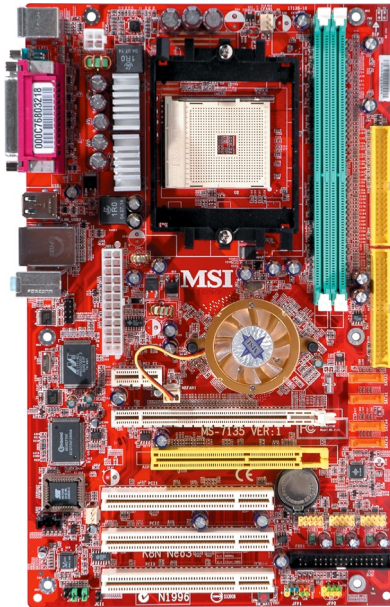




***K8N Neo3 Series***  
**MS-7135 (v1.X) ATX Mainboard**

---



**English Version**  
**G52-M7135X4**

Manual Rev: 1.2

Release Date: Feb. 2005



## **FCC-B Radio Frequency Interference Statement**

---

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 when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

### **Notice 1**

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **Notice 2**

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

**VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.**



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

- (1) this device may not cause harmful interference, and*
- (2) this device must accept any interference received, including interference that may cause undesired operation.*

## Copyright Notice

---

The material in this document is the intellectual property of **MICRO-STAR INTERNATIONAL**. We take every care in the preparation of this document, but no guarantee is given as to the correctness of its contents. Our products are under continual improvement and we reserve the right to make changes without notice.

## Trademarks

---

All trademarks are the properties of their respective owners.

AMD, Athlon™, Athlon™ XP, Thoroughbred™, and Duron™ are registered trademarks of AMD Corporation.

Intel® and Pentium® are registered trademarks of Intel Corporation.

PS/2 and OS®/2 are registered trademarks of International Business Machines Corporation.

Microsoft is a registered trademark of Microsoft Corporation. Windows® 98/2000/NT/XP are registered trademarks of Microsoft Corporation.

NVIDIA, the NVIDIA logo, DualNet, and nForce are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries.

Netware® is a registered trademark of Novell, Inc.

Award® is a registered trademark of Phoenix Technologies Ltd.

AMI® is a registered trademark of American Megatrends Inc.

## Revision History

---

Revision	Revision History	Date
V1.2	Memory & utility update	Feb. 2005

## Technical Support

---

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- 🔍 Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: [http://www.msi.com.tw/program/service/faq/faq/esc\\_faq\\_list.php](http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php)
- 🔍 Contact our technical staff at: [support@msi.com.tw](mailto:support@msi.com.tw)

## Safety Instructions

---

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
  - † The power cord or plug is damaged.
  - † Liquid has penetrated into the equipment.
  - † The equipment has been exposed to moisture.
  - † The equipment has not work well or you can not get it work according to User's Manual.
  - † The equipment has dropped and damaged.
  - † The equipment has obvious sign of breakage.
12. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**



**CAUTION:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.



廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

# CONTENTS

FCC-B Radio Frequency Interference Statement .....	ii
Copyright Notice .....	iii
Trademarks .....	iii
Revision History .....	iii
Technical Support .....	iii
Safety Instructions .....	iv
<b>Chapter 1. Getting Started .....</b>	<b>1-1</b>
Mainboard Specifications .....	1-2
Mainboard Layout .....	1-5
MSI Special Features .....	1-6
Live Monitor™ .....	1-6
Live BIOS™/Live Driver™ .....	1-7
Core Center (for AMD K8 Processor) .....	1-8
Packing Checklist .....	1-10
<b>Chapter 2. Hardware Setup .....</b>	<b>2-1</b>
Quick Components Guide .....	2-2
Central Processing Unit: CPU .....	2-3
CPU Installation Procedures for Socket 754 .....	2-4
Installing AMD Athlon64 CPU Cooler Set .....	2-5
Memory .....	2-7
Memory Population Rules .....	2-7
Installing DDR Modules .....	2-8
Power Supply .....	2-9
ATX 24-Pin Power Connector: JWR1 .....	2-9
ATX 12V Power Connector: JPW1 .....	2-9
Important Notification about Power Issue .....	2-10
Back Panel .....	2-11
Connectors .....	2-12
Floppy Disk Drive Connector: FDD1 .....	2-12
Fan Power Connectors: CFAN1 / SFAN1 / NBFAN1 .....	2-12
ATA133 Hard Disk Connectors: IDE1 & IDE2 .....	2-13
Serial ATA Connectors: SATA1~SATA4 .....	2-14
CD-In Connector: J1 .....	2-15
Front Panel Audio Connector: JAUD1 .....	2-15
Front Panel Connectors: JFP1, JFP2 .....	2-16
Serial Port Header: JCOM1 .....	2-16
Chassis Intrusion Switch Connector: JC11 .....	2-17

Front USB Connectors: JUSB1, JUSB2, JUSB3 .....	2-17
Jumpers/Buttons .....	2-18
Clear CMOS Button: SW_BAT1 .....	2-18
Slots .....	2-19
PCI (Peripheral Component Interconnect) Express Slots .....	2-19
PCI (Peripheral Component Interconnect) Slots .....	2-19
AGR (Advance Graphics Riser) Slot .....	2-20
Compatible VGA Card List .....	2-20
PCI Interrupt Request Routing .....	2-22
<b>Chapter 3. BIOS Setup .....</b>	<b>3-1</b>
Entering Setup .....	3-2
Control Keys .....	3-2
Getting Help .....	3-3
The Main Menu .....	3-4
Standard CMOS Features .....	3-6
Advanced BIOS Features .....	3-8
Advanced Chipset Features .....	3-11
Integrated Peripherals .....	3-12
Power Management Setup .....	3-17
PNP/PCI Configurations .....	3-20
H/W Monitor .....	3-22
Cell Menu .....	3-24
Load Fail-Safe/Optimized Defaults .....	3-30
BIOS Setting Password .....	3-31
<b>Chapter 4. Introduction to DigiCell .....</b>	<b>4-1</b>
Main .....	4-2
Introduction: .....	4-2
H/W Diagnostic .....	4-4
Communication .....	4-5
Software Access Point .....	4-6
Terminology .....	4-6
Access Point Mode .....	4-7
WLAN Card Mode .....	4-8
Live Update .....	4-9
MEGASTICK .....	4-10
Basic Function .....	4-10
Non-Unicode programs supported .....	4-12
Core Center (for AMD K8 Processor) .....	4-14

Audio Speaker Setting .....	4-16
Power on Agent .....	4-18
Power Off / Restart .....	4-19
Auto Login .....	4-20
<b>Appendix A: Using 2-, 4- &amp; 6-Channel Audio Function .....</b>	<b>A-1</b>
Installing the Audio Driver .....	A-2
Installation for Windows 2000/XP .....	A-2
Software Configuration .....	A-4
Sound Effect .....	A-4
Equalizer .....	A-6
Speaker Configuration .....	A-7
Speaker Test .....	A-8
HRTF Demo .....	A-10
General .....	A-11
Using 2-, 4- & 6- Channel Audio Function .....	A-12
<b>Appendix B: nVIDIA RAID Introduction .....</b>	<b>B-1</b>
Introduction .....	B-2
System Requirement .....	B-2
RAID Arrays .....	B-2
Summary of RAID Configurations .....	B-3
Basic Configuration Instructions .....	B-3
Setting Up the NVRAID BIOS .....	B-3
RAID Configuration .....	B-3
Installing the NVIDIA RAID Software Under Windows .....	B-7
NVIDIA RAID Utility Installation .....	B-7
Installing the RAID Driver (for bootable RAID Array) .....	B-8
Initializing and Using the Disk Array .....	B-11
RAID Drives Management .....	B-12
Viewing RAID Array Configurations .....	B-12
Setting Up a Spare RAID Disk .....	B-15
Rebuilding a RAID Mirrored Array .....	B-21



# ***Getting Started***

Thank you for choosing the **K8N Neo3** (MS-7135) v1.X ATX mainboard. The **K8N Neo3** mainboard is based on **nVIDIA® nForce4-4X** chipset for optimal system efficiency. Designed to fit the advanced **AMD® K8 Athlon 64** processor, the **K8N Neo3** mainboard delivers a high performance and professional desktop platform solution.



## Mainboard Specifications

### CPU

- † Supports Socket-754 for AMD K8 Athlon 64 processor
- † Supports up to 3700+ Athlon 64 processor or higher  
(For the latest information about CPU, please visit [http://www.msi.com.tw/program/products/mainboard/mbd/pro\\_mbd\\_cpu\\_support.php](http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php))

### Chipset

- † nVIDIA® nForce4-4X
  - HyperTransport link to the AMD Athlon 64 CPU
  - Supports single-channel DDR333/400 memory
  - Supports PCI Express x16/x1 interface
  - Two independent SATA controllers, for four drives
  - Dual Ultra ATA 133/100/66 IDE controllers
  - Supports high-speed USB2.0 ports

### Main Memory

- † Supports single-channel, four-memory-bank DDR 333/400 using two 184-pin DDR DIMMs
- † Supports a maximum memory size up to 2GB without ECC
- † Supports 2.5v DDR SDRAM DIMM  
(For the updated supporting memory modules, please visit [http://www.msi.com.tw/program/products/mainboard/mbd/pro\\_mbd\\_trp\\_list.php](http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php))

### Slots

- † One PCI Express x16 slot (PCI Express Bus specification v1.0a compliant)
- † One PCI Express x1 slot (PCI Express Bus specification v1.0a compliant)
- † Three 32-bit Master 3.3V/5V PCI Bus slots
- † One AGR (Advance Graphics Riser) slot for compatible AGP VGA cards  
(For more detailed information on compatible AGP VGA cards, please refer to [http://www.msi.com.tw/program/products/mainboard/mbd\\_index.php](http://www.msi.com.tw/program/products/mainboard/mbd_index.php))

### Onboard IDE

- † Dual IDE controllers on the nVIDIA® nForce4-4X chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 133/100/66 operation modes
- † Can connect up to 4 IDE devices

### Onboard Serial ATA

- † Supports 4 SATA ports with up to 150MB/s transfer rate



#### MSI Reminds You...

*To create a bootable RAID volume for a Windows 2000 environment, Microsoft's Windows 2000 Service Pack 4 (SP4) is required. As the end user cannot boot without SP4, a combination installation CD must be created before attempting to install the operating system onto the bootable RAID volume.*

To create the combination installation CD, please refer to the following website:

<http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm>

### USB Interface

- † 10 USB ports
  - Controlled by nForce4-4X chipset
  - 4 ports in the rear I/O, 6 ports via the external bracket

### NV RAID (Software)

- † Supports up to 4 SATA and 4 ATA133 Hard drives
  - RAID 0, 1, 0+1, or JBOD supported
  - RAID function available for PATA133 + SATA H/D drives

### LAN

- † Marvell PHY 88E1111 Gigabit Ethernet chip (*Optional*)
- † Realtek 8201 CL 10/100Mb/s Ethernet chip (*Optional*)

### Audio

- † RealTek ALC655 6-channel software audio codec
  - Compliance with AC97 v2.3 spec.
  - Meets PC2001 audio performance requirement

### On-Board Peripherals

- † On-Board Peripherals include:
  - 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
  - 2 serial ports
  - 1 parallel port supporting SPP/EPP/ECP mode
  - 10 USB2.0 ports (Rear\*4 / Front\*6)
  - 1 Audio (Line-In/Line-Out/MIC) port
  - 1 RJ-45 LAN jack
  - 1 CD-In pinheader
  - 2 IDE ports support 4 IDE devices
  - 4 serial ATA ports

### BIOS

- † The mainboard BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- † The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.
- † Supports boot from LAN, USB Device 1.1 & 2.0, and SATA HDD.

**Dimension**

† ATX form factor: 300mm x 185mm

**Mounting**

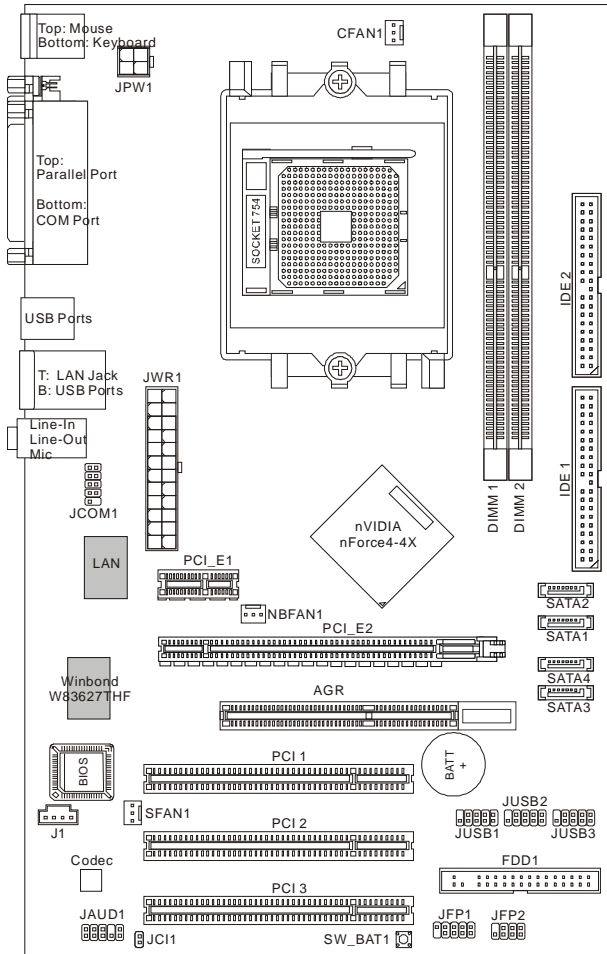
† 6 mounting holes



**MSI Reminds You...**

*Please note that the companion MSI Driver/Utility CD supports this mainboard with **Windows 2000/XP** system drivers ONLY.*

# Mainboard Layout




**K8N Neo3 Series (MS-7135) v1.X ATX Mainboard**

## MSI Special Features


### Live Monitor™

The Live Monitor™ is a tool used to schedule the search for the latest BIOS/drivers version on the MSI Web site. To use the function, you need to install the “MSI Live Update 3” application. After installation, the “MSI Live Monitor” icon (as shown on the right) will appear on the screen. Double click this icon to run the application.



Double click the “MSI Live Monitor” icon  at the lower-right corner of the taskbar, and the following dialog box will appear. You can specify how often the system will automatically search for the BIOS/drivers version, or change the LAN settings right from the dialog box.



You can right-click the MSI Live Monitor icon  to perform the functions listed below:

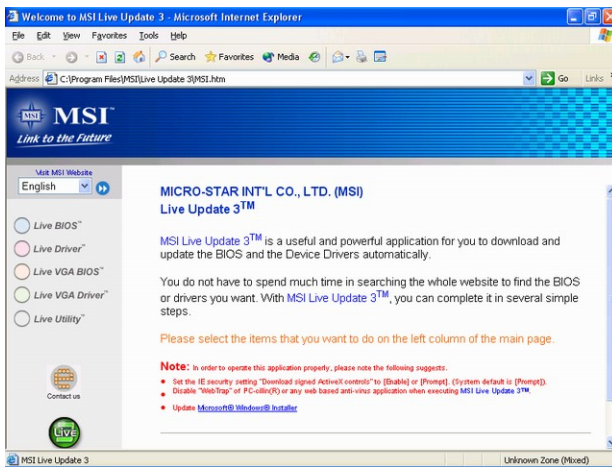
- I **Auto Search** – Searches for the BIOS/drivers version you need immediately.
- I **View Last Result** – Allows you to view the last search result if there is any.
- I **Preference** – Configures the Search function, including the Search schedule.
- I **Exit** – Exits the Live Monitor™ application.
- I **FAQ** – Provides a link to a database which contains various possible questions about MSI's products for users to inquire.

## Live BIOS™/Live Driver™

The Live BIOS™/Live Driver™ is a tool used to detect and update your BIOS/drivers online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the “MSI Live Update 3” application. After the installation, the “MSI Live Update 3” icon (as shown on the right) will appear on the screen.



Double click the “MSI Live Update 3” icon, and the following screen will appear:



Several buttons are placed on the left column of the screen. Click the desired button to start the update process.

- **Live BIOS** – Updates the BIOS online.
- **Live Driver** – Updates the drivers online.
- **Live VGA BIOS** – Updates the VGA BIOS online.
- **Live VGA Driver** – Updates the VGA driver online.
- **Live Utility** – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a “sorry” message is displayed. For more information on the update instructions, insert the companion CD and refer to the “Live Update Guide” under the “Manual” Tab.

## Core Center (for AMD K8 Processor)

Click on the **Core Center** icon in the main menu and the **Core Center** program will be enabled.

### Cool'n'Quiet

This utility provides a CPU temperature detection function called **Cool'n'Quiet**. **Cool'n'Quiet** is a special feature designed only for AMD® Athlon64 processor, and with **Cool'n'Quiet**, the system will be capable of detecting the temperature of the CPU according to the CPU's working loading. When the CPU temperature climbs up to a certain degree, the speed of the system cooling fan will be risen automatically. On the other hand, the speed of the system cooling fan will slow down instantly when the CPU temperature descends to its normal degree.



Here the current system status (including Vcore, 3.3V, +5V and 12V) and the current PC hardware status (such as the CPU & system temperatures and all fans speeds) are shown on the left and right sides for you to monitor.

When you click the red triangles in the left and right sides, two sub-menus will open for users to overclock, overspec or to adjust the thresholds of system to send out the warning messages.



**Left-side: Current system status**

In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button in front of each item and make it available (the radio button will be lighted as yellow when selected), use the “+” and “-” buttons to adjust, then click “**OK**” to apply the changes. Then you can click “**Save**” to save the desired FSB you just configured.

Also you may click “**Auto**” to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click “**Default**” to restore the default values.

**Right-side: PC hardware status during real time operation**

In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click “**OK**” to apply the changes. The values you set for the temperatures are the maximum thresholds for the system warnings, and the values for fan speeds are the minimum thresholds.

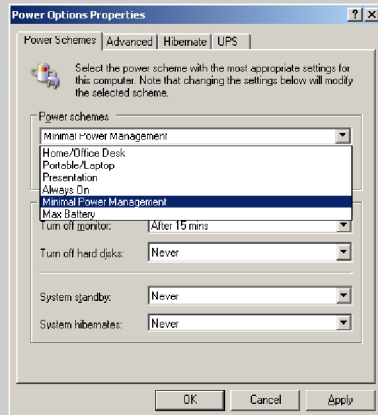
**Center-side: Cool'n'Quiet / User mode**

Here you may adjust the CPU fan speed. If you choose **User mode**, you may adjust the CPU fan speed in 8 different modes, from **High Speed** to **Low speed**. If you choose **Cool'n'Quiet**, the system will automatically configure an optimal setting for you.

**MSI Reminds You...**

To ensure that **Cool'n'Quiet** function is activated and will be working properly, it is required to double confirm that:

1. Run BIOS Setup, and select **Cell Menu**. Under **Cell Menu**, find **Cool'n'Quiet Support**, and set this item to “**Enable**.”
2. Enter Windows, and select [Start]->[Settings]->[Control Panel]->[Power Options]. Enter **Power Options Properties** tag, and select **Minimal Power Management** under **Power schemes**.

