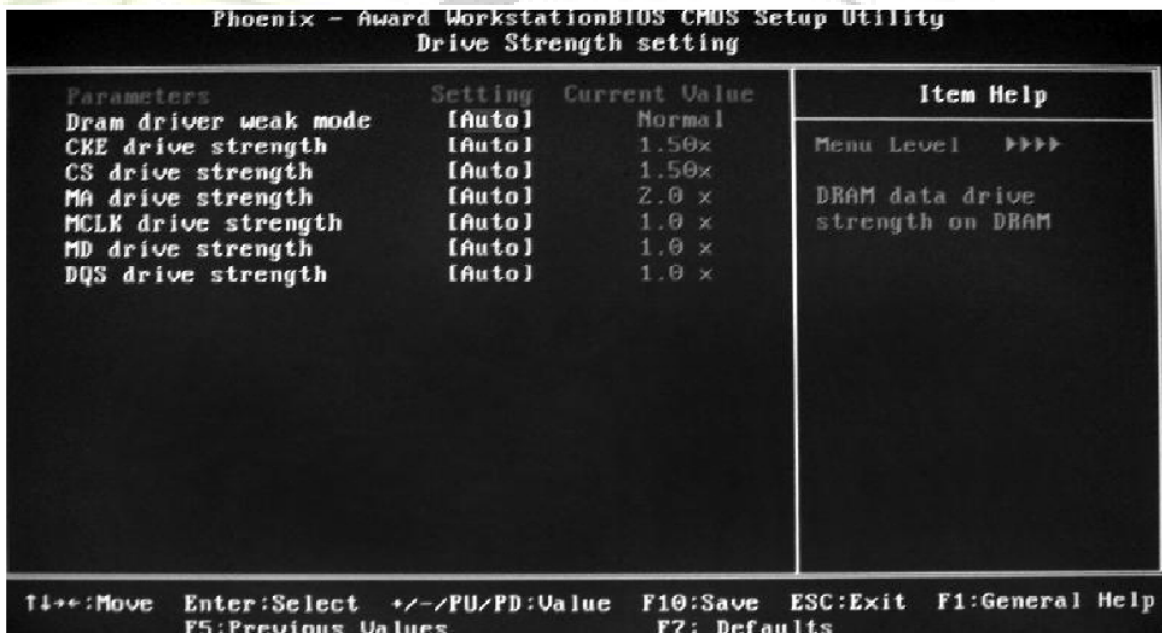
Read DQS Skew [Auto] by Default

Read DQS delayed with respect to the data. 1/96 MEMCLK per unit.

Read delay from Rx FIFO [Auto] by Default

Delay from DQS receiver enable to first data read from Rx FIFO.

Drive Strength Setting



Parameters	Setting	Current Value	Item Help
Dram driver weak mode	[Auto]	Normal	
CKE drive strength	[Auto]	1.50x	Menu Level >>>>
CS drive strength	[Auto]	1.50x	
MA drive strength	[Auto]	2.0 x	DRAM data drive strength on DRAM
MCLK drive strength	[Auto]	1.0 x	
MD drive strength	[Auto]	1.0 x	
DQS drive strength	[Auto]	1.0 x	

T1++:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F7: Defaults

Drive Strength Setting Menu

Chapter 3: BIOS Setup

DRAM driver weak mode [Auto] by Default

DRAM data drive strength on DRAM.

CKE drive strength [Auto] by Default

Drive strength of the CKE pins.

CS drive strength [Auto] by Default

Drive strength of the CS and ODT pins.

MA drive strength [Auto] by Default

Drive strength of the Address, RAS, CAS, WE, and parity pins.

MCLK drive strength [Auto] by Default

Drive strength of the MEMCLK pins.