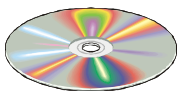




## Packing Checklist



MSI mainboard



MSI Driver/  
Utility CD &  
RAID Driver  
Disk



SATA Cable (Optional)



Power Cable



Round Cable of  
Floppy Disk (Optional)



Round Cable of  
IDE Devices (Optional)



User's Guide



USB Bracket (Optional)



Back IO Shield

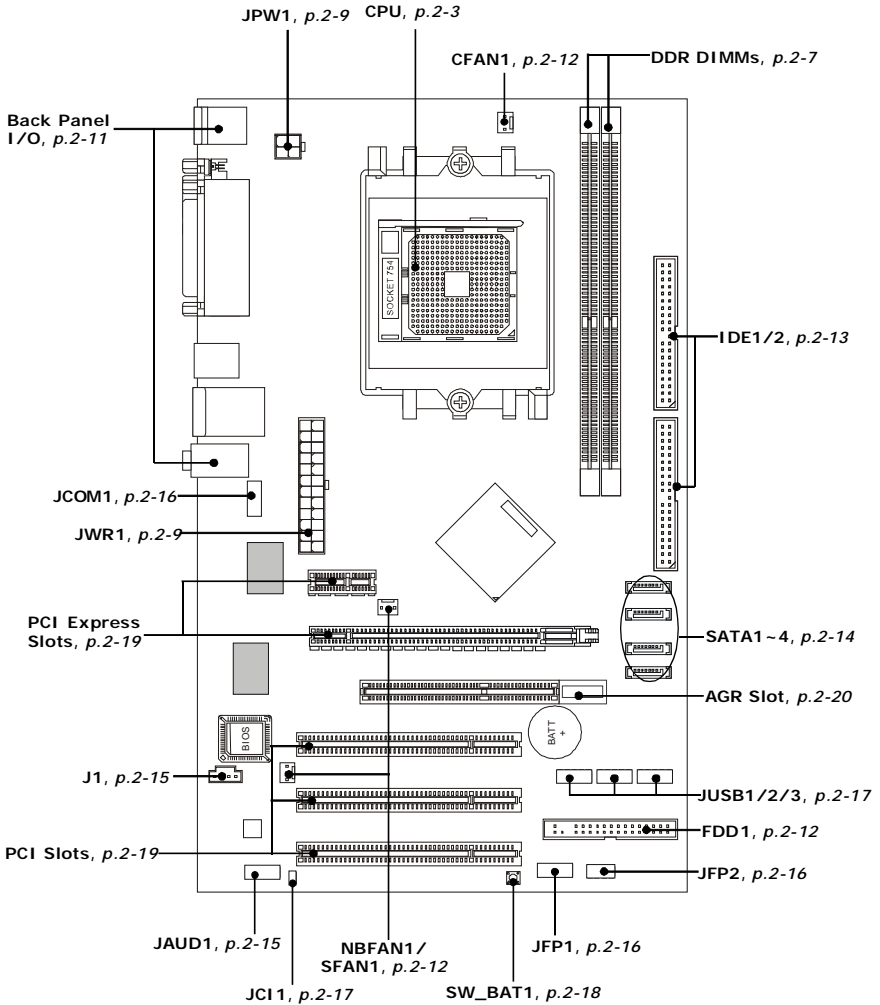
# 2

## ***Hardware Setup***

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

# Quick Components Guide



## Central Processing Unit: CPU

The mainboard supports AMD® Athlon64 processor. The mainboard uses Socket-754 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit [http://www.msi.com.tw/program/products/mainboard/mbd/pro\\_mbd\\_cpu\\_support.php](http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php).



### MSI Reminds You...

#### **Overheating**

*Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.*

#### **Replacing the CPU**

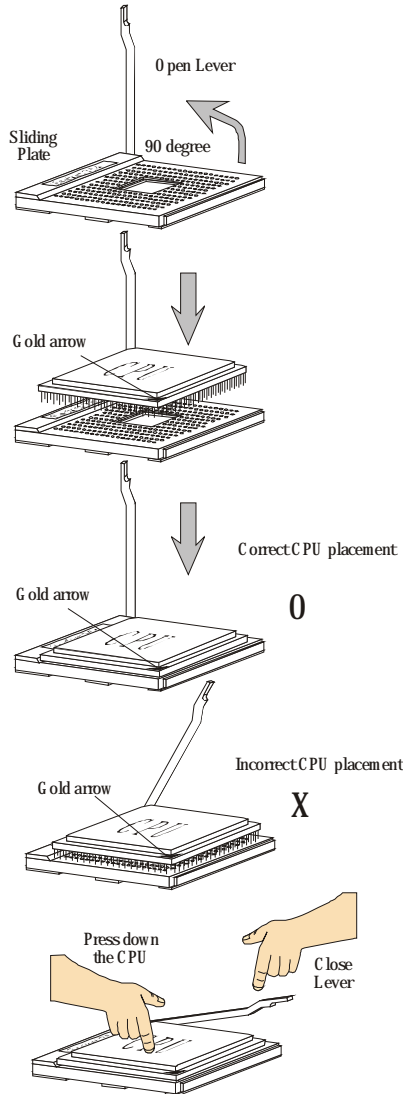
*While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.*

#### **Overclocking**

*This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

## CPU Installation Procedures for Socket 754

1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow on the CPU. The gold arrow should point as shown in the picture. The CPU can only fit in the correct orientation.
4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



## Installing AMD Athlon64 CPU Cooler Set

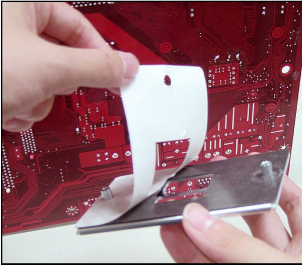
When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.



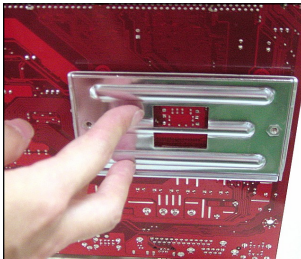
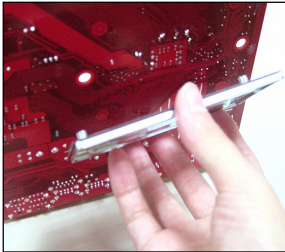
### MSI Reminds You...

Mainboard photos shown in this section are for demonstration of the cooler installation for Socket 754 CPUs only. The appearance of your mainboard may vary depending on the model you purchase.

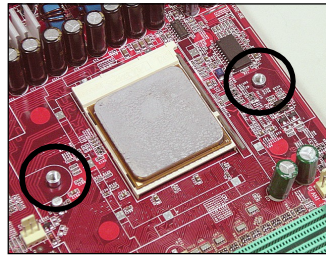
1. Detach the shield off the backplate's paster.



2. Turn over the mainboard, and install the backplate to the proper position.

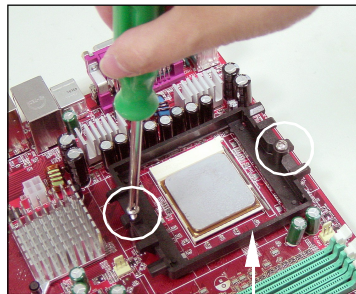


3. Turn over the mainboard again, and place the mainboard on the flat surface. Locate the two screw holes of the mainboard.



4. Align the retention mechanism and the backplate.

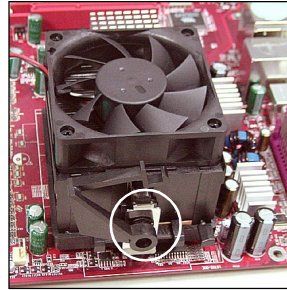
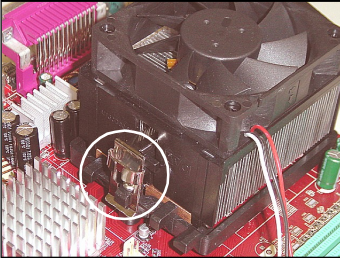
Fix the retention mechanism and the backplate with two screws.



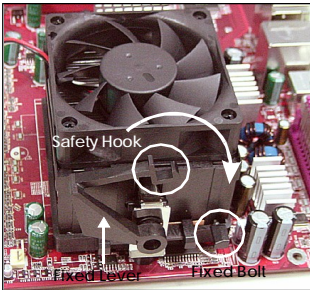
retention mechanism

5. Position the cooling set onto the retention mechanism.

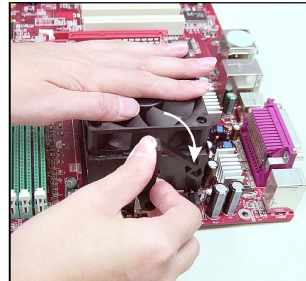
Hook one end of the clip to hook first, and then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.



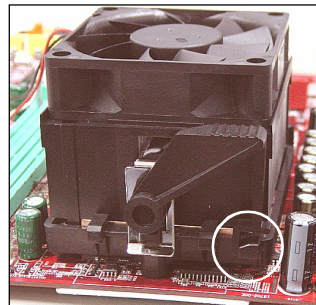
6. Locate the Fix Lever, Safety Hook and the Fixed Bolt. Lift up the intensive fixed lever.



7. Fasten down the lever.



8. Make sure the safety hook completely clasps the fixed bolt of the retention mechanism.
9. Attach the CPU Fan cable to the CPU fan connector on the mainboard.



**MSI Reminds You...**

*While disconnecting the Safety Hook from the fixed bolt, it is necessary to keep an eye on your fingers, because once the Safety Hook is disconnected from the fixed bolt, the fixed lever will spring back instantly.*

## Memory

The mainboard provides 2 slots for 184-pin DDR DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install DDR 333/400 modules on the DDR DIMM slots (DIMM 1~2).

**DIMM1~DIMM2**  
(from left to right)



### Memory Population Rules

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	TotalMemory
DIMM 1	S/D	64MB~1GB
DIMM 2	S/D	64MB~1GB
Maximum System Memory Supported		<b>64MB~2GB</b>

**S: Single Side**

**D: Double Side**



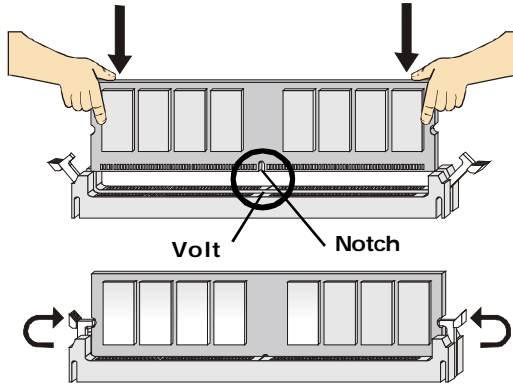
#### MSI Reminds You...

1. Make sure that you install memory modules of **the same type and density** on DDR DIMMs.
2. For systems using double-sided DDR400 modules in single-channel mode, the maximum DRAM speed is DDR333.



### Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.



#### MSI Reminds You...

*You can barely see the golden finger if the module is properly inserted into the socket.*

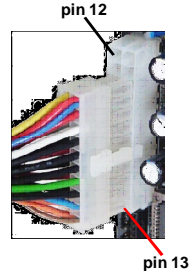
## Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

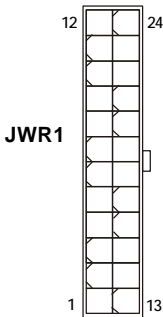
### ATX 24-Pin Power Connector: JWR1

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13 (refer to the image at the right hand). There is also a foolproof design on pin 11, 12, 23 & 24 to avoid wrong installation.



Pin Definition



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

### ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

JPW1 Pin Definition



PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V



#### MSI Reminds You...

1. These two connectors connect to the ATX power supply and have to work together to ensure stable operation of the mainboard.
2. Power supply of 350 watts (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 18A.

## Important Notification about Power Issue

nVIDIA chipset is very sensitive to ESD (Electrostatic Discharge), therefore this issue mostly happens while users intensively swap memory modules under S5 (power-off) states, and the power code is plugged while installing modules. Due to several pins are very sensitive to ESD, so this kind of memory-replacement actions might cause chipset system unable to boot. Please follow the following solution to avoid this situation.

Unplug the AC power cable (shown in figure 1) or unplug the JWR1 & JPW1 power connectors (shown in figure 2 & figure 3) before the 1st installation or during system upgrade procedure.

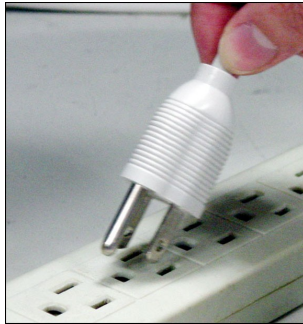


Figure 1:  
Unplug the AC power cable

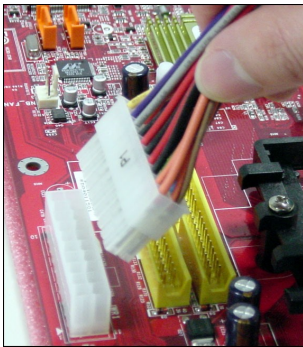


Figure 2:  
Unplug the JWR1 power connector

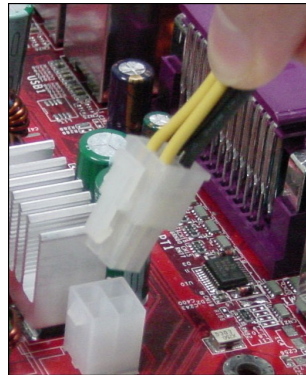


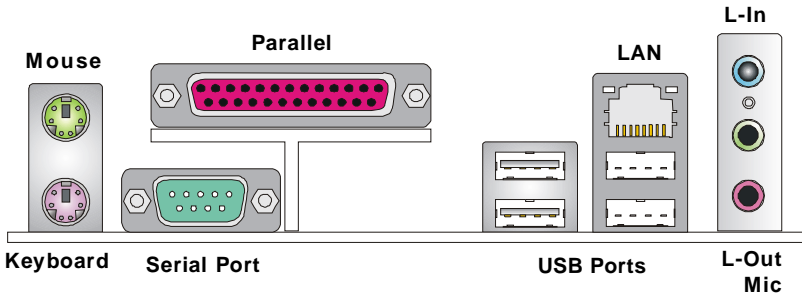
Figure 3:  
Unplug the JPW1 power connector



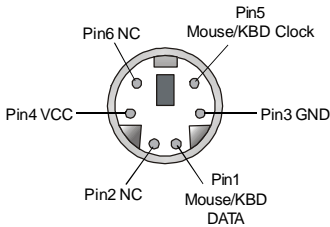
### MSI Reminds You...

*Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.*

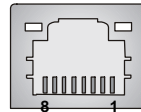
## Back Panel



### Mouse/Keyboard Connector



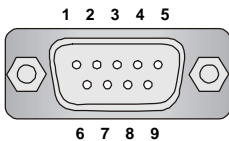
### RJ-45 LAN Jack



### Gigabit LAN (Optional)

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

### Serial Port

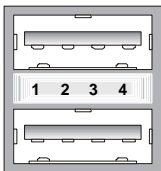


PIN	SIGNAL
1	DCD
2	SIN
3	SOUT
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

### 10/100 LAN (Optional)

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

### USB Ports



PIN	SIGNAL
1	VCC
2	-Data
3	+Data
4	GND

## Connectors

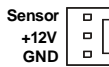
### Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

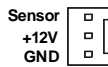


### Fan Power Connectors: CFAN1 / SFAN1 / NBFAN1

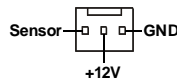
The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



CFAN1



SFAN1



NBFAN1



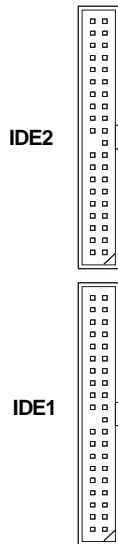
#### MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CFAN1 supports Smart Fan control. You can install **Core Center** utility that will automatically control the CPU fan speed according to the actual CPU temperature. Alternatively, you may set up the smart fan control functions in the BIOS setup utility.
3. Please refer to the recommended CPU fans at AMD® official website.

## ATA133 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0-4, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to four hard disk drives, CD-ROM and other IDE devices.

The Ultra ATA133 interface boosts data transfer rates between the computer and the hard drive up to 133 megabytes (MB) per second. The new interface is one-third faster than earlier record-breaking Ultra ATA/100 technology and is backwards compatible with the existing Ultra ATA interface.



### IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

### IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

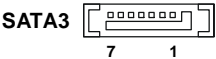
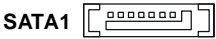


#### MSI Reminds You...

*If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.*

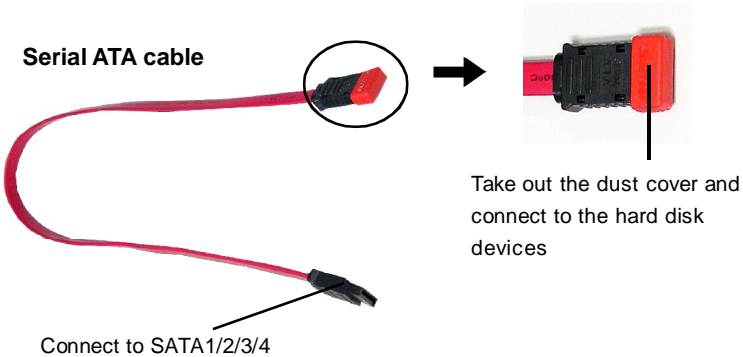
**Serial ATA Connectors: SATA1~SATA4**


SATA1~SATA4 are high-speed Serial ATA interface ports. Each supports 1<sup>st</sup> generation serial ATA data rates of 150MB/s and is fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device.



**SATA1 ~ SATA4 Pin Definition**

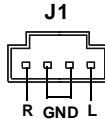
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		



 **MSI Reminds You...**  
*Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.*

### CD-In Connector: J1

This connector is provided for CD-ROM audio.



### Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



#### Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel



#### MSI Reminds You...

*If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.*

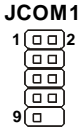




### Serial Port Header: JCOM1

The mainboard offers one 9-pin header as serial port. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to it.

Pin Definition

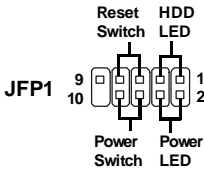


PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

### Front Panel Connectors: JFP1, JFP2

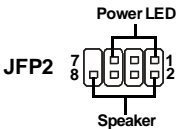
The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JFP1 Pin Definition



PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FPPWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

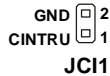
JFP2 Pin Definition



PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

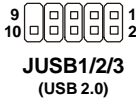
## Chassis Intrusion Switch Connector: JC11

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



## Front USB Connectors: JUSB1, JUSB2, JUSB3

The mainboard provides three standard USB 2.0 pin headers. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

Connect to JUSB1, JUSB2, or JUSB3



### MSI Reminds You...

*Note that the pins of VCC and GND must be connected correctly to avoid possible damage.*

## Jumpers/Buttons

The motherboard provides the following jumpers/buttons for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers/buttons.

### Clear CMOS Button: SW\_BAT1

CMOS stands for Complementary Metal-Oxide Semiconductor and is more specifically referred to as CMOS RAM. It is a tiny 64-byte region of memory that, owing to battery power, retains system configuration data when the PC is shut off. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, press the SW\_BAT1 button to have the data erased.



SW\_BAT1



#### **MSI Reminds You...**

*You can clear CMOS by pressing this button while the system is off. Avoid clearing CMOS while the system is on; it will damage the mainboard.*

## Slots

The motherboard provides one PCI Express x1 slot, one PCI Express x16 slot, three 32-bit PCI slots, and one AGR slot.

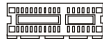
### PCI (Peripheral Component Interconnect) Express Slots

The PCI Express slots support high-bandwidth, low pin count, and serial interconnect technology. You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP 8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers, while PCI Express x1 supports transfer rate of 250 MB/s.



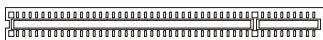
PCI Express x16 slot



PCI Express x1 slot

### PCI (Peripheral Component Interconnect) Slots

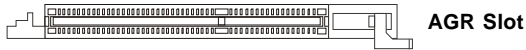
The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.



PCI Slots

### AGR (Advance Graphics Riser) Slot

The AGR slot is a special design that only supports compatible AGP VGA cards. For more detailed information on compatible AGP VGA cards, please refer to [http://www.msi.com.tw/program/products/mainboard/mbd\\_index.php](http://www.msi.com.tw/program/products/mainboard/mbd_index.php).