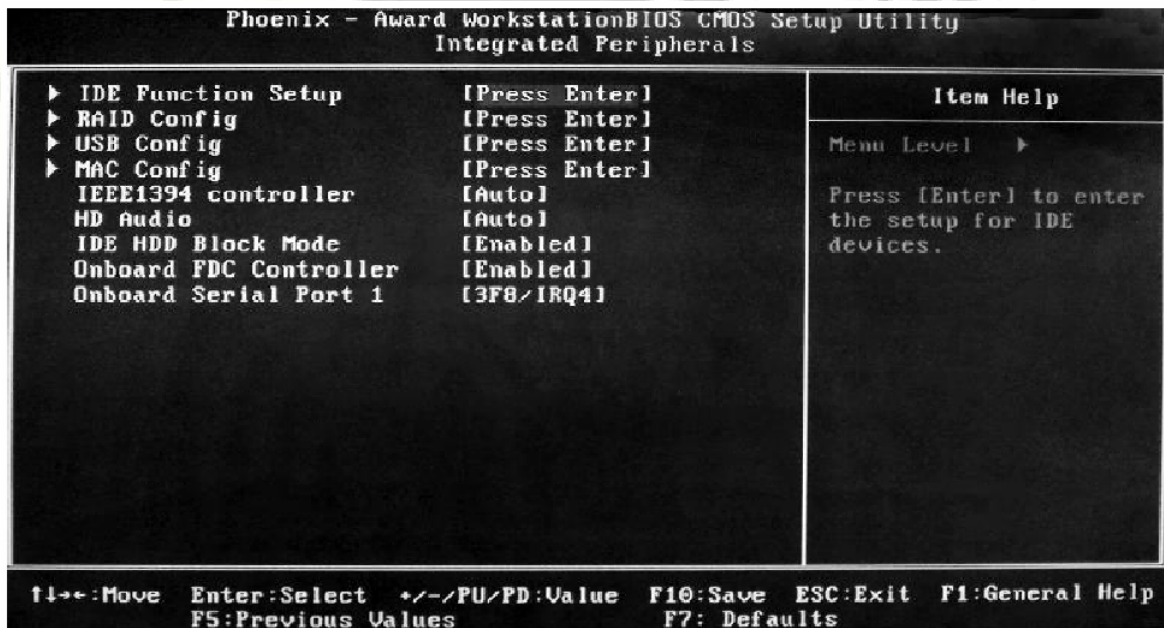
MD drive strength [Auto] by Default

Drive strength of the Data pins.

DQS drive strength [Auto] by Default

Drive strength of the DQS pins.

Integrated Peripherals



Integrated Peripherals Menu

Chapter 3: BIOS Setup

IDE Function Setup [Press Enter]

Use this menu to setup the data flow control for IDE.

RAID Config [Press Enter]

Use this menu to enable or disable SATA RAID.

USB Config [Press Enter]

Use this menu to setup USB interface.

MAC Config [Press Enter]

Use this menu to turn off MAC.

IEEE 1394 controller [Auto] by Default

Use this setting to set whether the IEEE 1394 function is enabled.

HD Audio [Auto] by Default

Use this setting to configure HD Audio.

IDE HDD Block Mode [Enable] by Default

Use this setting to configure HDD Block Mode.

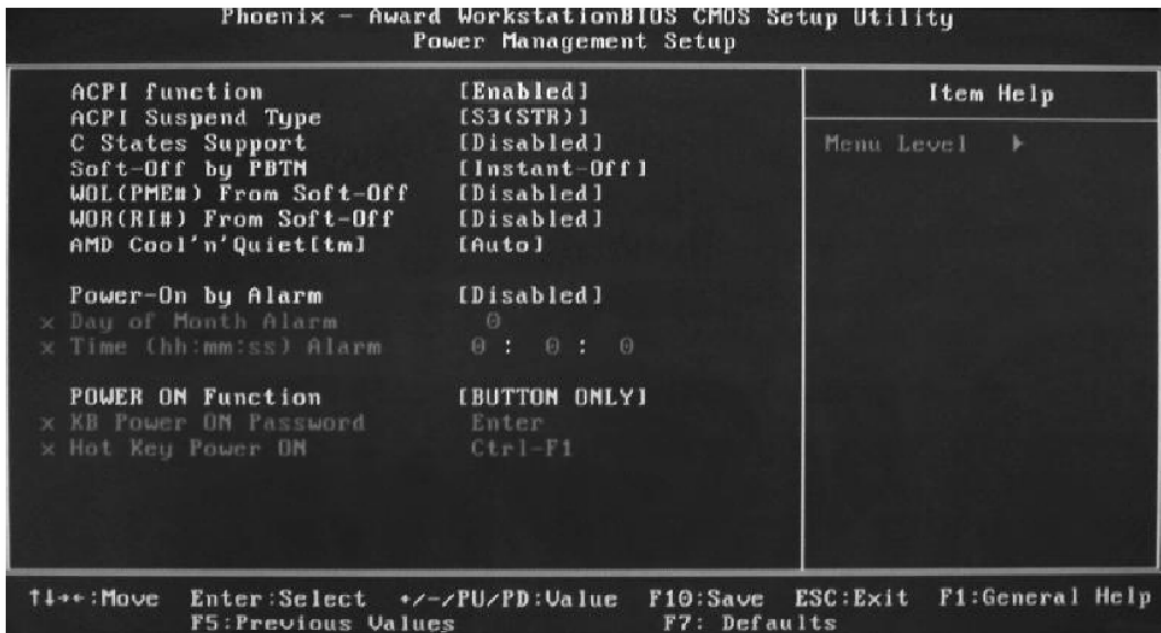
Onboard FDC Controller [Enable] by Default

This option is used to set whether the Onboard FDC Controller is enabled.

Onboard Serial Port 1 [3F8/IRQ4] by Default

This option is used to assign the I/O address and IRQ for onboard serial port 1.

Chapter 3: BIOS Setup



Power Management Setup Menu

Power Management Setup

ACPI function [Enable] by Default

ACPI stands for “Advanced Configuration and Power Interface”. ACPI is a standard that defines power and configuration management interfaces between an operating system and the BIOS. In other words, it is a standard that describes how computer components work together to manage system hardware. In order to use this function the ACPI specification must be supported by the OS (for example, Windows2000 or WindowsXP).

ACPI Suspend Type [S1&S3] by Default

This option is used to set the energy saving mode of the ACPI function. When you select “S1 (POS)” mode, the power will not shut off and the supply status will remain as it is, in S1 mode the computer can be resumed at any time. When you select “S3 (STR)” mode, the power will be cut off after a delay period. The status of the computer before it enters STR will be saved in memory, and the computer can quickly return to previous status when the STR function wakes. When you select “S1 & S3” mode, the system will automatically select the delay time.

C States Support [Disable] by Default

CPU power state selection.

Soft-Off by PBTN [Instant-Off] by Default

This option is used to set the power down method. This function is only valid for system using an ATX power supply. When “Instant-Off” is selected, press the power switch to immediately turn off power. When “Delay 4 Sec” is selected, press and hold the power button for four seconds to turn off power.

Chapter 3: BIOS Setup

WOL(PME#) From Soft-Off [Disable] by Default

This item is used to set the system to wake-up on LAN.

WOR(RI#) From Soft-Off [Disable] by Default

This item is used to set the system to wake-up on ring.

AMD Cool 'n' Quiet[tm] [Disable] by Default

Use this option to enable or disable AMD Cool 'n' Quiet™ Technology.

Power-on by Alarm [Disable] by Default

This item is used to set the timing of the power-on function.

POWER ON Function [BUTTON ONLY] by Default

This option is used to set the power on method for your PC.



PnP/PCI Configurations

PnP/PCI Configuration Menu

Init Display First [PCI Slot] by Default

This option is used to set which display device will be used first when your PC starts up.

Reset Configuration Data [Disable] by Default

This option is used to set whether the system is permitted to automatically distribute IRQ, DMA, and I/O addresses each time the machine is turned on.

Chapter 3: BIOS Setup

Resources Controlled by [Auto(ESCD)] by Default

Use this option to determine if IRQ resources are automatically assigned or manually assigned

IRQ Resources

Press <Enter> to manually assign IRQ resources.

PCI/VGA Palette Snoop [Disable] by Default

If you use a non-standard VGA card, use this option to solve graphic acceleration card or MPEG audio card problems (e.g. colors not accurately displayed).

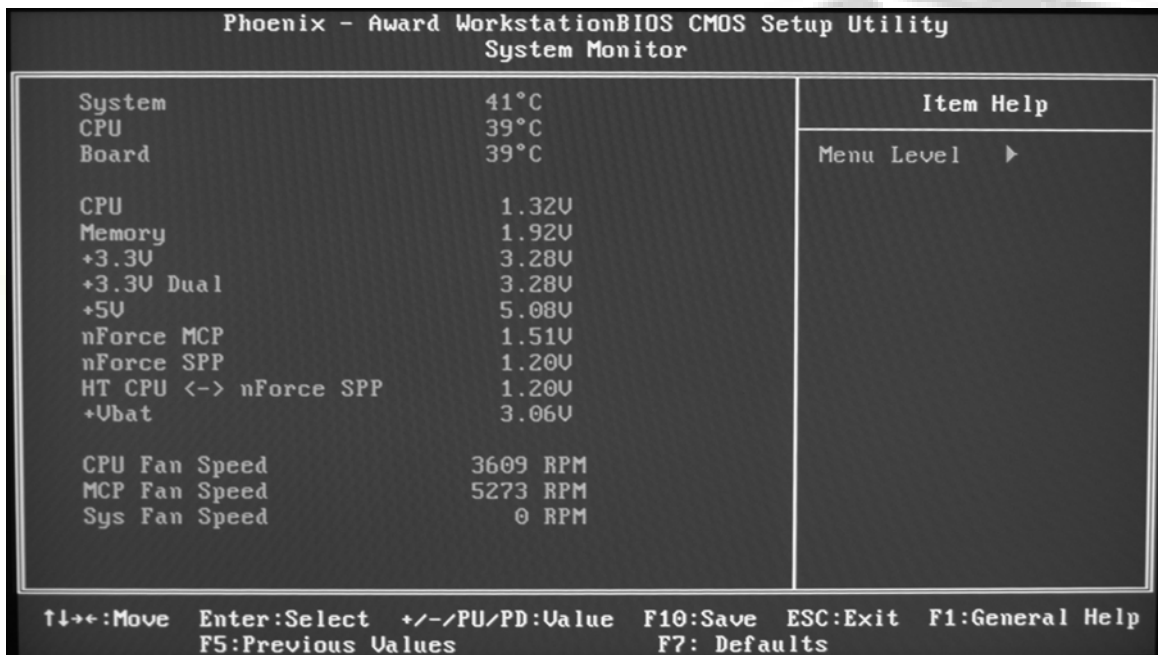
Maximum Payload Size [4096] by Default

This option is used to set maximum TLP payload size for PCI Express devices.