### Compatible VGA Card List

System Configuration				
	Manufacturer	Model No.	Spec.	
Devices Configuration	Processor	AMD	Athlon™ 64 Processor 2800+	FSB 200
	Memory	Transcend	SEC K4H280838D-TCB3	DDR333 / 256MB
	VGA Card	As Follows		
	Lan Card	Onboard		
	Sound Card	Onboard		
	Hard Drive	Hitachi	HDS7222580VLSA80	SATA150 / 82.3GB
	CD-ROM	BenQ	CD652A	52X
	Floppy Drive	TEAC	FD-235HF	1.44MB
	Power Supply	DELTA	DPS-300KB-1A	300W
	Mouse	Acer	M-S69	PS/2
	Keyboard	Acer	6511-CX	PS/2
	Monitor	ViewSonic	P225f	22" CRT
	SW Info	VGA BIOS		
VGA Driver				
MB Driver		(from NVOM011 CD)		



**MSI Reminds You...**

The VGA BIOS and driver versions need to be identical to the versions in the compatibility list in order to have the AGR function work properly.

No.	VGA CARD Vender	Model name	VGA Chip	VGA Memory	VGA BIOS	AGP SPEED	MS-7135	
							Result	Driver Ver.
1	Alvratron	FX5700U	GeForce FX5700 Ultra	128MB/DDR SDRAM	4.36.20.18.01	8X	Pass	6.14.10.6681
2	ATI	Fire GL 8800	Fire GL 8800	128MB/SDRAM	1.03	4X	Pass	6.14.10.6462
3	GAINWARD	GFX 5900 Ultra	GeForce 4 FX 5900 U	256MB/DDR SDRAM	4.35.20.24.00	8X	Pass	6.14.10.6681
4	Gigabyte	GV-R9200	Radeon 9200	128MB/DDR SDRAM	BK-AM 8.9	8X	Pass	6.14.10.6430
5	Gigabyte	GV-N57L128D	GeForce FX5700LE	128MB/DDR SDRAM	4.36.20.30.00	8X	Pass	6.14.10.6172
6	Leadtek	Winfast A360LE TD	GeForce FX5700LE	128MB/DDR SDRAM	4.36.20.30.00	8X	Pass	6.14.10.6681
7	Leadtek	Winfast A400GT TDH	GeForce 6800GT	256MB/DDR SDRAM	5.40.02.15.00	8X	Pass	6.14.10.6681
8	MSI	MS-8863	GeForce 4 MX 460	64MB/SDRAM	4.17.00.30.06	4X	Pass	6.14.10.6681
9	MSI	MS-8907	GeForce FX 5200	64MB/DDR SDRAM	4.34.20.22.00	8X	Pass	6.14.10.6681
10	MSI	MS-8911	GeForce FX 5200	128MB/DDR SDRAM	4.34.20.15.00	8X	Pass	6.14.10.6681
11	MSI	MS-8919	GeForce FX 5200	128MB/DDR SDRAM	4.34.20.23.08	8X	Pass	6.14.10.6681
12	MSI	MS-8923	GeForce FX 5200 Ultra	128MB/DDR SDRAM	4.34.20.23.00	8X	Pass	6.14.10.6681
13	MSI	MS-8929	GeForce FX 5900	128MB/DDR SDRAM	4.35.20.18.04	8X	Pass	6.14.10.6681
14	MSI	MS-8931	GeForce FX 5600 Ultra	128MB/DDR SDRAM	4.31.20.51.00	8X	Pass	6.14.10.6681
15	MSI	MS-8936	GeForce4 MX4000	64MB/DDR SDRAM	4.18.20.42.00	8X	Pass	6.14.10.6172
16	MSI	MS-8936	GeForce FX5500	128MB/DDR SDRAM	4.34.20.66.03	8X	Pass	6.14.10.6172
17	MSI	MS-8946	GeForce FX 5950 Ultra	256MB/DDR SDRAM	4.35.20.32.16	8X	Pass	6.14.10.6172
18	MSI	MS-8959	GeForce FX5700LE	128MB/DDR SDRAM	4.36.20.30.10	8X	Pass	6.14.10.6681
19	MSI	MS-8975	Nvidia GeForce 6800	128MB/DDR SDRAM	5.40.02.12.01	8X	Pass	6.14.10.6172
20	Unika	FX5200 SP5208	GeForce FX5200	64MB/DDR SDRAM	4.34.20.42.00	8X	Pass	6.14.10.6172
21	MSI	MS-8952	ATI Radeon 9250	128MB/DDR SDRAM	008.017D.031.000	8X	Pass	6.14.10.6476
22	Power Color	R92U-LC3	Radeon 9250	128MB/DDR SDRAM	008.017D.016.000	8X	Pass	6.14.10.6476
23	Power Color	RV6DE-NB3	Radeon 7000	64MB/DDR SDRAM	008.004.008.000	4X	Pass	6.14.10.6453
24	ATI	Radeon LE	Radeon LE DDR	32MB/DDR SGRAM	PIN113-10604-100	4X	Pass	6.13.10.6153
25	ATI	Fire GL 8700	Fire GL 8700	64MB/DDR SDRAM	1.11	4X	Pass	6.12.10.3051
26	ATI	Radeon 9000 Pro	Radeon DDR	64MB/DDR SDRAM	BK8.0.0	4X	Pass	6.14.10.6458
27	ATI	Radeon 9500	Radeon 9500	64MB/DDR SDRAM	113.94210.100	8X	Pass	6.14.10.6458
28	ATI	Radeon 9700	Radeon 9700	128MB/DDR SDRAM	113.94206.101	8X	Pass	6.14.10.6458
29	ASUS	AGP-V7700 Deluxe	GeForce 2 GTS	32MB/DDR SGRAM	2.15.01.13	4X	Pass	2.9.5.8
30	ASUS	V8440	GeForce 4 Ti 4400	128MB/SDRAM	4.25.0022	4X	Pass	2.9.5.8
31	ASUS	V8460 Ultra	GeForce 4 Ti 4600	128MB/SDRAM	4.25.0019	4X	Pass	6.6.8.1
32	Creative	3D Blaster 5 RX9700 Pro	Radeon 9700	128MB/SGRAM	113.94206.101	8X	Pass	6.14.10.6458
33	ELSA	Gladiac 517 SV	GeForce 4 MX420	64MB/SDRAM	4.17.00.24.E1	4X	Pass	2.9.5.8
34	ELSA	Gladiac 528 Ultra	GeForce 4 Ti 4200	128MB/DDR SDRAM	4.28.20.21.E0	8X	Pass	6.6.8.1
35	GAINWARD		GeForce 4 MX460	64MB/DDR	4.17.0030	4X	Pass	2.9.5.8
36	GAINWARD		GeForce 4 MX440T	64MB/SDRAM	4.17.00.30	4X	Pass	2.9.5.8
37	GAINWARD		GeForce 4 MX440	64MB/DDR SDRAM	4.18.2007	8X	Pass	6.6.8.1
38	Leadtek	Winfast	GeForce3 Titanium 500 TD	64MB/SDRAM	V11.05.2001	4X	Pass	6.6.8.1
39	Leadtek	Winfast A 170 TH	GeForce 4 MX 420	64MB/SDRAM	4.17.00.28	4X	Pass	2.9.5.8
40	Leadtek	Winfast A250 TD	GeForce 4 4400 TI	128MB/SDRAM	4.25.0022	4X	Pass	6.6.8.1
41	MSI	MS-8806	Nvidia RIVA TNT2	32MB/SDRAM	2.05.17.03.00	4X	Pass	6.6.8.1
42	MSI	MS-8831	GeForce GTS Pro	64MB/SDRAM	3.15.01.00.07	4X	Pass	6.6.8.1
43	MSI	MS-8847	GeForce 4 MX 440	64MB/DDR SDRAM	4.17.0045	4X	Pass	6.6.8.1
44	MSI	MS-8851	GeForce 3 Ti 200	64MB/SDRAM	3.20.00.18.11	4X	Pass	2.9.5.8
45	MSI	MS-8852	GeForce 2 MX 100/200	32MB/SDRAM	3.11.0148	4X	Pass	2.9.5.8
46	MSI	MS-8860	GeForce 4 MX 440	64MB/SDRAM	4.17.00.24.52	4X	Pass	2.9.5.8
47	MSI	MS-8861	GeForce 4 MX 440	64MB/SDRAM	4.17.00.24.46	4X	Pass	2.9.5.8
48	MSI	MS-8870	GeForce 4 Ti 4200	64MB/DDR SDRAM	4.25.00.29.10	4X	Pass	2.9.5.8
49	MSI	MS-8872	GeForce 4 Ti 4600	128MB/DDR SDRAM	4.25.00.27.33	4X	Pass	2.9.5.8
50	MSI	MS-8879	GeForce 4 Ti 4200	64MB/DDR SDRAM	4.25.0032	4X	Pass	2.9.5.8

## MS-7135 ATX Mainboard

No.	VGA CARD Vender	Model name	VGA Chip	VGA Memory	VGA BIOS	AGP SPEED	MS-7135	
							Result	Driver Ver.
51	MSI	MS-8888	GeForce 4 MX 440	64MB/DDR SDRAM	4.18.20.03.00	8X	Pass	6.6.8.1
52	MSI	MS-8889	GeForce 4 Ti 4200	128MB/DDR SDRAM	4.28.20.05.02	8X	Pass	6.6.8.1
53	MSI	MS-8890	GeForce 4 MX 440	64MB/DDR SDRAM	4.18.20.07.23	8X	Pass	6.6.8.1
54	MSI	MS-8891	GeForce 4 MX 440	128MB/DDR SDRAM	4.18.20.02.21	8X	Pass	6.6.8.1
55	MSI	MS-8894	GeForce 4 Ti 4200	128MB/DDR SDRAM	4.28.20.05.11	8X	Pass	6.6.8.1
56	MSI	MS-8895	GeForce 4 MX 440	64MB/DDR SDRAM	4.18.2007	8X	Pass	6.6.8.1
57	MSI	MS-8900	GeForce 4 Ti 4800 SE	128MB/DDR SDRAM	4.28.20.21.00	8X	Pass	6.6.8.1
58	MSI	MS-8904	GeForce FX 5800	128MB/DDR SDRAM	4.30.20.23.05	8X	Pass	6.6.8.1
59	MSI	MS-8948	GeForce FX 5700	128MB/DDR SDRAM	4.36.20.19.06	8X	Pass	6.6.8.1
60	NS	GF4 MX440	GeForce 4 MX 440	64MB/DDR SDRAM	4.17.00.45.78	4X	Pass	2.9.5.8
61	Pixel View	MVGA-NBG25GA	GeForce 4 Ti 4200	128MB/SDRAM	4.25.00.28	4X	Pass	2.9.5.8
62	Triplex		Xabre Pro	64MB/SDRAM	0.80.00	8X	Pass	6.13.10.3080
63	Triplex	Millennium Silver	GeForce 4 MX 440	64MB/DDR	4.17.00.24	4X	Pass	2.9.5.8
64	Triplex		SIS Sabre 600 Ultra	64MB/DDR SDRAM	1.08.03	8X	Pass	6.13.10.3080
65	VINIX	VINIX VX-3340	XABRE400	64MB/DDR SDRAM	1.03.01	8X	Pass	6.13.10.3080

## PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
AGR Slot	INT A#	INT B#		
PCI Slot 1	INT B#	INT C#	INT D#	INT A#
PCI Slot 2	INT C#	INT D#	INT A#	INT B#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#

# 3

## BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

- ≈ An error message appears on the screen during the system booting up, and requests you to run SETUP.
- ≈ You want to change the default settings for customized features.



### MSI Reminds You...

1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

2. Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:

*W7135NMS V1.0 150304 where:*

*1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.*

*2nd - 5th digit refers to the model number.*

*6th digit refers to the chipset as I = Intel, N = nVidia, and V = VIA.*

*7th - 8th digit refers to the customer as MS = all standard customers.*

*V1.0 refers to the BIOS version.*

*150304 refers to the date this BIOS was released.*



## Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

### Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

## Getting Help

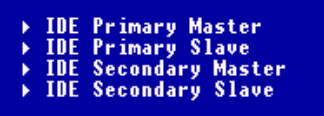
After entering the Setup menu, the first menu you will see is the Main Menu.

### Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu containing additional options can be launched from this field. You can use control keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press <Esc>.



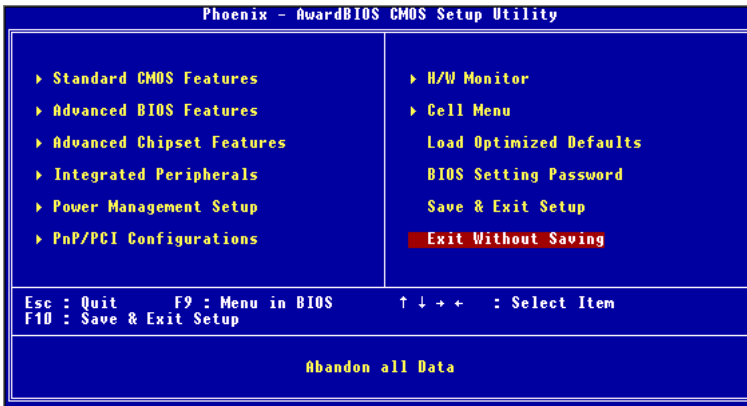
```
▶ IDE Primary Master
▶ IDE Primary Slave
▶ IDE Secondary Master
▶ IDE Secondary Slave
```

### General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

## The Main Menu

Once you enter Phoenix-Award® BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



### Standard CMOS Features

Use this menu for basic system configurations, such as time, date etc.

### Advanced BIOS Features

Use this menu to setup the items of special enhanced features.

### Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

### Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

### Power Management Setup

Use this menu to specify your settings for power management.

### PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

### H/W Monitor

This entry shows your PC health status.

**Cell Menu**

Use this menu to specify your settings for CPU/AGP frequency/voltage control and overclocking.

**Load Optimized Defaults**

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

**BIOS Setting Password**

Use this menu to set the password for BIOS.

**Save & Exit Setup**

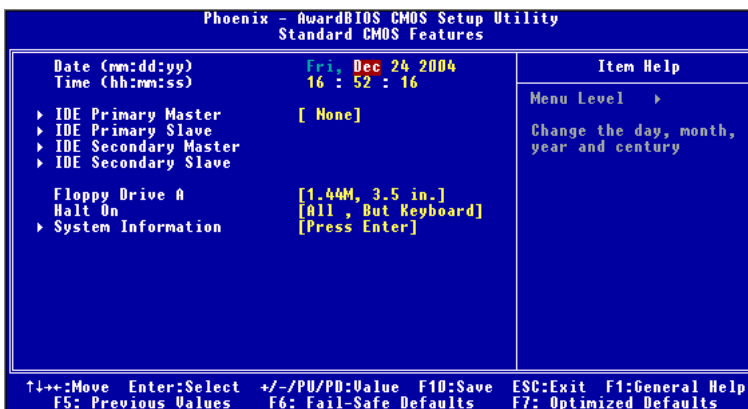
Save changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all changes and exit setup.

## Standard CMOS Features

The items in Standard CMOS Features Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



### Date

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

- day** Day of the week, from Sun to Sat, determined by BIOS. Read-only.
- month** The month from Jan. through Dec.
- date** The date from 1 to 31 can be keyed by numeric function keys.
- year** The year can be adjusted by users.

### Time

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

### IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.

If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be

provided in the documentation from your hard disk vendor or the system manufacturer.

[Access Mode]	The settings are [CHS], [LBA], [Large], [Auto].
[Capacity]	The formatted size of the storage device.
[Cylinder]	Number of cylinders.
[Head]	Number of heads.
[Precomp]	Write precompensation.
[Landing Zone]	Cylinder location of the landing zone.
[Sector]	Number of sectors.

**Floppy Drive A**

This item allows you to set the type of floppy drives installed. Available options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in.].

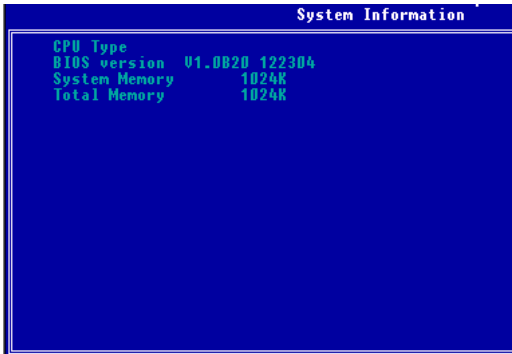
**Halt On**

The setting determines whether the system will stop if an error is detected at boot. Available options are:

[All Errors]	The system stops when any error is detected.
[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.
[All, But Diskette]	The system doesn't stop for a disk error.
[All, But Disk/Key]	The system doesn't stop for either a disk or a keyboard error.

**System Information**

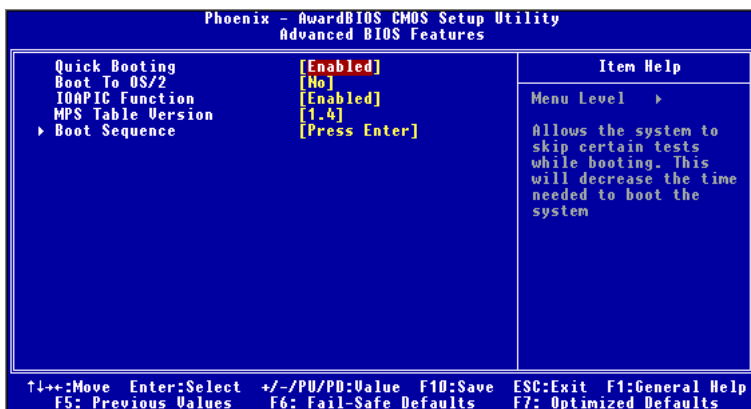
Press <Enter> to enter the sub-menu and the following screen appears:



**CPU Type/BIOS Version/System Memory/Total Memory**

The items show the CPU type, BIOS version and memory status of your system (read only).

## Advanced BIOS Features



### Quick Booting

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 disable quick POST. It is better to find a problem during POST than lose data during your work. Options: [Enabled], [Disabled].

### Boot To OS/2

This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose [No], you cannot run the OS/2® operating system with DRAM larger than 64MB. Settings: [Yes], [No].

### IOAPIC Function

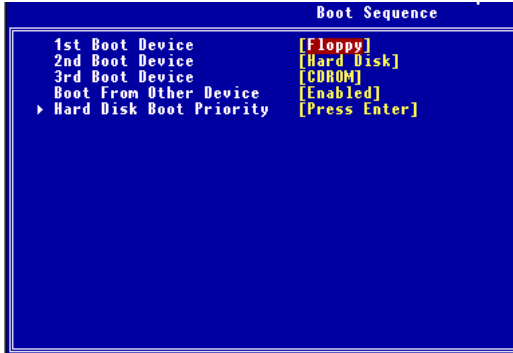
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system. Settings: [Enabled] and [Disabled].

### MPS Table Version

This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: [1.4], [1.1].

## Boot Sequence

Press <Enter> to enter the sub-menu and the following screen appears:



### 1st/2nd/3rd Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.



#### MSI Reminds You...

*Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed.*

### Boot From Other Device

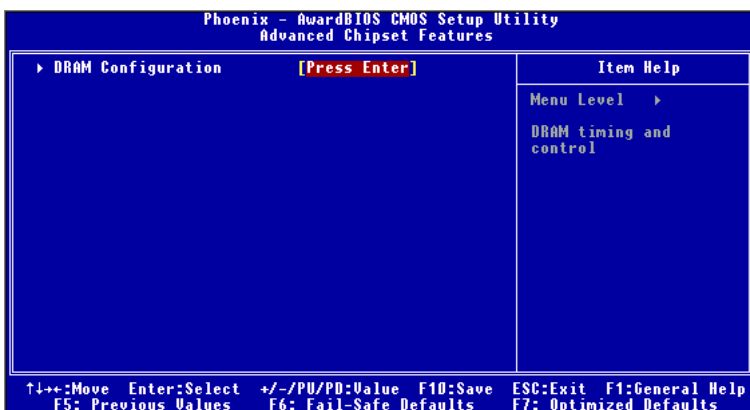
Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

### Hard Disk Boot Priority

Press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, and press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in this hard disk boot priority list.