Maximum ASPM [Disable] by Default

Enable/Disable Advance State Power Management

System Monitor



Phoenix - Award Workstation BIOS CMOS Setup Utility		
System Monitor		
System	41°C	Item Help
CPU	39°C	
Board	39°C	Menu Level ▶
CPU	1.32V	
Memory	1.92V	
+3.3V	3.28V	
+3.3V Dual	3.28V	
+5V	5.08V	
nForce MCP	1.51V	
nForce SPP	1.20V	
HT CPU <-> nForce SPP	1.20V	
+Ubat	3.06V	
CPU Fan Speed	3609 RPM	
MCP Fan Speed	5273 RPM	
Sys Fan Speed	0 RPM	

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

System Monitor Menu

Chapter 3: BIOS Setup

Temperature values

System

The temperature of the system.

CPU

The temperature of the CPU.

Board

The temperature of the motherboard.

Voltage values

CPU

The voltage of the CPU.

Memory

The voltage of the Memory.

+3.3V

The voltage of the +3.3V .

+3.3V Dual

The voltage of the +3.3V Dual.

+5V

The voltage of the +5V.

nForce MCP

The voltage of the nForce MCP chip.

nForce SPP

The voltage of the nForce SPP chip.

HT CPU <-> nForce SPP

The voltage of the HT between the CPU and the nForce SPP chip.

+Vbat

The voltage of +Vbat.

nForce MCP

The voltage of the nForce MCP chip.

nForce SPP

The voltage of the nForce SPP chip.

Chapter 3: BIOS Setup

HT CPU <-> nForce SPP

The voltage of the HT between the CPU and the nForce SPP chip.

+Vbat

The voltage of +Vbat.

Fan Speed values

CPU Fan Speed

The CPU fan speed.

MCP Fan Speed

The MCP fan speed.

Sys Fan Speed

The system fan speed.

Load Defaults

The BIOS defaults sets the basic system functions that ensure system stability. If your computer cannot POST properly, you should load the Defaults to restore the original settings.

Set Password

The password can be used to start the system or modify the CMOS settings. When you select the Set Password option, the following message will appear in the center of the screen:

Enter Password:

Enter your password, not exceeding 8 characters, then press <Enter>. The password you enter will replace any previous password. When prompted, key in the new password and press <Enter>. If you do not want to set a password, just press <Enter> when prompted to enter a password, and in the screen the following message will appear. If no password is keyed in, any user can enter the system and view/modify the CMOS settings.

**Password Disabled!!!
Press any key to continue ...**

Set User Name

Set the name that will appear on the POST welcome screen.

Chapter 3: BIOS Setup

Save & Exit Setup

When you select this option and press <Enter>, the following message will appear in the center of the screen:

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

Press <Y> to save your changes in CMOS and exit the program; press <N> or <ESC> to return to the main menu.

Exit Without Saving

If you select this option and press <Enter>, the following message will appear in the center of the screen:

Quit Without Saving (Y/N)?N

Press <Y> to exit CMOS without saving your modifications; press <N> or <ESC> to return to the main menu.

Chapter 4

Raid Setup and LED Error Codes

This chapter will introduce the Raid setup process and error codes displayed on the LED.

This chapter provides the following information:

- Setting up Raid in the BIOS
- Configuring Raid in Nvidia Raid Utility
- Installing the Raid Driver (for bootable Raid Array)
- On board LED error codes



Chapter 4: Raid Setup and LED Error Codes

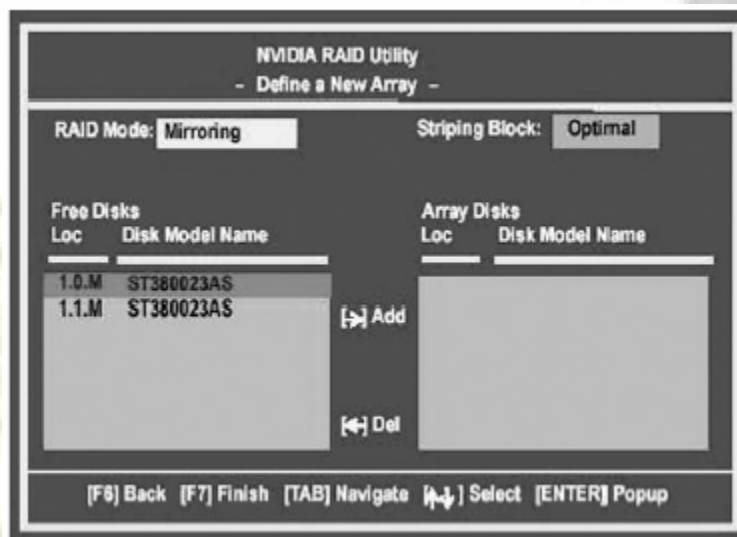
Setting up Raid in the BIOS

To enable Raid:

1. Turn on the system, then press the <Delete> to enter the BIOS.
2. Use the arrow key to select “Integrated Peripherals” and press Enter.
3. Use the arrow key to select “Raid Config” and press Enter.
4. In the “Raid Config” window, enable the “Raid Enable”, and the other options will be able to be accessed. Enable the ports that you want to setup Raid disks.
5. Press F10 to save settings.

Configuring Raid in Nvidia Raid Utility

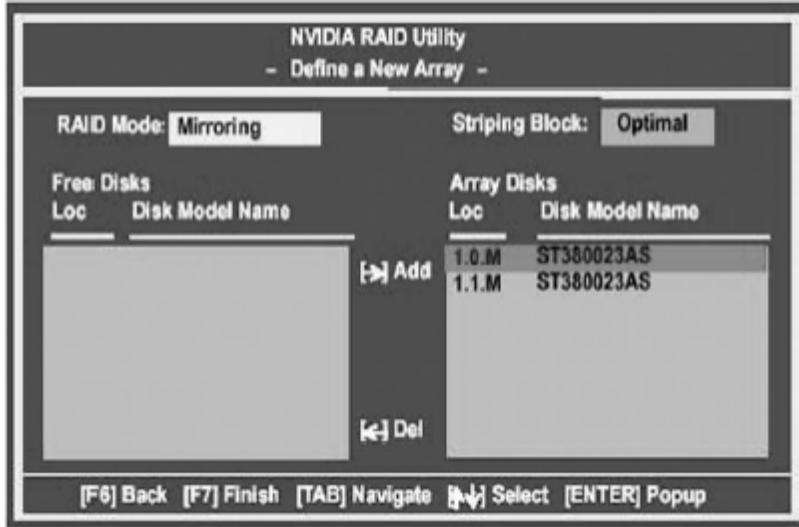
1. After enabling Raid in the BIOS reboot the system. When you see the Nvidia Raid Utility prompting you to press F10, press F10 to enter the utility.
2. Press <N>, and the utility “Define a New Array” window will appear.



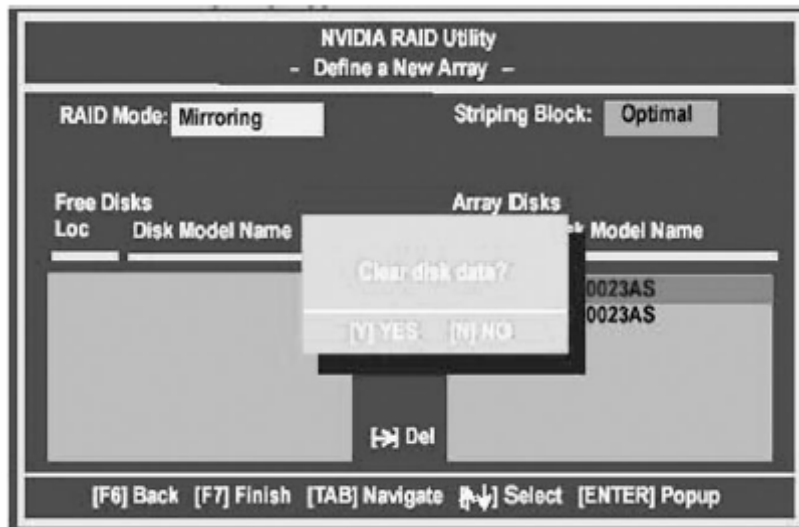
3. Use the <Tab> key to navigate through the screen. Use up and down arrows to select the fields.
4. Tab to the “Free Disk” section. Use the arrow keys move the disk from the “Free Disk” to the “Array Disks”.

Chapter 4: Raid Setup and LED Error Codes

4. Tab to the “Free Disk” section. Use the arrow keys move the disk from the “Free Disk” to the “Array Disks”. The disk that are in the “Array Disks” field will be used in the Raid configuration.