## Advanced Chipset Features

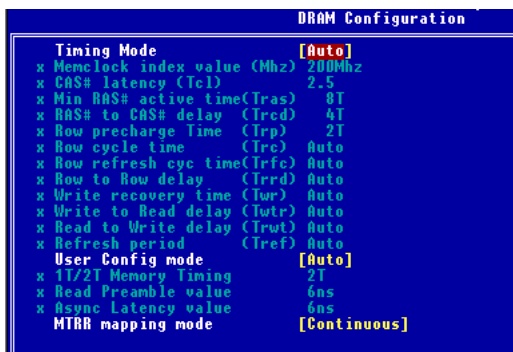


### MSI Reminds You...

*Change these settings only if you are familiar with the chipset. It is strongly recommended that users should leave the settings to their default options.*

### DRAM Configuration

Press <Enter> to enter the sub-menu and the following screen appears:



### Timing Mode

This field has the capacity to automatically detect all of the DRAM timing. If you

set this field to [Manual], the following fields will be selectable. The settings are: [Auto], [Manual].

**Memclock index value (Mhz)**

When **Timing Mode** is set to [Manual], user can place an artificial memory clock on the system. Please note that memory is prevented from running faster than this frequency. Setting options: [100MHz] ~ [200MHz].

**CAS# Latency (Tcl)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: [Auto], [2.0], [2.5], [3.0]. [2.0] increases the system performance the most while [3.0] provides the most stable performance.

**Min RAS# Active Time (Tras)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This setting determines the time RAS takes to read from and write to a memory cell. Setting options: [Auto], [5T] ~ [15T].

**RAS# to CAS# delay (Trcd)**

When the **Timing Mode** is set to [Manual], the field is adjustable. When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: [Auto], [2T] ~ [7T].

**Row Precharge Time (Trp)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Setting options: [Auto], [2T] ~ [7T].

**Row cycle time (Trc)**

When the **Timing Mode** is set to [Manual], the field is adjustable. The row cycle time determines the minimum number of clock cycles a memory row takes to complete a full cycle, from row activation up to the precharging of the active row. Setting options: [Auto], [7T] ~ [22T].

**Row refresh cyc time (Trfc)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This setting indicates Auto refresh or CAS Before RAS (CBR). DRAM needs to refresh periodically in order to retain its data which can be done by an internal counter / scheduler and a so-called CBR command. The auto refresh time used to take the same number of cycles as a standard bank cycle, however, with increased DRAM densities, oftentimes now two consecutive rows are refreshed back to

back, which takes twice the amount of time. With current DRAM chip densities, this is not yet an issue, however, with the upcoming densities of greater than 1 Gbit/chip, tRFC will have to be roughly 2 x tRC. Setting options: [Auto], [9T] ~ [24T].

**Row to Row delay (Trrd)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This BIOS feature specifies the minimum amount of time between successive ACTIVATE commands to the same DDR device. The shorter the delay, the faster the next bank can be activated for read or write operations. However, because row activation requires a lot of current, using a short delay may cause excessive current surges. Setting options: [Auto], [2T] ~ [4T].

**Write recovery time (Twr)**

When the **Timing Mode** is set to [Manual], the field is adjustable. It specifies the amount of delay (in clock cycles) that must elapse after the completion of a valid write operation, before an active bank can be precharged. This delay is required to guarantee that data in the write buffers can be written to the memory cells before precharge occurs. Available settings: [Auto], [2T], [3T].

**Write to Read delay (Twtr)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This item controls the Write Data In to Read Command Delay memory timing. This constitutes the minimum number of clock cycles that must occur between the last valid write operation and the next read command to the same internal bank of the DDR device. Available settings: [Auto], [1T], [2T].

**Read to Write delay (Trwt)**

When the **Timing Mode** is set to [Manual], the field is adjustable. This setting controls the Read-to-Write turnaround time. It specifies the Number of memory cycles after a read until a write can be done without running into bus contention and other issues. Setting options: [Auto], [1T] ~ [6T].

**Refresh period (Tref)**

When the **Timing Mode** is set to [Manual], the field is adjustable. Select the period required to refresh the DRAMs, according to DRAM specifications. Setting options: [Auto], [1x1552 Cycles] ~ [4x4672 Cycles], [128].

**User Config mode**

The BIOS will automatically control the following four settings if this function is set to [Auto]. If you set this field to [Manual], the following fields will be selectable. Setting options: [Auto], [Manual].

**1T/ 2T Memory Timing**

When the **User Config mode** is set to [Manual], the field is adjustable. This field controls the SDRAM command rate. Selecting [1T] makes SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting [2T] makes SDRAM signal controller run at 2T rate. Setting options: [1T], [2T].

**Read Preamble value**

When the **User Config mode** is set to [Manual], the field is adjustable. It specifies the time prior to the max-read DQS-return when the DQS receiver should be turned on. This is specified in units of 0.5ns. The controller needs to know when to enable its DQS receiver in anticipation of the DRAM DQS driver turning on for a read. The controller will disable its DQS receiver until the read preamble time and then enable its DQS receiver while the DRAM asserts DQS. Setting options: [2ns] ~ [9.5ns].

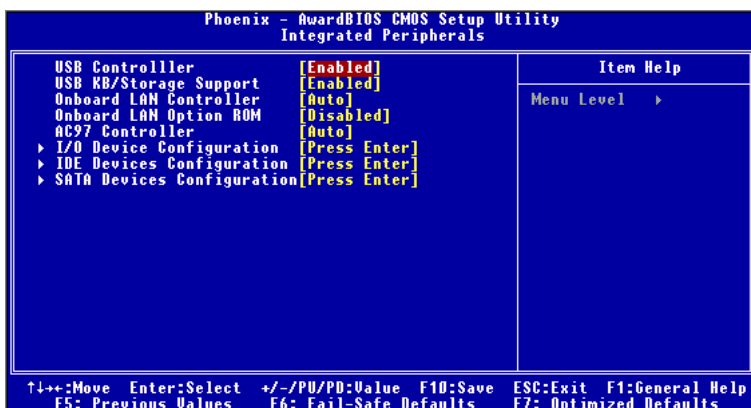
**Async Latency value**

When the **User Config mode** is set to [Manual], the field is adjustable. This field should be loaded with 4-bit value equal to the maximum asynchronous latency in the DRAM read round-trip loop. Setting options: [2ns] ~ [11ns].

**MTRR Mapping Mode**

This setting controls the MTRR mapping mode. To install the WinXP64, this setting should be set to [Continuous]. Setting options: [Continuous], [Discrete].

## Integrated Peripherals



### USB Controller

This setting allows you to enable/disable the onboard USB controller. Selecting [Enabled] enables the system to support both USB 1.1 and 2.0 spec. Setting options: [Disabled], [Enabled].

### USB KB/Storage Support

Select [Enabled] if you need to use a USB-interfaced keyboard or storage device in the operating system. Setting options: [Enabled], [Disabled].

### Onboard LAN Controller

Setting to [Auto] allows the BIOS to auto-detect the nVIDIA LAN controller and enable it. Setting options: [Auto] and [Disabled].

### Onboard LAN Option ROM

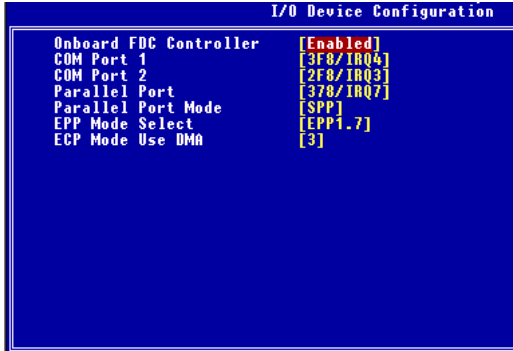
This item is used to enable or disable the MAC LAN Boot ROM. Setting options: [Disabled], [Enabled].

### AC97 Controller

[Auto] allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC'97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings: [Auto], [Disabled].

**I/O Device Configuration**

Press <Enter> to enter the sub-menu and the following screen appears:



**Onboard FDC Controller**

Select [Enabled] if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field. The settings are: [Enabled], [Disabled].

**COM Port 1/2**

Select an address and corresponding interrupt for the serial ports. The settings are: [3F8/IRQ4], [2E8/IRQ3], [3E8/IRQ4], [2F8/IRQ3], [Disabled], [Auto].

**Parallel Port**

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

- [Disabled]
- [3BC/IRQ7]      Line Printer port 0
- [278/IRQ5]      Line Printer port 2
- [378/IRQ7]      Line Printer port 1UART Mode Select

**Parallel Port Mode**

- [SPP]            Standard Parallel Port
- [EPP]           Enhanced Parallel Port
- [ECP]           Extended Capability Port
- [ECP+EPP]     Extended Capability Port + Enhanced Parallel Port

To operate the onboard parallel port as Standard Parallel Port only, choose [SPP]. To operate the onboard parallel port in the EPP mode simultaneously, choose [EPP]. By choosing [ECP], the onboard parallel port will operate in ECP mode only. Choosing [ECP + EPP] will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

**EPP Mode Select**

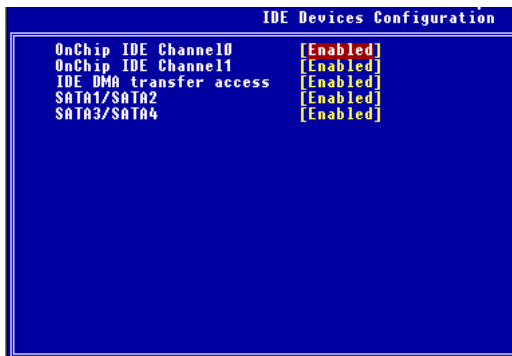
The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either [EPP 1.7] spec or [EPP 1.9] spec can be chosen.

**ECP Mode Use DMA**

The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA." At this time, the user can choose between DMA channel [3] or [1].

**IDE Device Configuration**

Press <Enter> to enter the sub-menu and the following screen appears:

**OnChip IDE Channel 0/1**

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose [Enabled] to activate each channel separately. Settings: [Enabled], [Disabled].

**IDE DMA Transfer Access**

This item is used to enable or disable the DMA transfer function of the IDE Hard Drive. The settings are: [Enabled], [Disabled].

**SATA1/SATA2 & SATA3/SATA4**

This item is used to enable/disable the onchip SATA controller. The settings are: [Enabled], [Disabled].

### SATA Device Configuration

Press <Enter> to enter the sub-menu and the following screen appears:



#### RAID Enable

This item is used to enable/disable the onchip RAID function. When you set to [Enabled], the following fields will become selectable. Setting options: [Enabled], [Disabled].

#### IDE Primary/ Secondary Master/Slave RAID

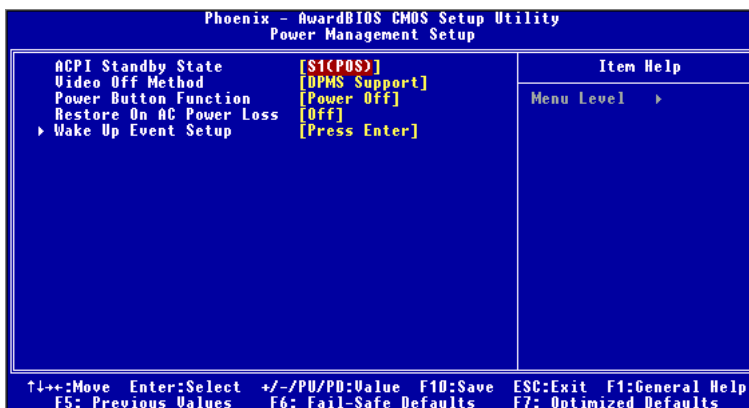
This feature allows users to enable or disable the RAID function for each IDE hard disk drive. Settings: [Enabled], [Disabled].

#### SATA1/SATA2/SATA3/SATA4 RAID

This feature allows users to enable or disable the RAID function for each onchip SATA hard disk drive. The settings are: [Enabled], [Disabled].



## Power Management Setup



### MSI Reminds You...

*S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.*

### ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1(POS) or S3(STR) fashion through the setting of this field. Options are:

- |            |  |
|------------|--|
| [S1 (POS)] | The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.   |
| [S3 (STR)] | The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs. |

### Video Off Method

This determines the manner in which the monitor is blanked.

- |                  |  |
|------------------|--|
| [V/H SYNC+Blank] | This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. |
| [Blank Screen]   | This option only writes blanks to the video buffer.  |
| [DPMS Support]   | Initial display power management signalling.   |

**Power Button Function**

This feature sets the function of the power button. Settings are:

- [Power Off] The power button functions as normal power off button.
- [Suspend] When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

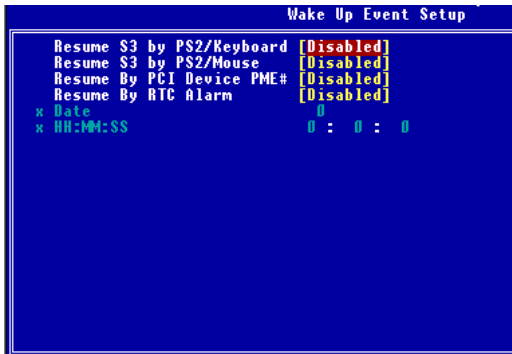
**Restore On AC Power Loss**

This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

- [Off] Leaves the computer in the power off state.
- [On] Leaves the computer in the power on state.
- [Former-Sts] Restores the system to the status before power failure or interrupt occurred.

**Wake Up Event Setup**

Press <Enter> and the following sub-menu appears.



**Resume S3 By PS/2 Keyboard, Resume S3 By PS/2 Mouse**

These fields allow the activity of the PS/2 peripherals (keyboard and mouse) to wake up the system from S3 sleep state. Settings: [Enabled], [Disabled].

**Resume By PCI Device PME#**

When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PME (Power Management Event). Settings: [Enabled], [Disabled].

**Resume By RTC Alarm**

The field is used to enable or disable the feature of booting up the system on a scheduled time/date. Settings: [Enabled], [Disabled].

**Date**

The field specifies the date for **Resume By RTC Alarm**. Settings: [0]-[31].

**HH:MM:SS**

The field specifies the time for **Resume By RTC Alarm**. Format is <hour>  
<minute><second>.

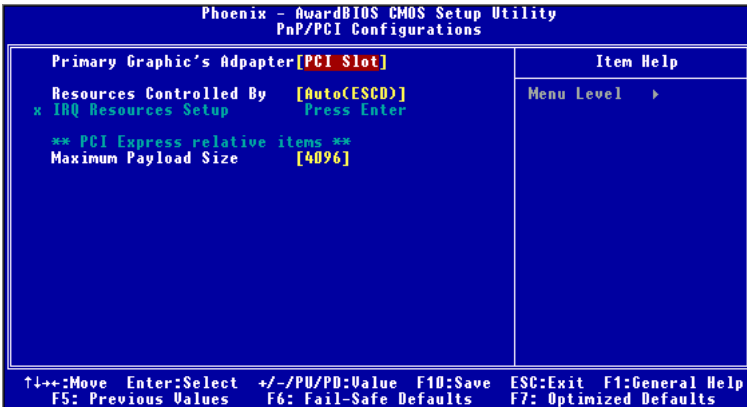


**MSI Reminds You...**

*If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.*

## PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **Peripheral Component Interconnect**, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



### Primary Graphics Adapter

This setting specifies which VGA card is your primary graphics adapter. Setting options: [PCI Slot], [PCIEx].

### Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95/98. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "Ø"). Setting options: [Auto (ESCD)], [Manual].

### IRQ Resources Setup

The items are adjustable only when **Resources Controlled By** is set to [Manual]. Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

- [PCI Device]                      For Plug & Play compatible devices designed for PCI bus architecture.
- [Reserved]                        The IRQ will be reserved for further request.

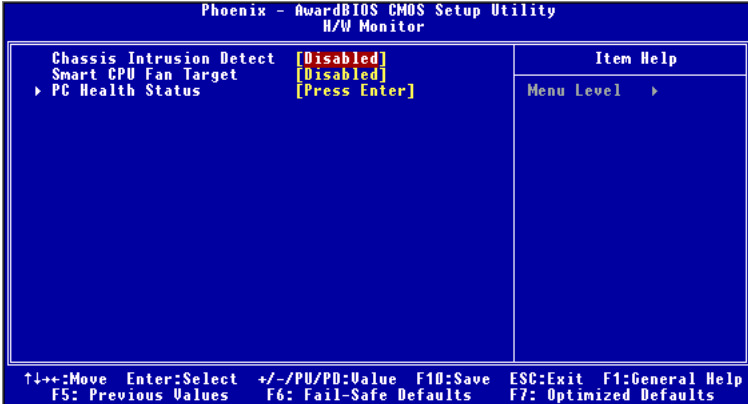
**\*\* PCI Express Relative Items \*\***

**Maximum Payload Size**

This setting specifies the maximum TLP payload size for the PCI Express devices. The unit is byte. Setting options: [128], [256], [512], [1024], [2048], [4096].

## H/W Monitor

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



### Chassis Intrusion Detect

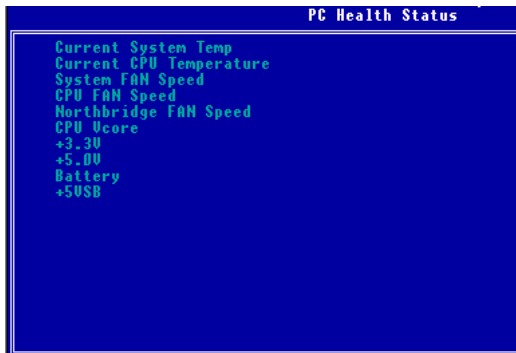
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Setting options: [Enabled], [Reset], [Disabled].

### Smart CPU Fan Target

The BIOS provides the Smart Fan system which can control the fan speed automatically depending on the current temperature to keep it within a specific range. Settings: [Enabled], [Disabled].

### PC Health Status

Press <Enter> and the following sub-menu appears.

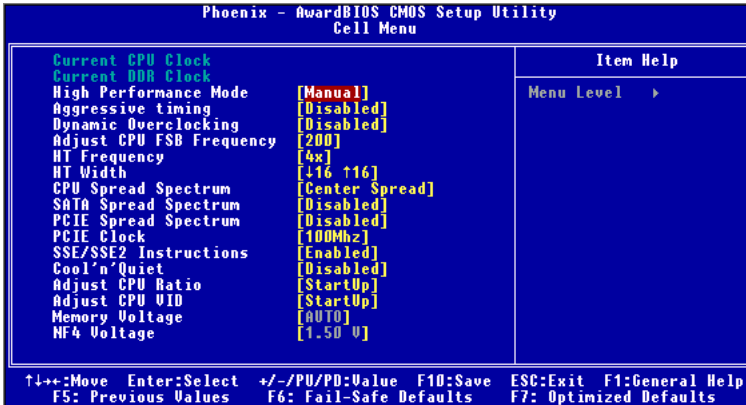


**Current System/CPU Temperature, System/CPU/Northbridge Fan Speed, CPU Vcore, +3.3V, +5.0V, Battery, +5VSB**

These items display the current status of all of the monitored hardware devices/components such as CPU voltage, temperatures and all fans' speeds.

## Cell Menu

The items in Cell Menu include some important settings of CPU, AGP, DRAM and overlocking functions.



### Current CPU / DDR Clock

These two items show the current clocks of CPU & DDR. Read-only.

### High Performance Mode

This field allows you to select the DDR timing setting. Setting to [Optimized] enables relevant overlocking settings automatically to be determined by SPD. Selecting [Manual] allows users to configure these fields manually. Setting options: [Optimized], [Manual].

### Aggressive timing

This item allows you to enable or disable the memory clock. When [Enabled] is selected, the timing delay of memory will be shorten to increase the performance. Setting options: [Enabled], [Disabled].

### Dynamic Overclocking

Dynamic Overclocking Technology is the automatic overlocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance.