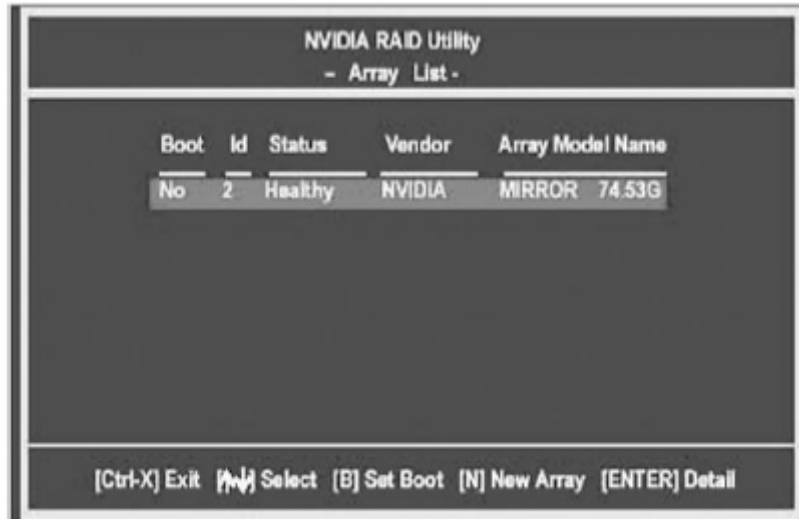


5. After the disk are been selected, press **F7**. A “Clear disk data” window will appear. Press **<Y>** if you want to wipe all the data from the Raid Array, otherwise press **<N>**. Also press **<Y>** if the Raid drivers were used in previous raid configurations.

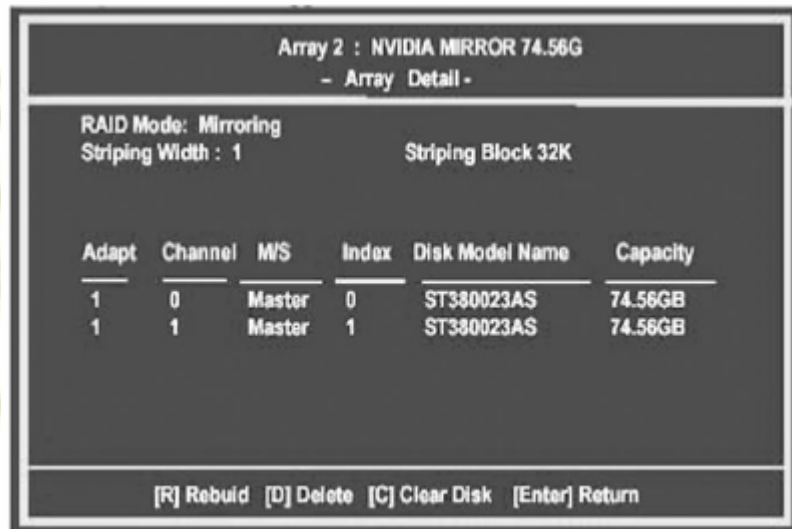


Chapter 4: Raid Setup and LED Error Codes

The “Array List” window will appear displaying the Raid array that is setup.



6. Use the arrow keys to select the array that you want to setup, and press <Enter>. The Array detail window will appear.



7. If you want to mark this disk as empty and wipe out all its contents then press <C>.

8. At the prompt, press <Y> to wipe out all the data, otherwise press <N>.

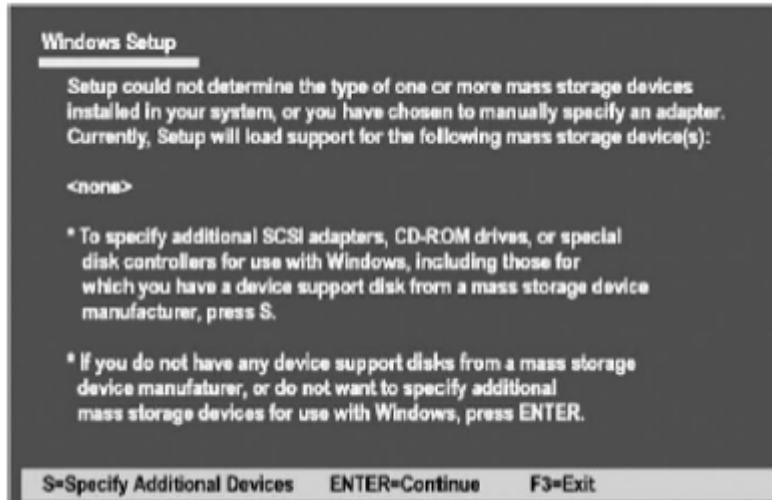
9. Press <Enter> again to go back to the previous window and then press <F10> to exit the RAID setup.