Setting options:

[Disabled]	Disable Dynamic Overclocking function.
[Private]	1st level of overclocking, increasing the CPU frequency by 1%.
[Sergeant]	2nd level of overclocking, increasing the CPU frequency by 3%.
[Captain]	3rd level of overclocking, increasing the CPU frequency by 5%.
[Colonel]	4th level of overclocking, increasing the CPU frequency by 7%.
[General]	5th level of overclocking, increasing the CPU frequency by 9%.
[Commander]	6th level of overclocking, increasing the CPU frequency by 11%.



### MSI Reminds You...

- 1. Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest that users should make sure that the CPU can afford to overclocking regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to disable the Dynamic Overclocking or to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, you also need to disable the **Dynamic Overclocking** first.*
- 2. When overclocking, it is NOT recommended to use SATA devices.*

### Adjust CPU FSB Frequency

This item allows you to select the CPU Front Side Bus clock frequency (in MHz). Select the number between [200]~[400] for needed frequency.

### HT Frequency

This setting specifies the maximum operating frequency of the link's transmitter clock. Setting options: [1x], [1.5x], [2x], [2.5x], [3x], [4x], [5x].

### HT Width

This field allows you to set the HT Width between CPU & Chip. ↑ mark means Chip to CPU HT Width. And ↓ mark means CPU to Chip HT Width. Setting options: [ ↓ 8 ↑ 8 ], [ ↓ 16 ↑ 8 ], [ ↓ 8 ↑ 16 ], [ ↓ 16 ↑ 16 ].

### CPU Spread Spectrum

This setting is used to enable or disable the CPU Spread Spectrum feature. When overclocking the CPU, always set it to [Disabled]. Setting options: [Center Spread], [Disabled].

### SATA Spread Spectrum

This setting is used to enable or disable the SATA Spread Spectrum feature. Setting options: [Disabled], [Down Spread].

### PCIe Spread Spectrum

This setting is used to enable or disable the CPU Spread Spectrum feature. When

overclocking the CPU, always set it to [Disabled]. Setting options: [Disabled], [Down Spread].

### PCIe Clock

This setting determines the clock frequency of the PCI Express slots. Setting options: [100MHz] ~ [145MHz].

### SSE/SSE2 Instructions

This setting disables/enables the SSE/SSE2 Instructions. The Streaming SIMD Extensions (SSE) were introduced in the Pentium III processor. The SSE extensions consist of a new set of instructions and a new set of registers. These instructions and registers are designed to allow Single-Instruction Multiple-Data (SIMD) computations to be made on single-precision floating-point numbers.

The Streaming SIMD Extensions 2 (SSE2) were introduced in the Pentium 4 and Intel Xeon processors. They consist of a new set of instructions that operate on the XXM and MXCSR registers and perform SIMD operations on double-precision floating-point values and on integer values. Several of these new SSE/SSE2 instructions also operate in the MMX registers.

### Cool 'n' Quiet

This feature is especially designed for AMD Athlon processor, which provides a CPU temperature detecting function to prevent your CPU's from overheating due to heavy workload. Setting options: [Disabled], [Enabled].



#### MSI Reminds You...

*To ensure the stability of Cool'n'Quiet function, it is always recommended to have the memories plugged in DIMM1.*

### Adjust CPU Ratio

This item lets you adjust the CPU ratio. Setting to [Startup] enables the CPU running at the fastest speed which is detected by system. Setting options are: [Startup], [x4]~[x12].

### Adjust CPU VID

This item lets you adjust the CPU VID. Setting to [Startup] enables the CPU running at the default VID detected by the system. Setting options: [Startup], [1.550V] ~ [0.825V].

### Memory Voltage

Adjusting the DDR voltage can increase the DDR speed. Any changes made to this setting may cause a stability issue, so **changing the DDR voltage for long-term purpose is NOT recommended.**

### NF4 Voltage

NF4 voltage is adjustable in this field.



#### **MSI Reminds You...**

*The settings shown in different color in **Memory Voltage** and **NF4 Voltage** help to verify if your setting is proper for your system.*

**Gray: Default setting.**

**Yellow: High performance setting.**

**Red: Not recommended setting and the system may be unstable.**

*Changing **CPU Voltage**, **Memory Voltage** and **NF4 Voltage** may result in the instability of the system; therefore, it is **NOT** recommended to change the default setting for long-term usage.*

## Load Optimized Defaults

The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

When you select **Load Optimized Defaults**, a message as below appears:




Load Optimized Defaults (Y/N)? Y

Pressing [Y] loads the default factory settings for optimal system performance.

## BIOS Setting Password

When you select this function, a message as below will appear on the screen:



Enter Password:


Type the password, up to 8 characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.



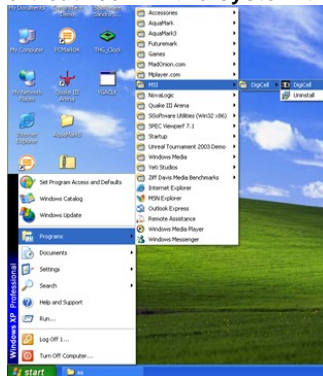
# Introduction to DigiCell

DigiCell, the most useful and powerful utility that MSI spent much research and efforts to develop, helps users to monitor and configure all the integrated peripherals of the system, such as audio program, power management, MP3 files management and communication / 802.11g WLAN settings. Moreover, with this unique utility, you will be able to activate the MSI well-known features, Live Update and Core Center, which makes it easier to update the BIOS/drivers online, and to monitor the system hardware status (CPU/Fan temperature and speed) or to overclock the CPU/memory.

Once you have your DigiCell installed (locate the setup source file in the setup CD accompanying with your mainboard, path: **Utility --> MSI Utility --> MSI DigiCell**), it will have an icon  in the system tray, a short cut icon on the desktop, and a short cut path in your "Start-up" menu. You may double-click on each icon to enable DigiCell.



short-cut icon in the system tray



short-cut path in the start-up menu  
(path: Start->Programs->MSI->DigiCell)

## Main

Before using this utility, it is required to have all the integrated peripherals/cards (LAN card, Wireless LAN card, MegaStick... etc.) and all the necessary drivers (onboard LAN driver, audio driver, CoreCenter, Live Update... etc.) installed correctly.

The icon representing each item will be lit up if it is inserted/installed correctly and properly. Otherwise, the icon will remain grey out and user will not be able to view the function/connection of that item.



### Introduction:

Click on each icon appearing above to enter the sub-menu to make further configuration.

#### **MSI**

Click on this button to link to MSI website:

<http://www.msi.com.tw>.

#### **Quick Guide**

Click on this button and the quick guide of **DigiCell** will be displayed for you to review.

#### **H/W Diagnostic**

In this sub-menu, it provides the information of each DigiCell button for you to check if the representing peripherals/cards/drivers are correctly installed.

#### **Comm.**

In this sub-menu, you can see the configuration details for communication products, including the status, strength, speed and channel of the connection of the Ethernet LAN & Wireless LAN.

#### **Software Access Point**

In this sub-menu, you can change your connection mode to different ones, and configure the advanced settings for each mode, such as the authentication encryption... etc.

**Live Update**

You can take advantage of **Live Update** to detect and update BIOS and drivers online.

**Core Center**

You can take advantage of **Core Center** to monitor the health status of your system and to overclock under Windows OS if your system supports overclocking function.

**MEGA STICK**

If you have your MEGA STICK connected to your system, this icon will be lit up. Click this blue icon to turn DigiCell into a MP3 player, and then you can load media files from your MEGA STICK or the system, and edit the preferred playlist.

**Audio Speaker Setting**

In this sub-menu, you can configure and test the multi-channel audio function, speakers, sound effect and environment.

**Power on Agent**

In this sub-menu, you can configure date, time and auto-executed programs of the power-on, power-off and restarting features.



**MSI Reminds You...**

*Click on **back** button in every sub-menu and it will bring you back to the main menu.*

## H/W Diagnostic

In the **H/W Diagnostic** sub-menu, you can see the information, status and note of each DigiCell. You may double check the connection and installation of the item marked as gray.

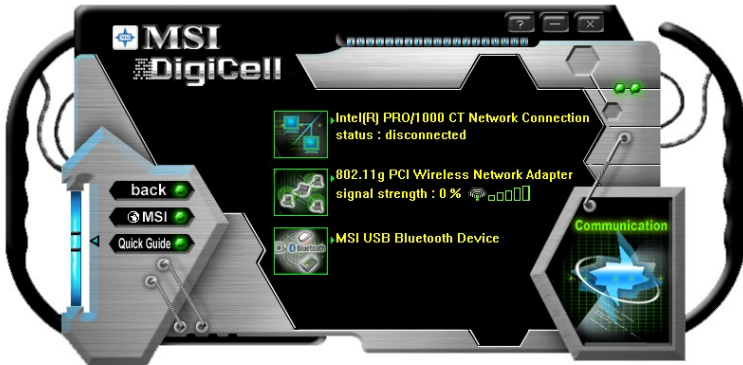


You may also click on the **Mail to MSI** button to send your questions or suggestions to MSI's technical support staff.



## Communication

In the **Communication** sub-menu, you can see the status of all the LAN / WLAN / Bluetooth on the screen if the hardware is installed. The first icon indicates the onboard LAN on your system, the second icon indicates the wireless LAN status, and the third one is the information about the bluetooth on your system. Click on each item for details.



This icon indicates the information and connection status of onboard LAN, which is read-only.



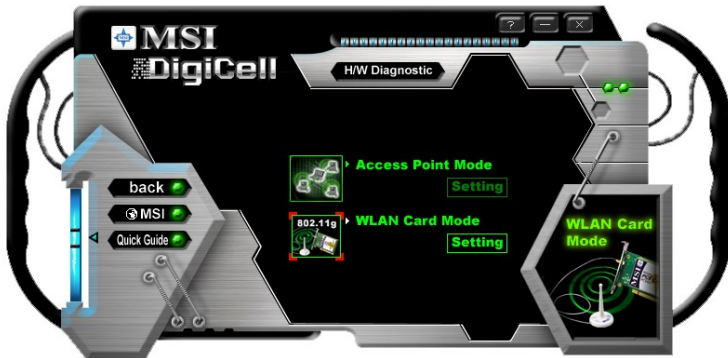
The second icon indicates the wireless connection. You may click this icon to configure the advanced settings in the **WLAN Card Mode** dialogue box (see the image on p.4-8). Please note that it is only available when the **Software Access Point** is set to **WLAN Card Mode**.



The third icon indicates the connection using bluetooth devices. If your system is connected to the bluetooth device, the icon will light up.

## Software Access Point

In the **Software Access Point** sub-menu, you can see the communication status on your system and choose the desired software access point mode by clicking on the desired icon, in which the default settings are configured for your usage. The default software access point mode is set to **WLAN Card Mode**. For more advanced security settings and channels switching, click on **“Setting”** button to enter its sub-menu.



### Terminology

Here are the introduction of WLAN / AP communication terminology.

#### WEP Key

In the wireless network environment, the administrator can set up password (Network Key) to protect the network from being attacked or unauthorized access. When building the network, you can set up 4 sets of WEP keys, which can be 5 characters (10 hex-adecimal digital) or 13 characters (26 hex-adecimal digital) and specify one of them to use.

#### Ad-hoc Mode

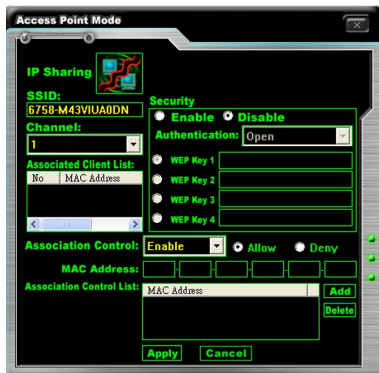
An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.

#### Infrastructure Mode

The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.

## Access Point Mode

Click on “**Setting**” button of the **Access Point Mode** and the following screen will display.



### IP Sharing

Click on this icon to enable/disable the IP sharing. The default of this setting is disabled.



Disabled.



Enabled.

Enabling/disabling IP sharing depends on the different situation. For example:

1. If your family and you are getting on Internet at home with multi computers, and your ISP only provides one IP for you, you may need to enable **IP Sharing** function in order to use this one IP to get on Internet with multi computers simultaneously.
2. If you are getting on Internet in office, usually the LAN card will automatically get the IP this computer uses. In this case you don't have to enable this function.

### SSID

Means Service Set Identifier, a **unique** name shared among all points in a wireless network. It must be **identical** for all points in the network. Then the card will be able to connect to an access point with the same SSID.

### Channel

Specifies the operating radio frequency channel in **Infrastructure mode**, which should be set to an available one (ex: with less traffic to ensure the stable and better connection).

### Associated Client List

This option is to display information of stations that are currently associated to your wireless gateway.

### Association Control

This option allows you to control which PC can connect to the wireless LAN. If you enable this feature, only PCs with MAC address located in Association Control List

can connect to the wireless LAN.

### MAC Address

MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network.

### Security

This option allows you to enable/disable the authentication function.

#### Authentication

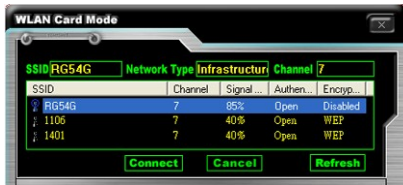
Open: Communicates the key across the network.

Shared: Devices must have identical WEP settings to communicate.

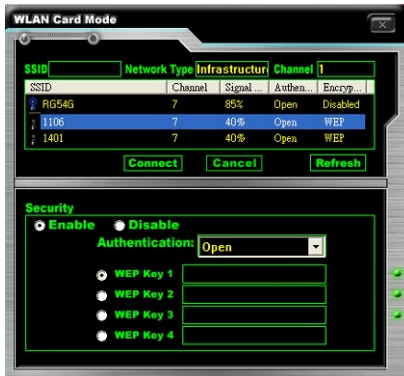
### WLAN Card Mode

Click on “**Setting**” button of the **WLAN Card Mode** for the WEP status of your APs.

If the AP you are selecting (the highlighted one) is not encrypted (**Disabled** shown in the **Encryption** column), the screen will display as below. You can click “**Connect**” to make connection to that AP, click “**Cancel**” to close this dialog box, or click “**Refresh**” button to update the available WLAN connections.



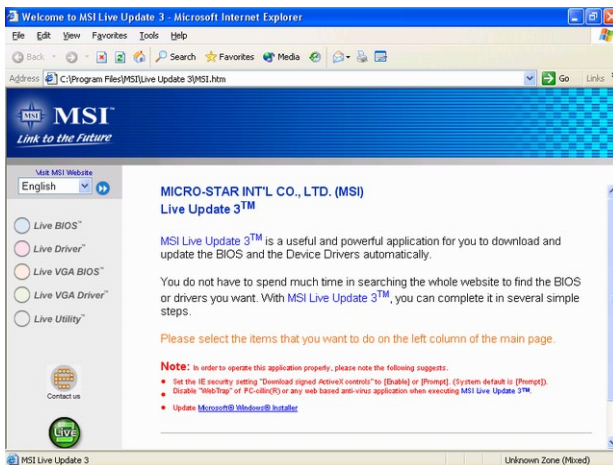
If the network you are selecting is encrypted (**WEP** shown in the **Encryption** column), the screen will display as below. You need to enter the correct WEP key defined by AP in the specified **WEP Key 1~4** fields to make the connection.



## Live Update

Click on the **Live Update** icon in the main menu and the **Live Update** program will be enabled.

The Live Update 3™ is a tool used to detect and update your BIOS/drivers/VGA BIOS/Driver/Utility online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the "MSI Live Update 3" application. After the installation, the "MSI Live Update 3" icon (as shown on the right) will appear on the screen. Double click the "MSI Live Update 3" icon, and the following screen will appear:



Several buttons are placed on the left column of the screen. Click the desired button to start the update process.

- Live BIOS** – Updates the BIOS online.
- Live Driver** – Updates the drivers online.
- Live VGA BIOS** – Updates the VGA BIOS online.
- Live VGA Driver** – Updates the VGA driver online.
- Live Utility** – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a "sorry" message is displayed. For more information on the update instructions, insert the companion CD and refer to the "Live Update Guide" under the "Manual" Tab.

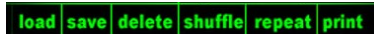
## MEGA STICK

In the **MEGA STICK** sub-menu, you can configure the settings of MSI MEGA STICK and the media files (\*.m3u, \*.mp3, \*.wav, \*.cda, \*.wma) on your system.



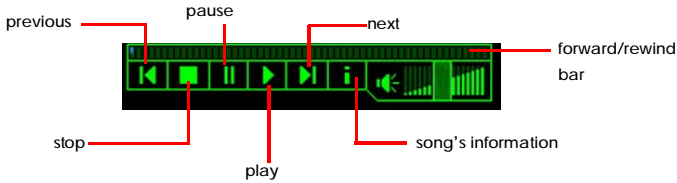
### Basic Function

Here you can edit your own play list with the buttons “load”, “save”, “delete”, “shuttle”, “repeat” & “print”.



- |                |  |
|----------------|--|
| <b>Load</b>    | To load media files or the playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.   |
| <b>Save</b>    | To save a loaded playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.   |
| <b>Delete</b>  | Click on the media files in the <b>Play List:</b> field and use “Delete” button to remove the media file from the play list. You may remove multi media files simultaneously by using “Ctrl” to select multi files.  |
| <b>Shuffle</b> | To play the media file in the <b>Play List:</b> in a random order.   |
| <b>Repeat</b>  | To repeat the selected files in the <b>Play List:</b> .  |
| <b>Print</b>   | This button has 2 functions: <ol style="list-style-type: none"> <li>1. To print out the details of current play list through your printer with the following information:<br/>Song title --- Song length --- Singer name</li> <li>2. To save the details of current play list and save the file in the plain text file format in the \\Program files\MSI\DigiCell\MyMusic.txt for your reference. The <i>MyMusic.txt</i> file is with the following information:<br/>Song title --- Song length --- Singer name</li> </ol> |

There is also a toolbar for you to execute some basic function, like play, stop, pause, previous/next song, song info and volume adjust. There is also a scroll bar on the top for you to forward/rewind.



Right-click on the MP3 file and choose “Info”, a **MP3 Info** dialogue will pop up to show the information of the file, including the title, artist, album, release year and others. You may also add your own comment in the **comment** field. Then click “Save” to save the change, click “Cancel” to discard the change, or click “Remove” to remove all this information.

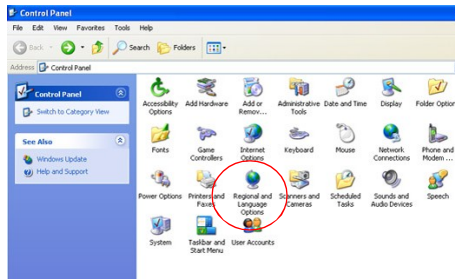


## Non-Unicode programs supported

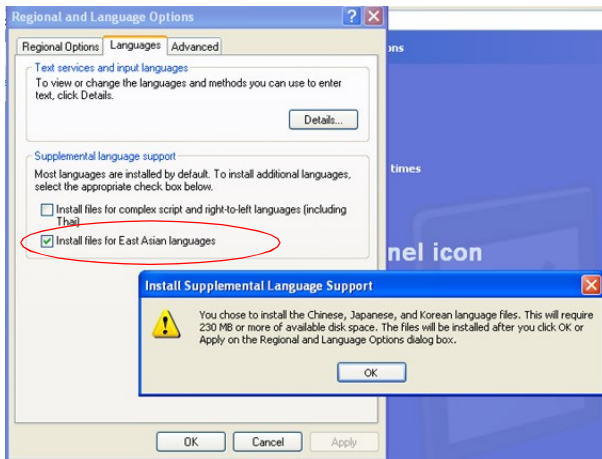
If you are using an operating system in European languages, and you'd like to play the media files in MEGA STICK with East-Asian languages (such as Chinese, Japanese... etc.), it is possible that the file names display incorrectly.

However, you can install the **Supplemental Language Support** provided by Microsoft to solve this problem. You need to have your Microsoft Setup CD prepared in the CD-ROM. The system will start to install the necessary components after the settings are configured here. Follow the steps described below.

1. Go to [Control Panel] and choose [Regional and Languages Options].

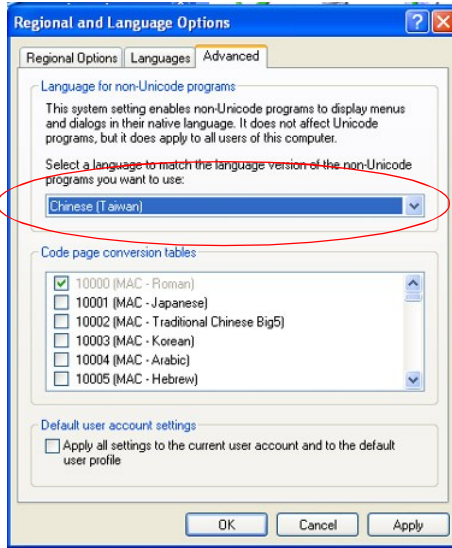


2. Go to the [Languages] tab and enable the check box of [Install files for East Asian languages]. A dialogue box will pop up to remind you the above selection is chosen.





3. Then go to the [Advanced] tab and select **the language you want to be supported** (the language of the filename in the MegaStick) from the drop-down list in the [Language for non-Unicode programs], then click [Apply]. The system will install the necessary components from your Microsoft Setup CD immediately.

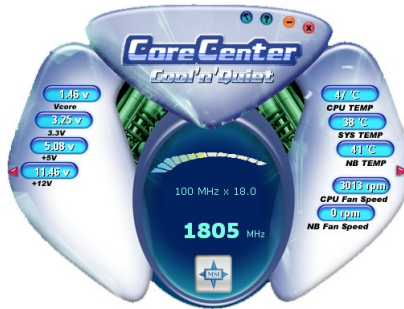


## Core Center (for AMD K8 Processor)

Click on the **Core Center** icon in the main menu and the **Core Center** program will be enabled.

### Cool'n'Quiet

This utility provides a CPU temperature detection function called **Cool'n'Quiet**. **Cool'n'Quiet** is a special feature designed only for AMD® Athlon64 processor, and with **Cool'n'Quiet**, the system will be capable of detecting the temperature of the CPU according to the CPU's working loading. When the CPU temperature climbs up to a certain degree, the speed of the system cooling fan will be risen automatically. On the other hand, the speed of the system cooling fan will slow down instantly when the CPU temperature descends to its normal degree.



Here the current system status (including Vcore, 3.3V, +5V and 12V) and the current PC hardware status (such as the CPU & system temperatures and all fans speeds) are shown on the left and right sides for you to monitor.

When you click the red triangles in the left and right sides, two sub-menus will open for users to overclock, overspec or to adjust the thresholds of system to send out the warning messages.



### Left-side: Current system status

In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button in front of each item and make it available (the radio button will be lighted as yellow when selected), use the “+” and “-” buttons to adjust, then click “**OK**” to apply the changes. Then you can click “**Save**” to save the desired FSB you just configured.

Also you may click “**Auto**” to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click “**Default**” to restore the default values.

### Right-side: PC hardware status during real time operation

In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click “**OK**” to apply the changes. The values you set for the temperatures are the maximum thresholds for the system warnings, and the values for fan speeds are the minimum thresholds.

### Center-side: Cool'n'Quiet / User mode

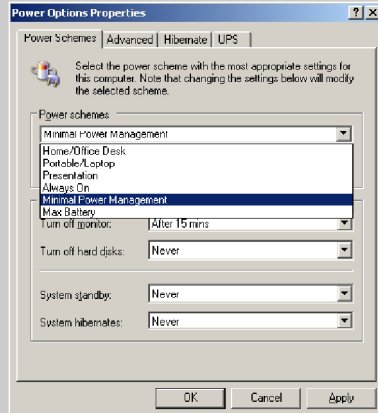
Here you may adjust the CPU fan speed. If you choose *User mode*, you may adjust the CPU fan speed in 8 different modes, from **High Speed** to **Low speed**. If you choose *Cool'n'Quiet*, the system will automatically configure an optimal setting for you.



#### MSI Reminds You...

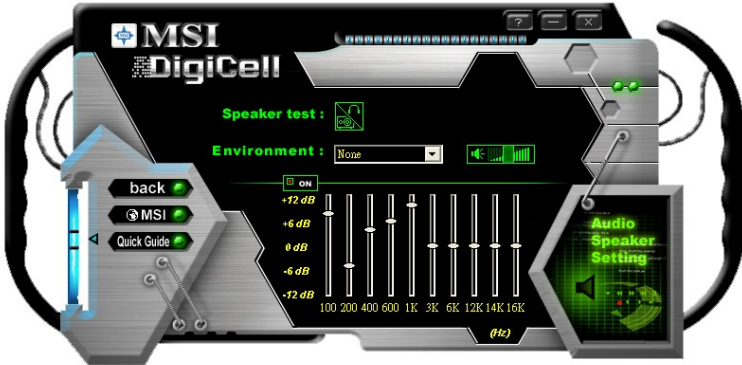
*To ensure that Cool'n'Quiet function is activated and will be working properly, it is required to double confirm that:*

1. Run BIOS Setup, and select **Cell Menu**. Under **Cell Menu**, find **Cool'n'Quiet Support**, and set this item to “**Enable**.”
2. Enter Windows, and select [Start]->[Settings]->[Control Pannel]->[Power Options]. Enter **Power Options Properties** tag, and select **Minimal Power Management** under **Power schemes**.

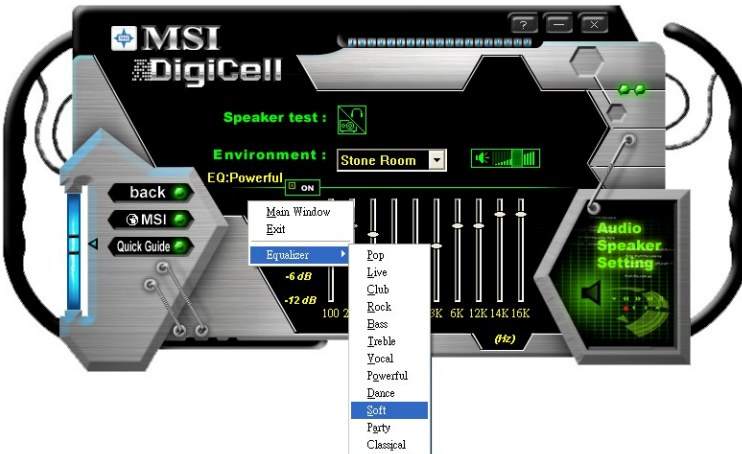


## Audio Speaker Setting

In the **Audio Speaker Setting** sub-menu, you can configure the multi-channel audio operation, perform speaker test, and choose the environment you prefer while enjoying the music.

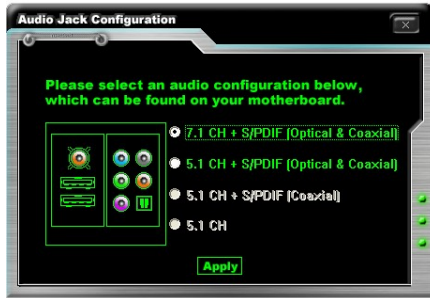


You can scroll the bar of each equalizer to regulate the current playing digital sound source. Also you may click on the “on” button to enable/disable the equalizer function. Once the equalizer function is enabled, you can choose several preset equalizers for your preference. You may also right-click anywhere to execute this function. After you have chosen one equalizer, it will be indicated next to the “on” button in yellow.

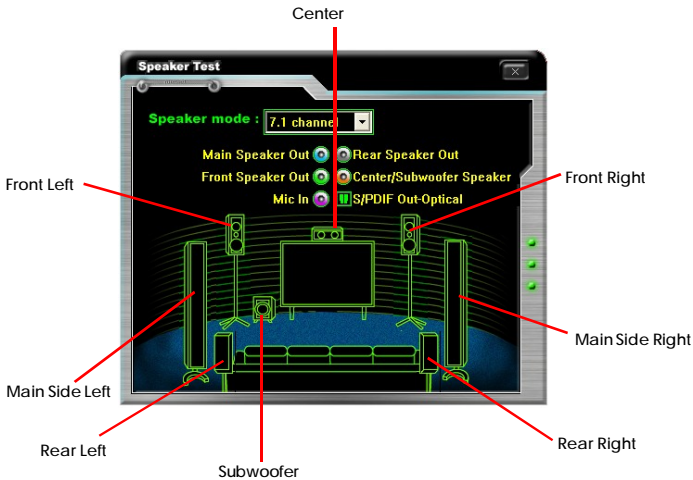


The **Environment** setting lets you select the environment you like, such as **Cave** or **Convert Hall**.

Click on the “**Speaker test**” button and the following dialogue box will appear:



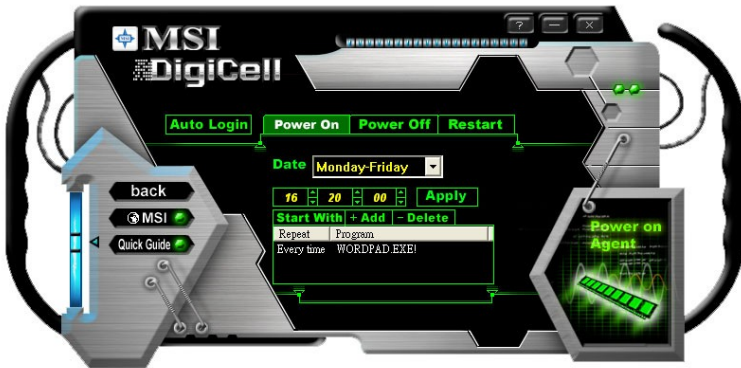
In this **Speaker Configuration** dialogue box, select the audio configuration which is identical to the audio jack on your mainboard. Once the correct audio configuration is selected, click “**Apply**” to save the changes. Then the following screen will appear. In this **Speaker Configuration** dialogue box, first select the correct item from the **Speaker mode** drop-down list, and then click on each connected speaker to ensure if Headphone, 2-, 4-, 5.1-, or 7.1- channel audio operation is working properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector, or replace the bad speakers with good ones.



## Power on Agent

In the **Power on Agent** sub-menu, you can configure setting of power-on, power-off and restarting status.

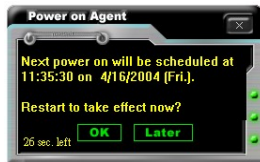
In the screen below, you can set the date, time, start-up programs respectively for power-on, power-off and restarting.



### Power On

Here are the available settings for **Power On** function:

- Date** Use the drop-down list to select the date for power-on.
- Time** Use the arrow keys to select the hour/minute/second for power-on, power-off and restarting. Then click "**Apply**" to save the changes. As you click "**Apply**", the following dialogue will appear to show you the next power-on schedule, and the system will start to count down to restart. Click "**OK**" to restart the computer right away or click "**Later**" to restart your computer later.



#### MSI Reminds You...

Please note that the new setting will not take effect until you restart your computer.

## Power Off / Restart

You may configure the time (in the format hh:mm:ss) for the next power-off / restart.

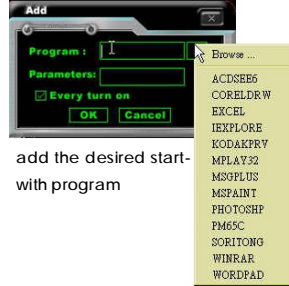
## Start With

Use the button “+Add” to add the start-up programs as DigiCell is activated next time. For example, you may like to have Outlook activated or a specified website linked when you get to the office every morning.

Step 1: Click on the **Program:** field and click “>>” button to browse for the path of Outlook or Internet Explorer.

Step 2: Click on “OK” to apply the setting.

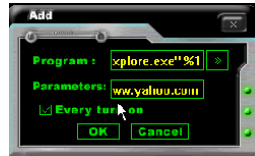
Step 3: For specified file or specified website, you may enter the file name with the complete path or the website link in the **Parameters:** field.



add the desired start-up with program



To activate Outlook as DigiCell is enabled next time



To activate a specified website as DigiCell is enabled next time

Of course you may use the button “-Delete” to remove the added programs, or you can right-click on the selected program and click **Delete**.



delete the added program



### MSI Reminds You...

You can also enable the **Every turn on** function, which will enable the specified program(s) and file(s) every time the Digi Cell utility runs.

## Auto Login



Since the **Power On** function allows the system to power on automatically, you may have to enable this **Auto Login** function in the following situations:

1. If you are using a computer belonging to a domain in office, and you need to enter your user name & password everytime when you boot up your computer.
2. If there are multi users using the same computer and you'd like to power on the computer automatically with one specific user.

### Enable Auto Login

Enable this setting if you want to use the **Auto Login** feature. It supports the following operating systems: Win9X, Windows ME, Windows 2000 & Windows XP.

### Default User Name

It is only available for Windows 2000 & Windows XP.

- If you are using a computer belonging to a domain in office, please enter your login user name in this field.
- If you are using a computer with multi users (for Windows XP operating system), please enter the user name you'd like to auto power-on in this field.

### Default Password

It is only available for Windows 2000 & Windows XP.

- If you are using a computer belonging to a domain in office, please enter your login password in this field.
- If you are using a computer with multi-users (for Windows XP operating system), please enter the password for the user name you'd like to auto power-on in this field.



## ***Appendix A: Using 2-, 4- & 6-Channel Audio Function***

The mainboard is equipped with Realtek ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use the 2-/4-/6-channel audio function on the board.

## Installing the Audio Driver

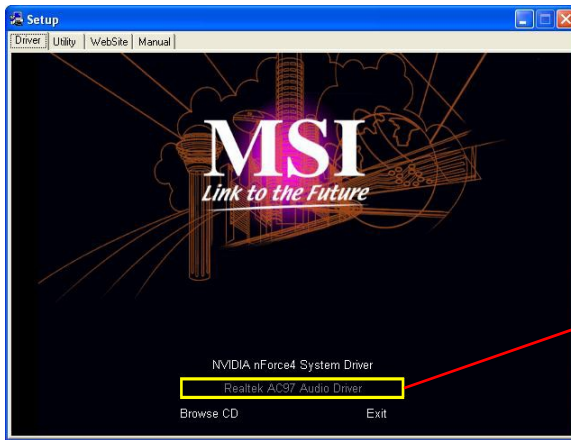
You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 2-/4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

### Installation for Windows 2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack2 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek AC97 Audio Drivers**.



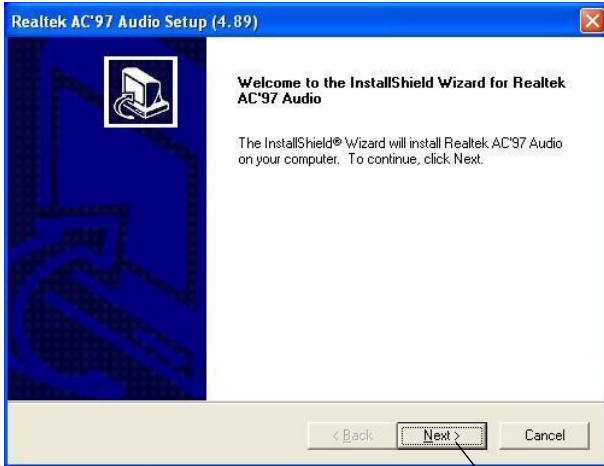
Click here



#### MSI Reminds You...

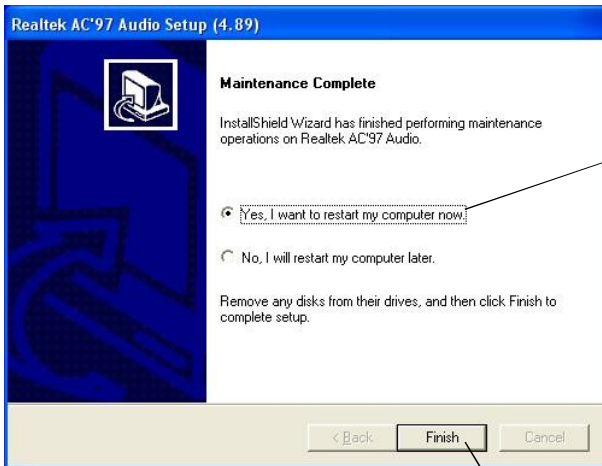
The **AC97 Audio Configuration**  software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

3. Click **Next** to install the AC'97 Audio software.



Click here


4. Click **Finish** to restart the system.



Select this option

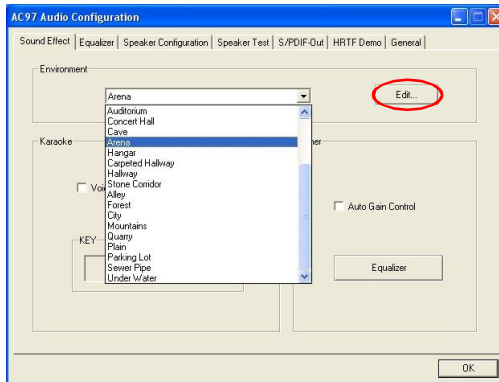
Click here

## Software Configuration

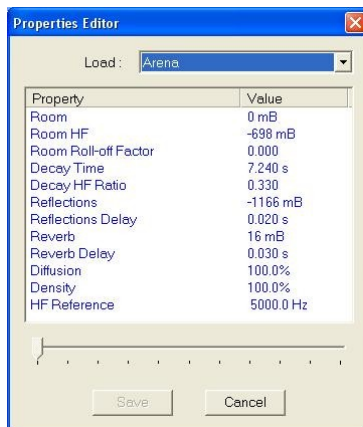
After installing the audio driver, you are able to use the 2-/4-/6-channel audio feature now. Click the audio icon  from the window tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**.

### Sound Effect

Here you can select a sound effect you like from the **Environment** list.

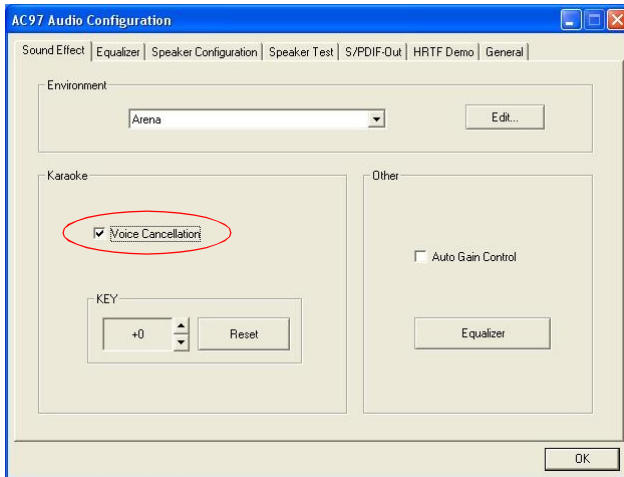


You may also edit the properties for an environment as you wish by clicking the **Edit** button, then just scroll the bar in the bottom for each property to adjust.



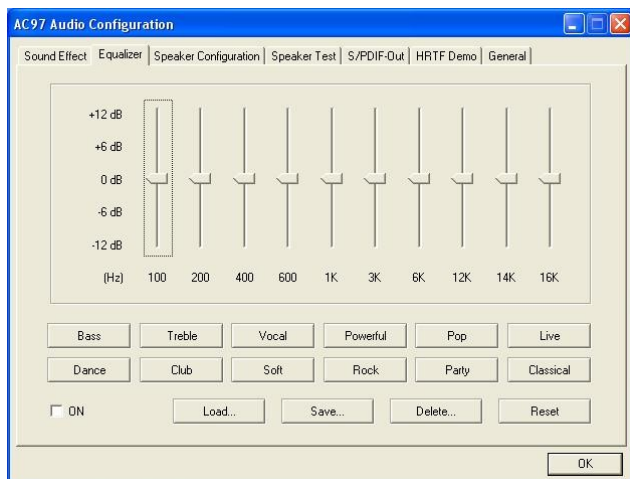
Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

Just check the **Voice Cancellation** box and then click **OK** to activate the Karaoke function.