Chapter 4: Raid Setup and LED Error Codes

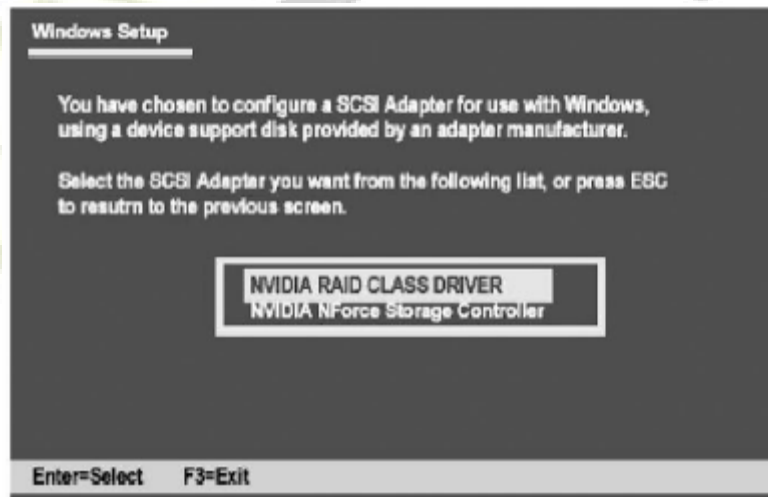
Installing the Raid Driver (for bootable Raid Array)

After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows Setup program starts.

1. Press **F6** and wait for the Windows Setup screen to appear.



2. Insert the floppy that has the RAID driver, press <S>. Press <Enter> to install “Nvidia Raid Class Ddriver”



3. Press <S> again and select “Nvidia Nforce Storage Controller” and press <Enter>.

Chapter 4: Raid Setup and LED Error Codes

4. After both drivers are installed press <Enter> to continue the Windows install.



Chapter 4: Raid Setup and LED Error Codes

On board LED error codes

Code(hex)	Name	Description
01	Reserved	
02	Jumps to E000 segment	Execution of POST routines in E000
03	Early Superio Init	Early Initialized the super IO
04	Reserved	
05	Blank video	Reset Video controller
06	Reserved	
07	Init KBC	Keyboard controller init
08	KB test	Test the Keyboard
09	Reserved	
0A	Mouse Init	Initialized the mouse
0B	Reserved	
0C	Reserved	
0D	Reserved	
0E	Check Sum Check	Check the integrity of the ROM, BIOS and message
0F	Reserved	
10	Autodetect	EEPROM Check Flash type and copy flash write/erase routines
11	Reserved	
12	Test CMOS	Test and Reset CMOS
13	Reserved	
14	Load Chipset	Load Chipset Defaults
15	Reserved	
16	Init Clock	Initialize onboard clock generator
17	Reserved	
18	Init CPU	CPU ID and initialize L1/L2 cache
19	Reserved	
1A	Reserved	
1B	Setup Vector Table	Interrupt Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
1C	CMOS Battery Check	Test CMOS and check Battery Fail
1D	Early PM	Early PM initialization
1E	Reserved	
1F	Re-initial KB	Load keyboard matrix
20	Reserved	
22	HPM init	Init Heuristic Power Management (HPM)
23	Program chipset	Early Programming of chipset registers
24	Init PNP	Init PNP
25	Shadow VBIO	Shadow system/video BIOS
26	Clock Gen	Init onboard clock generator and sensor
27	Setup BDA	Setup BIOS DATA AREA (BDA)
28	Reserved	

Chapter 4: Raid Setup and LED Error Codes

Code(hex)	Name	Description
29	CPU Speed detect	Chipset programming and CPU Speed detect
2A	Reserved	
2B	Init video	Initialize Video
2C	Reserved	
2D	Video memory test	Test Video Memory and display Logos
2E	Reserved	
2F	Reserved	
30	Reserved	
31	Reserved	
32	Reserved	
33	Early keyboard reset	Early Keyboard Reset
34	Reserved	
35	Test DMA Controller 0	Test DMA channel 0
36	Reserved	
37	Test DMA Controller 1	Test DMA channel 1
38	Reserved	
39	Test DMA Page Registers	Test DMA Page Registers
3A	Reserved	
3B	Reserved	
3C	Test Timer	Test 8254 Timer 0 Counter 2.
3D	Reserved	
3E	Test 8259-1 Mask	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
3F	Reserved	
40	Test 8259-2 Mask	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
41	Reserved	
42	Reserved	
43	Test Stuck Interrupt	Turn off interrupts then verify no 8259's Interrupt interrupt mask register is on. Test 8259 Force an interrupt and verify the interrupt occurred.
44	Reserved	
45	Reinit serial port	Reinitialize Preboot agent serial port
46	Reserved	
47	EISA Test	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag.
48	Reserved	
49	Size Memory	Size base memory from 256K to 640K and extended memory above 1MB.
4A	Reserved	
4B	Reserved	

Chapter 4: Raid Setup and LED Error Codes

Code(hex)	Name	Description
4C	Reserved	
4D	Reserved	
4E	Init APIC	Initialize APIC and set MTRR
4F	Reserved	
50	USB init Initialize	USB controller
51	Reserved	
52	Memory Test	Test all memory of memory above 1MB using Virtual 8086 mode, page mode and clear the memory
53	Reserved	
54	Reserved	
55	CPU display	Detect CPU speed and display CPU vendor specific version string and turn on all necessary CPU features
56	Reserved	
57	PnP Init Display	PnP logo and PnP early init
58	Reserved	
59	Setup Virus	Setup virus protect according to protect setup
5A	Reserved	
5B	Awdflash Load	If required, will auto load Awdflash.exe in POST
5C	Reserved	
5D	Onboard I/O	Init Initializing onboard superIO
5E	Reserved	
5F	Reserved	
60	Setup enable	Display setup message and enable setup functions
61	Reserved	
62	Reserved	
63	Initialize Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
64	Reserved	
65	PS2 Mouse special	Special treatment to PS2 Mouse port
66	Reserved	
67	ACPI init	ACPI sub-system initializing
68	Reserved	
69	Init Cache	Initialize cache controller
6A	Reserved	
6B	Setup	Enter setup check and autoconfiguration check up
6C	Reserved	
6D	Initialize Floppy	Initialize floppy disk drive
6E	Reserved	
6F	FDD install	Install FDD and setup BIOS data area parameters

Chapter 4: Raid Setup and LED Error Codes

Code(hex)	Name	Description
70	Reserved	
71	Reserved	
72	Reserved	
73	Initialize Hard Drive	Initialize hard drive controller
74	Reserved	
75	Detect HDD	IDE device detection
76	Reserved	
77	Detect serial ports	Initialize serial ports
78	Reserved	
79	Reserved	
7A	Detect parallel ports	Initialize parallel ports
7B	Reserved	
7C	HDD Write Protect	HDD check for write protection
7D	Reserved	
7E	Reserved	
7F	POST error check	Check POST error and display them and ask for user intervention
80	Reserved	
81	Reserved	
82	Security Check	Ask password security.
83	Write CMOS	Write all CMOS values back to RAM and clear screen
84	Display PNP	Display PNP devices
85	USB Final Init	Final USB initialization
86	Reserved	
87	Reserved	
88	Reserved	
89	Setup ACPI tables	Setup ACPI tables
8A	Reserved	
8B	Option ROM Detect	Scan for Option ROMs
8C	Reserved	
8D	Enable Parity Check	Enable Parity Check
8E	Reserved	
8F	IRQ12 Enable	Enable IRQ12 if mouse present
90	Reserved	
91	Reserved	
92	Reserved	
93	Boot Medium Read	Detect and store boot partition head and cylinder values in RAM
94	Final Init	Final init for last micro details before boot
95	NumLock	Set NumLock status according to Setup
96	Boot Attempt	Set low stack Boot via INT 19h.

Chapter 4: Raid Setup and LED Error Codes

Code(hex)	Name	Description
C0	Base CPU test	Read/Write CPU registers
C1	Memory Presence	Base memory detect
C2	Early Memory	Board Initialization
C3	Extend Memory	Turn on extended memory, cache initialization
C4	Special Display	First display initialization
C5	Early Shadow	Early shadow enable for fast boot
C6	Cache presence	External cache size detection
CF	CMOS Check	CMOS checkup

Nvidia Added POST Codes

Code(hex)	Name	Description
F0	HW Ident	Identify HW in the system
F1	SLAM Table	Register the slam tables
F2	Early SLAM table	Early SLAM table
F3	Init Com Port	COM port initialization
00	HW Init	Initialize hardware devices
01	Override Parameters	Override input parameters etc. before QUERY
04	Process SPD	Read SPD & fill in arrays
08	Query HW	Query the hardware devices
0C	Load ROM Table	ROM table pointer
10	Init Memory Controller	Initialize the Memory Controller
20	Init PCI Express	PCI Express Initialization
30	Init Spread Spectrum	Load Spread Spectrum tables
40	Set Top-Of-Memory	Set Top-Of-Memory registers
44	Late SLAM table	Late SLAM table
48	Previous Power State SLAM table	Previous Power State SLAM table
4C	Hardware Workarounds	Hardware Workarounds
50	NVMM	Restore, and exit NVMM
54	NV Memory Test	NV Memory Test
FE	ERROR handler	ERROR handler
FF	Boot	

Appendix

Trademark

All trademarks are the property of their respective owners.

FCC Compliance

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation of this device is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: The use of shielded cables for the connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

CE Compliance

This device is in conformity with (reference to the specification under which conformity is declared in accordance with 89/336 EEC-EMC Directive)

EN 55022: 1998/A2: 2003	Limits and methods of measurements of radio disturbance characteristics of information technology equipment
EN 61000-3-2/:2000	Electromagnetic compatibility (EMC) Part 3: Limits Section 2: Limits for harmonic current emissions (equipment input current $\leq 16\text{A}$ per phase)
EN 61000-3-3/A1:2001	Electromagnetic compatibility (EMC) Part 3: Limits Section 2: Limits of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current $\leq 16\text{A}$
EN 55024/A2:2003	Information technology equipment-Immunity characteristics limits and methods of measurement



XFX

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