## Equalizer

Here you regulate each equalizer for current playing digital sound sources.

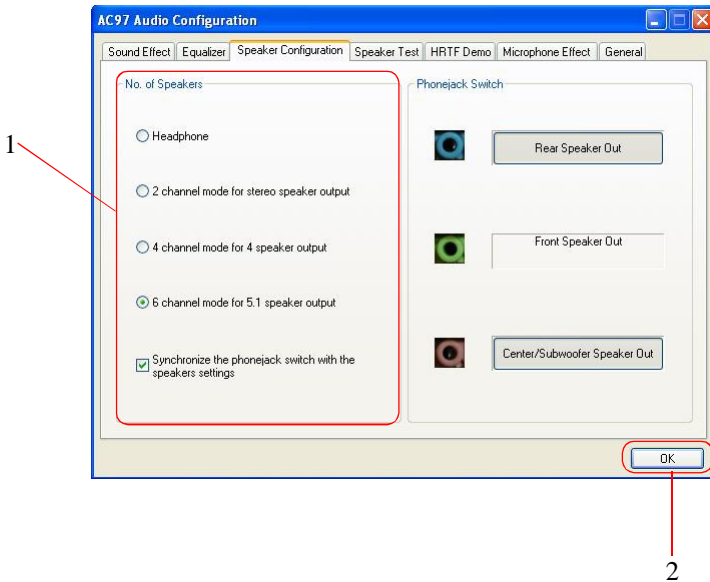


You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the buttons **Load** and **Save**. Or you may click **Reset** to use the default value.

## Speaker Configuration

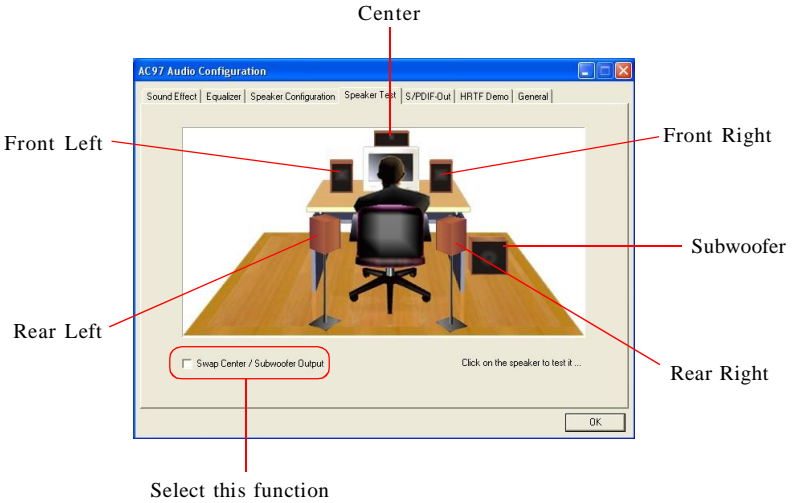
In this tab, you can easily configure your multi-channel audio function and speakers.

1. Select a desired multi-channel operation from **Number of Speakers**.
  - a. Headphone for the common headphone
  - b. 2-Channel Mode for Stereo-Speaker Output
  - c. 4-Channel Mode for 4-Speaker Output
  - d. 6-Channel Mode for 5.1-Speaker Output
2. Then click **OK** to apply the configuration.

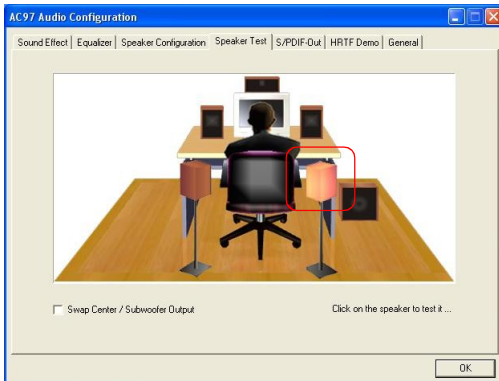


## Speaker Test

You can use this tab to test each connected speaker to ensure if 4- or 6-channel audio operation works properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.



Select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound.





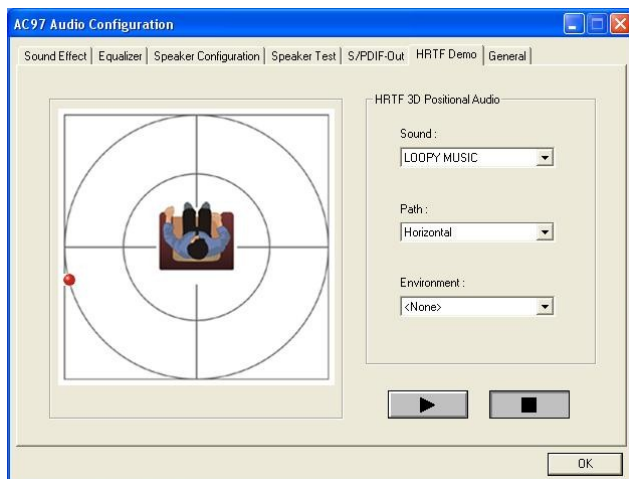


**MSI Reminds You...**

1. *6 speakers appear on the "Speaker Test" tab only when you select "6-Channel Mode" in the "Number of Speakers" column in "Speaker Configuration" tab. If you select "4-Channel Mode", only 4 speakers appear on the window.*
2. *While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.*

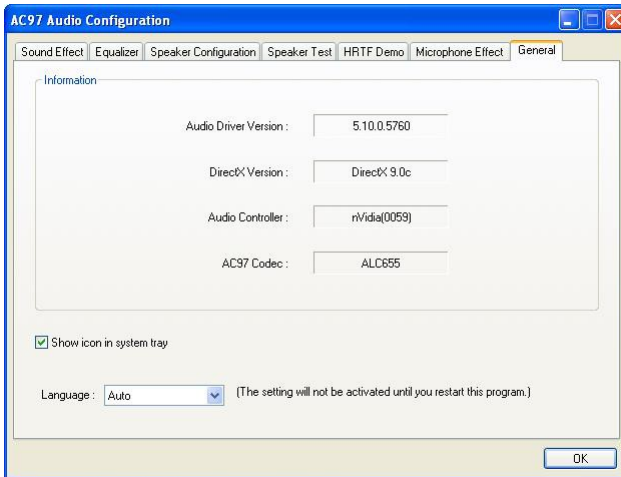
## HRTF Demo

In this tab you may adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.



## General

In this tab it provides some information about the AC97 Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & AC97 Codec. You may also select the language of this utility by choosing from the **Language** list.



## Using 2-, 4- & 6- Channel Audio Function

In addition to a default 2-channel analog audio output function, the audio connectors on the Back Panel also provide 4- or 6-channel analog audio output function if a proper setting is made in the software utility.

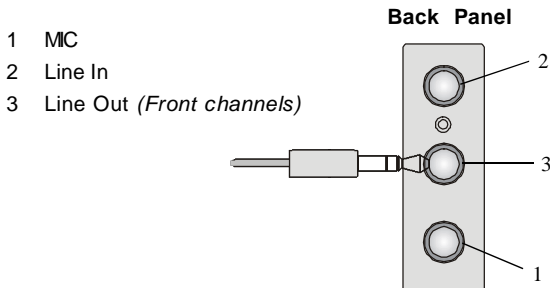
Read the following steps to have the Multi-Channel Audio Function properly set in the software utility, and have your speakers correctly connected to the Back Panel.

### Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software configuration.

#### **n 2-Channel Mode for Stereo-Speaker Output**

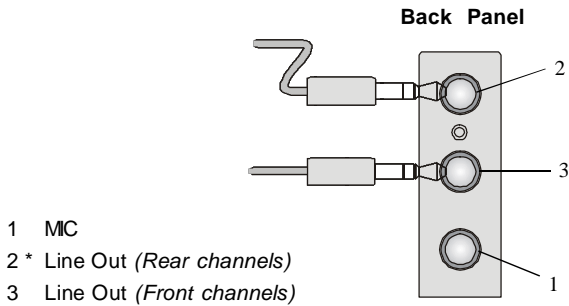
Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.



#### n 4-Channel Mode for 4-Speaker Output

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6-channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

Refer to the following diagram and caption for the function of each jack on the back panel when 4-Channel Mode is selected.

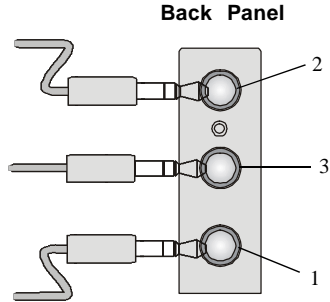


\* Line In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

### n 6-Channel Mode for 6-Speaker Output

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

- 1 \* Line Out (Center and Subwoofer channel)
- 2 \* Line Out (Rear channels)
- 3 Line Out (Front channels)



\* Both Line In and MIC function are converted to Line Out function when 6-Channel Mode for 6-Speaker Output is selected.



#### MSI Reminds You...

While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.



## ***Appendix B: nVIDIA RAID Introduction***

NVIDIA brings Redundant Array of Independent Disks (RAID) technology—which is used by the world's leading businesses—to the common PC desktop. This technology uses multiple drives to either increase total disk space or to offer data protection. For all levels, RAID techniques optimize storage solutions by using multiple disks grouped together and treating them as a single storage resource.

## Introduction

### System Requirement

#### Operating System Support

NVRAID supports the following operating systems:

- Windows XP Home Edition
- Windows XP Professional Edition
- Windows 2000 Professional

### RAID Arrays

NVRAID supports the following types of RAID arrays described in this section:

**RAID 0:** RAID 0 defines a disk striping scheme that improves the disk read and write times for many applications.

**RAID 1:** RAID 1 defines techniques for mirroring data.

**RAID 0+1:** RAID 0+1 combines the techniques used in RAID 0 and RAID 1 arrays.

**Spanning (JBOD):** JBOD provides a method for combining drives of different sizes into one large disk.

### Summary of RAID Configurations

Array	Uses	Advantages	Drawbacks	# Hard Disks	Fault Tolerance
<b>RAID 0</b>	Non-critical data requiring high performance.	High data throughput.	No fault tolerance.	multiple	None
<b>RAID 1</b>	Small databases or any other small capacity environment requiring fault tolerance.	100% data redundancy.	Requires 2 drives for the storage space of 1 drive.	2	Yes
<b>RAID 0+1</b>	Critical data requiring high performance.	Optimized for both 100% data redundancy and performance. Allows spare disks.	Requires 2 drives for the storage space of 1 drive—the same as RAID level 1.	4+	Yes
<b>JBOD</b>	Combining odd size drives into one big drive	Combines and uses the capacity of odd size drives.	Decreases performance because of the difficulty in using drives concurrently or to optimize drives for different uses.	Multiple	No



#### MSI Reminds You...

Please note that the companion MSI Driver/Utility CD supports this mainboard with **Windows 2000/XP** system drivers **ONLY**. Hence, users cannot install OS, either WinME or Win98, in their SATA hard drives.



## RAID Configuration

### Basic Configuration Instructions

The following are the basic steps for configuring NVRAID:

#### Non-Bootable RAID Array

1. Choose the hard disks that are to be RAID enabled in the system BIOS. (Check p. 3-17 for details.)
2. Specify the RAID level, either Mirroring (RAID 1), Striping (RAID 0), Striping and Mirroring (RAID 0+1), or Spanning (JBOD) and create the desired RAID array.
3. Enter the Windows OS, run the Windows nForce Setup application and install the RAID software. (Check p.B-7 for details.)
4. Initialize the NVRAID Array Disks.

#### Bootable RAID Array

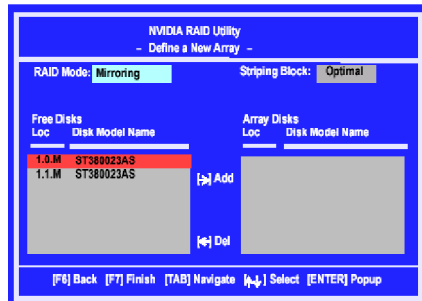
1. Choose the hard disks that are to be RAID enabled in the system BIOS. (Check p. 3-17 for details.)
2. Specify the RAID level, either Mirroring (RAID 1), Striping (RAID 0), Striping and Mirroring (RAID 0+1), or Spanning (JBOD) and create the desired RAID array.
3. Boot from the Windows OS, use the floppy disk that has the RAID driver to copy and install the nForce RAID software. (Check p.B-7 for details.)
4. Initialize the NVRAID Array Disks.

### Setting Up the NVRAID BIOS

Be sure to enable the *IDE RAID or SATA RAID* items in **SATA Devices Configuration of Integrated Peripherals** in BIOS (refer to p.3-17 for details) before configuring the NVRAID BIOS. After that press F10 to save the configuration and exit. The PC will reboot right away. Then enter the RAID BIOS Setup by pressing **F10** when prompted, and follow the procedures described below to set up the NVRAID BIOS. NVRAID BIOS setup lets you choose the RAID array type and which hard drives you want to make part of the array.

#### Entering the RAID BIOS Setup

1. After rebooting your PC, wait until you see the RAID software prompting you to press **F10**. The RAID prompt appears as part of the system POST and boot process prior to loading the OS.
2. Press **F10**, and the NVIDIA RAID Utility --- **Define a New Array** window will appear.  
The default **RAID Mode** is set to *Mirroring* and **Striping Block** is set to *Optimal*.



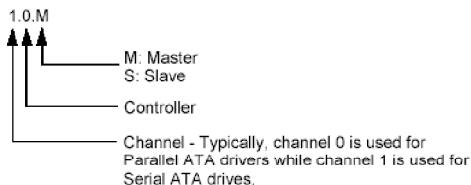
**Understanding the “Define a New Array” Window**

Use the Define a New Array window to

- Select the RAID Mode
- Set up the Striping Block
- Specify which disks to use for the RAID Array

Depending on the platform used, the system can have one or more channels. In a typical system there is usually one controller and multiple channels, and each channel has a slave and a master.

The channel/controller/master/slave status of each hard disk is given in the Loc (location) columns of the Free Disks and Array Disks lists.



In the example above, 1.0.M means the hard drive is attached to Channel 1, Controller 0, and the drive is set to Master. The following is a list of all possible combinations:

**Parallel ATA**

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**

1.0.M	Channel 1, controller 0, Master
1.1.M	Channel 1, controller 1, Master
2.0.M	Channel 2, controller 0, Master
2.1.M	Channel 2, controller 1, Master

**MSI Reminds You...**

*There is no such thing as Slave drive in Serial ATA. All drives are considered to be Master since there is a one to one connection between the drive and the controller.*

### Using the Define a New Array Window

If necessary, press the tab key to move from field to field until the appropriate field is highlighted.

- **Selecting the RAID Mode**

By default, this is set to [Mirroring]. To change to a different RAID mode, press the down arrow key until the mode that you want appears in the RAID Mode box—either [Mirroring], [Striping], [Spanning], or [Stripe Mirroring].

- **Selecting the Striping Block Size**

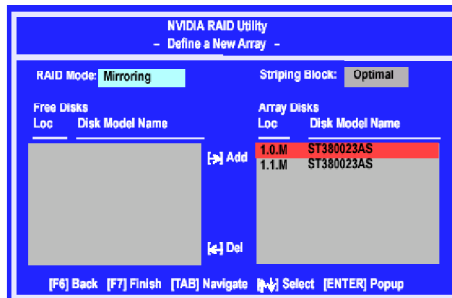
**Striping Block** size is given in kilobytes, and affects how data is arranged on the disk. It is recommended to leave this value at the default [Optimal], which is 32KB, but the values can be between [4 KB] and [128 KB].

- **Assigning the Disks**

The disks that you enabled from the RAID Config BIOS setup page appear in the **Free Disks** block. These are the drives that are available for use as RAID array disks.

To designate a free disk to be used as a RAID array disk,

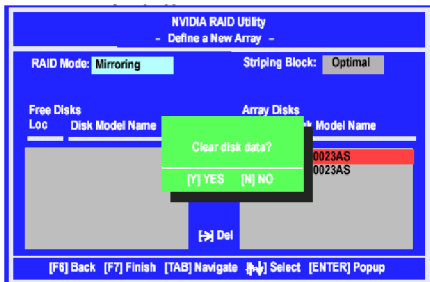
1. Tab to the **Free Disks** section. The first disk in the list is selected.
2. Move it from the Free Disks block to the Array Disks block by pressing the right arrow key (-->). The first disk in the list is moved, and the next disk in the list is selected and ready to be moved.
3. Continue pressing the right-arrow key (<-- ) until all the disks that you want to use as RAID array disks appear in the **Array Disks** block.



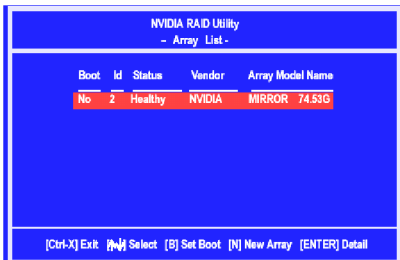
It shows that two disks have been assigned as RAID1 array disks in the figure above.

### Completing the RAID BIOS Setup

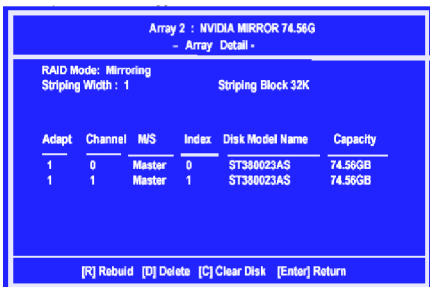
1. After assigning your RAID array disks, press **F7**. The Clear disk data prompt appears.



2. Press **Y** if you want to wipe out all the data from the RAID array, otherwise press **N**. You must choose **Yes** if the drives were previously used as RAID drives. The **Array List** window appears, where you can review the RAID arrays that you have set up.



3. Use the arrow keys to select the array that you want to set up, then press **Enter**. The **Array Detail** window appears.



4. If you want to mark this disk as empty and wipe out all its contents then press **C**.
5. At the prompt, press **Y** to wipe out all the data, otherwise press **N**.
6. Press **Enter** again to go back to the previous window and then press **Ctrl-X** to exit the RAID setup. Now that the RAID setup has been configured from the RAID BIOS, the next step is to configure and load NVRAID drivers under Windows, as explained in "Installing the NVIDIA RAID Software Under Windows" on pB-7.

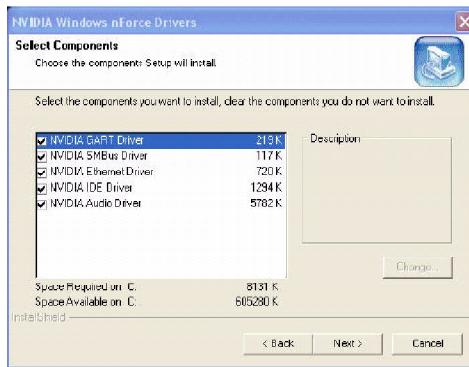
## NVIDIA RAID Utility Installation

### Installing the NVIDIA RAID Software Under Windows (for Non-bootable RAID Array)

The existing Windows IDE Parallel ATA driver (as well as the Serial ATA driver if SATA is enabled) must be upgraded to use the NVIDIA IDE Parallel ATA driver (as well as the NV Serial ATA driver if SATA is enabled).

This section describes how to run the setup application and install the RAID software which will upgrade the Windows IDE driver and install the RAID software.

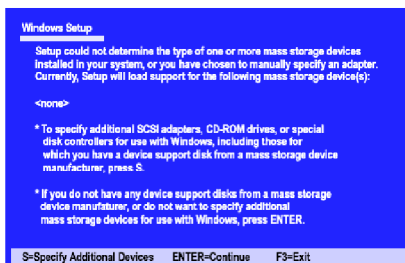
1. Start the nForce Setup program to open the NVIDIA Windows nForce Drivers page.



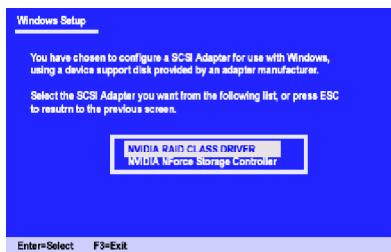
2. Select the modules that you want to install. Make sure that the “NVIDIA IDE Driver” is selected.
3. Click **Next** and then follow the instructions.
4. After the installation is completed, be sure to reboot the PC.
5. After the reboot, initialize the newly created array. See “Initializing and Using the Disk Array” on pB-10.

## Installing the RAID Driver (for bootable RAID Array)

1. After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows Setup program starts.
2. Press **F6** and wait for the Windows Setup screen to appear.



3. Specify the NVIDIA drivers:
  - (1) Insert the floppy that has the RAID driver, press S, then press Enter. The Windows Setup screen appears as below:

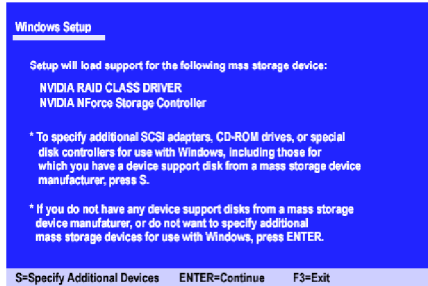


### MSI Reminds You...

Please follow the instruction below to make an nVIDIA RAID driver for yourself.

1. Insert the MSI CD into the CD-ROM drive.
2. Ignore the Setup screen and use "Explorer" to browse the CD.
3. Copy all the contents (excluding the subfolders) in the **\\nVidia\System\CK804\IDE\WinXP** or **\\nVidia\System\CK804\IDE\Win2K** to a formatted floppy disk.
4. The driver disk for nVIDIA RAID driver is done.

- (2) Select "NVIDIA RAID CLASS DRIVER" and then press **Enter**.
- (3) Press **S** again at the Specify Devices screen, then press **Enter**.
- (4) Select "NVIDIA NForce Storage Controller" and then press **Enter**. The following Windows Setup screen appears listing both drivers:



4. Press **Enter** to continue with Windows XP Installation. Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.
5. Follow the instructions on how to install Windows XP. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.



**MSI Reminds You...**

*Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed*

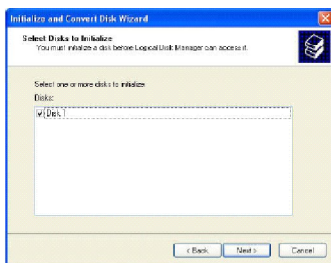
## Initializing and Using the Disk Array

The RAID array is now ready to be initialized under Windows.

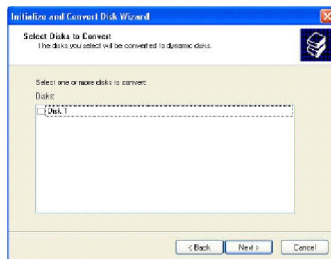
1. Launch Computer Management by clicking “Start” --> “Settings” --> “Control Panel” --> “Switch to Classic View” then open the “Administrative Tools” folder and double click on “Computer Management”.
2. Click “Disk Management” (under the “Storage” section). The Initialize and Convert Disk Wizards appears.



3. Click **Next**. The Select Disks to Initialize window appears. The disks listed depend on how many arrays you have configured.

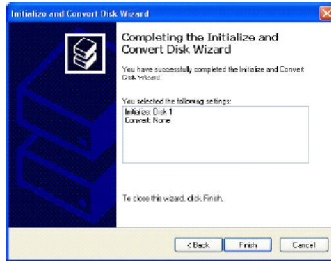


4. Click **Next**. The Select Disks to Convert window appears.

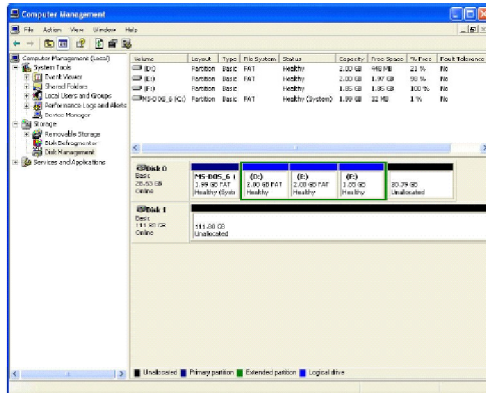




- Check the disk in the list if you want to make the array a dynamic disk, then click **Next**. The Completing the Initialize and Convert Disk Wizard window appears.



- Click **Finish**. The “Computer Management” window appears.



The actual disks listed will depend on your system, and the unallocated partition is the total combined storage of two hard disks. You must format the unallocated disk space in order to use it.

- Format the unallocated disk space. Right click “Unallocated space”, select “New Partition...” and follow the wizard. After the drive has been formatted, it is ready for use.

## RAID Drives Management

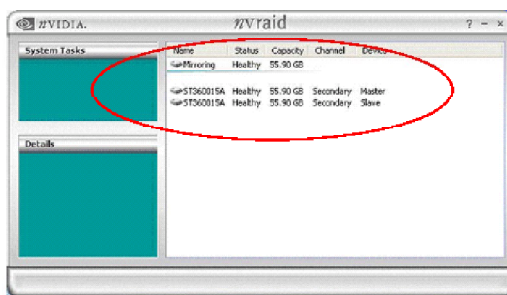
There is an application called NVRAIDMAN which helps you perform the following tasks of nVIDIA RAID.

- **Viewing RAID Array Configurations**  
View an array configuration (mirrored, striped, mirror-striped, JBOD, or any supported combination)
- **Setting Up a Spare RAID Disk**
  - View free and/or dedicated free disks
  - Designate a free disk to a particular array
- **Rebuilding a RAID Mirrored Array**
  - Rebuild a broken mirrored array
  - Watch the progress of rebuilding an array

### Viewing RAID Array Configurations

To view your RAID configuration from Windows, launch the NVRAID Management utility by double-clicking `NvRaidMan.exe` (the default location of `NvRaidMan.exe` is in `\\nVidia\System\CK804\IDE\WinXP\raidtool` or `\\nVidia\System\CK804\IDE\Win2K\raidtool` of the setup CD accompanied with your mainboard).

The RAID configuration information appears in the right-side pane, as shown below.



#### MSI Reminds You...

*The information in the figures in this part may vary from what it is shown in your system.*

### NVRAID Mirrored Array

The figure below shows an example of a two hard drive mirrored array using identical 55.90 GB IDE hard drives (ST360015A), where one drive is configured as Master and the other drive is configured as Slave. The total hard disk space used is 55.90 GB. (1.1 GB = 1,073,741,824 bytes)

Name	Status	Capacity	Channel	Device
Mirroring	Healthy	55.00 GB		
ST360015A	Healthy	55.00 GB	Secondary	Master
ST360015A	Healthy	55.90 GB	Secondary	Slave

### NVRAID Striped Array

The figure below shows an example of a two hard drive striped array using identical 55.90 GB IDE hard drives (ST360015A), where one drive is configured as Master and the other drive is configured as Slave. The total disk space used is 111.80 GB.

Name	Status	Capacity	Channel	Device
Striping	Healthy	111.80 GB		
ST360015A	Healthy	55.90 GB	Secondary	Master
ST360015A	Healthy	55.90 GB	Secondary	Slave

### NVRAID Striped Mirror Array

The figure below shows an example of a four hard drive stripe-mirrored array. The total disk space used is 111.80 GB.

Name	Status	Capacity	Channel	Device
Stripe Mirroring	Healthy	111.80 GB		
ST360015A	Healthy	55.90 GB	Secondary	Master
ST360015A	Healthy	55.90 GB	Secondary	Slave
ST360023AS	Healthy	74.53 GB	Primary	Master
ST360023AS	Healthy	74.53 GB	Secondary	Master

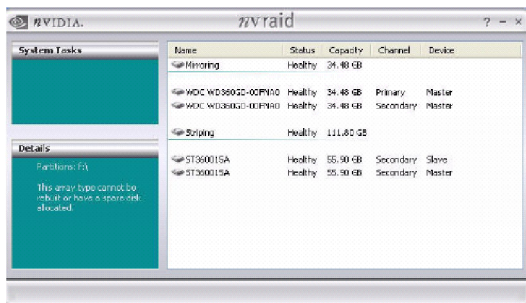
### NVRAID Spanning (JBOD) Array

The figure below shows an example of a two hard drive spanning array. The total disk space used is 111.80 GB.

Name	Status	Capacity	Channel	Device
Spanning	Healthy	111.80 GB		
ST360015A	Healthy	55.90 GB	Secondary	Master
ST360015A	Healthy	55.90 GB	Secondary	Slave

### NVRAID Mirrored Array and a Striped Array

The figure below shows an example of a two hard drive mirrored array as well as a two hard drive striped array.



## Setting Up a Spare RAID Disk

You can designate a hard drive to be used as a spare drive for a RAID 1 or RAID 0+1 array<sup>2</sup>. The spare drive can take over for a failed disk. NVRAID supports two types of spare drives:

- **Free Disk**

A free disk is a disk that is not part of any RAID array, but can be used by any available RAID 1 or RAID 0+1 array that requires a particular disk when one of its disks crashes or becomes unusable. The process is automatic and doesn't require any user interaction.

For example, if you have a system with four hard disks where one disk is used to boot the OS, two hard drives are set up in a mirrored array, and a fourth hard disk is set up as a free disk, then if one of the mirrored array drives fails, the free disk will be automatically assigned to the mirrored array to be used instead of the failed disk.

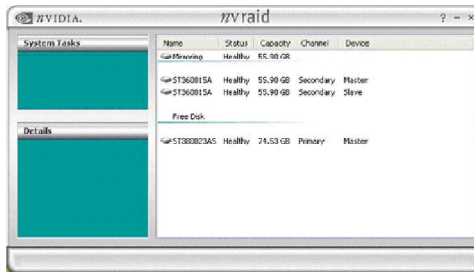
- **Dedicated Disk**

A dedicated free disk is a disk that is assigned to a RAID 1 or RAID 0+1 array and that disk is used by that array only when needed, for example during a system crash where a RAID mirrored drive is broken. The dedicated disk can be used only by the array that it is assigned to and not by any other array, unlike a free disk which can be used by any available RAID 1 or RAID 0+1 array.

## Assigning a Free Disk

To mark a disk as free, or not a part of any array,

1. Enter the system BIOS setup and make sure that the drive that you want to mark as free is RAID enabled.
2. Enter the RAID BIOS and make sure that the drive is not part of any array (if one exists).
3. Boot into Windows and run the NVRAIDMAN program. The drive appears under the Free Disk section. The figure below shows an example of the NVRAIDMAN display if you have a mirror array and one free disk.



## Assigning a Dedicated Disk

To mark a disk as dedicated, or reserve it for use by a specific array,

### Step 1: Mark the Disk as a Free Disk

1. Enter the system BIOS setup and make sure that the drive that you want to mark as free is RAID enabled.
2. Enter the RAID BIOS and make sure that the drive is not part of any array (if one exists).
3. Boot into Windows and run the NVRAIDMAN program. The drive appears under the Free Disk section.

### Step 2: Dedicate the Free Disk to an Array

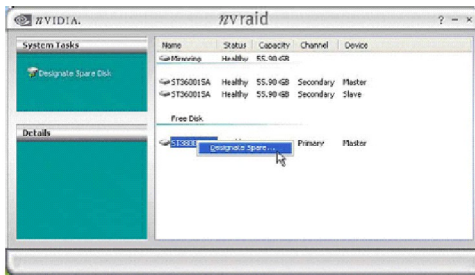
While running NVRAIDMAN, dedicate the free disk to an array using one of the following two methods:

- Method 1: Select a free disk and then assign it to an array.
- Method 2: Select an array and then assign a free disk to it.

Both methods are equally simple ways of accomplishing the same task.

#### Method 1: Select a free disk and then assign it to an array.

1. Right click one of the available disks under the Free Disk section. The pop-up menu appears.

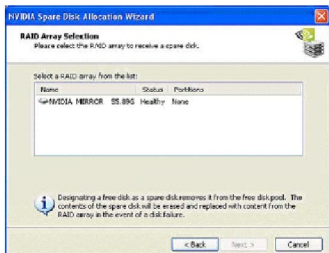


2. Select **Designate Spare** from the menu to launch the Spare Disk Allocation Wizard.



3. Click **Next**.

The RAID Array Selection page appears.

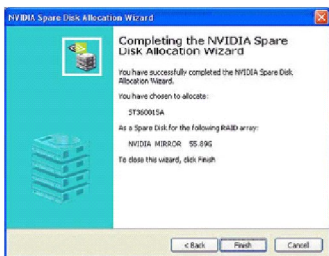


4. From the RAID Array Selection page, select one of the arrays from the list. This is the array to which you want to allocate the dedicated free disk.

**Note:** There is only one array created on the system.

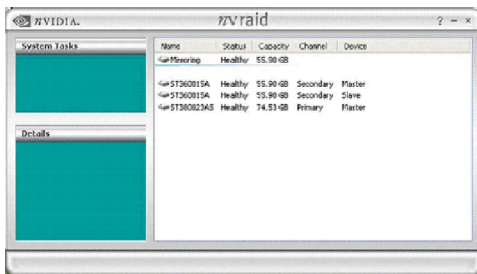
5. Click **Next**.

The Completing the NVIDIA Spare Disk Allocation page appears.



6. Click **Finish**.

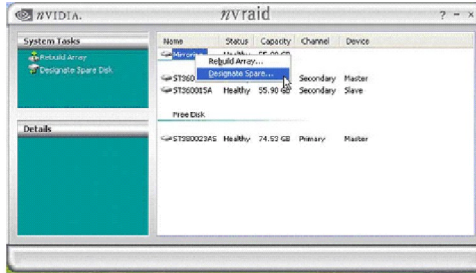
As shown in figure below, the ST380023AS drive is now a dedicated free disk in the mirrored array. If a system crash occurs that causes any of the two ST360015A drives to fail, the ST380023AS hard drive will take over and be used in the newly formed mirrored array.



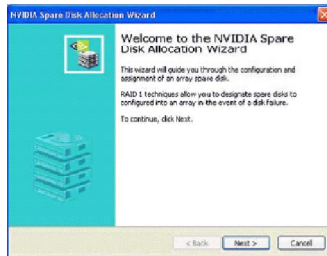
Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.

**Method 2: Select an array and then assign a free disk to it.**

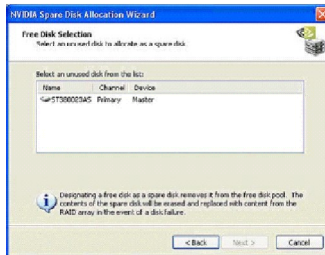
1. Right click on the array to which you want to assign a dedicated free disk. The pop-up menu appears.



2. Select **Designate Spare** from the menu to launch the Spare Disk Allocation Wizard.

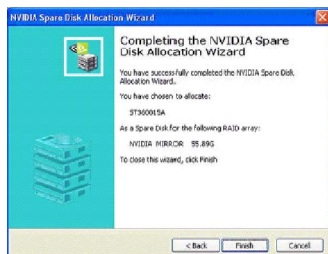


3. Click **Next**. The Free Disk Selection page appears.



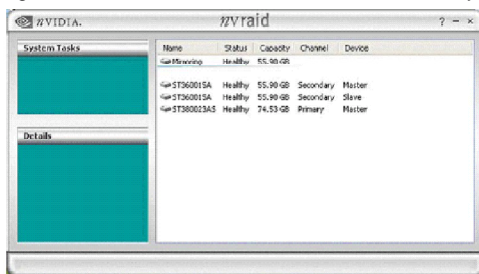
4. From the Free Disk Selection page, select one of the disks from the list. Please note that there can be more than one disk to choose from.

5. Click **Next**. The Completing the NVIDIA Spare Disk Allocation page appears.



6. Click **Finish**.

You have now assigned a dedicated free disk to a mirrored array.



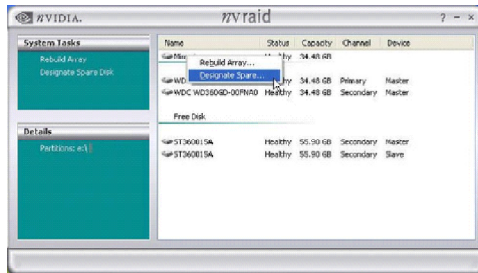
Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.



### Example of Dedicating a Free Disk in a RAID 1 or RAID 0+1 Array

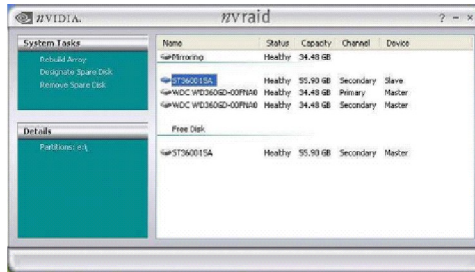
You can also assign a dedicated free disk to a RAID 1 or a RAID 0+1 array, using the same process.

1. Right-click either the free disk that you want to dedicate to an array, the array type, or the array drives as shown in the figure below. Then click **Designate Spare** to launch the Spare Disk Allocation Wizard.



2. Click **Designate Spare** and then follow the instructions in the Wizard. The figure below shows an example of a RAID 1 array that has one spare disk dedicated to it.

Once a dedicated disk has been assigned to a particular array, it can be removed at any time. To remove the disk, right click on the dedicated disk and select the option to remove it.



## Rebuilding a RAID Mirrored Array

Rebuilding is the process of recovering data from one hard drive to another. All data is copied from one hard drive to another and then the data is synchronized between the two hard drives. This only applies to RAID 1 array as well as a RAID 0+1 array.

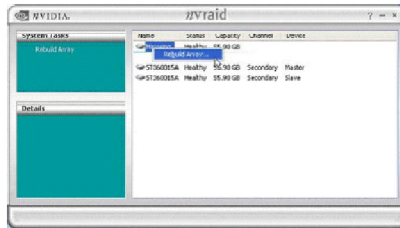
### Rebuilding Instructions

After creating a mirrored array, you can rebuild the array using the following steps:

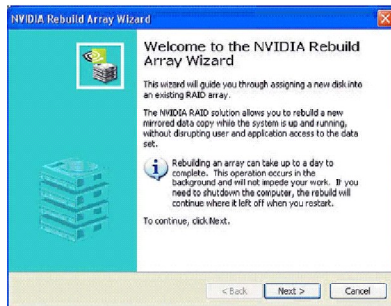
1. Go to Windows and run the NVRAID Management utility. The figure below shows an example of a system with one mirrored array.



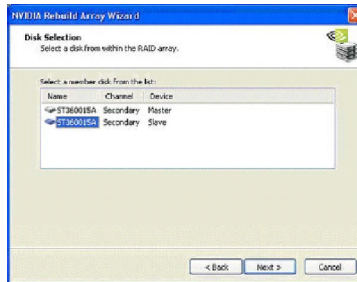
2. Right-click on Mirroring. The popup menu appears.



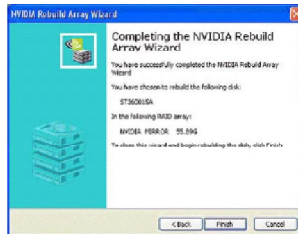
3. From the popup menu, click **Rebuild Array**. The NVIDIA Rebuild Array Wizard appears.



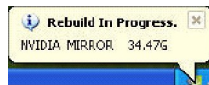
4. Click **Next**. The Disk Selection page appears.



5. Select the drive that you want to rebuild by clicking it from the list, then click **Next**. The Completing the NVIDIA Rebuild Array page appears.



6. Click **Finish**. The array rebuilding starts after a few seconds, and a small pop-up message appears towards the bottom right corner of the screen as shown in the figure below.



During the rebuilding process, the NVRAID Management utility screen shows the status under the System Tasks and Details sections.

**More About Rebuilding Arrays**

• **Rebuilding Occurs in the Background**

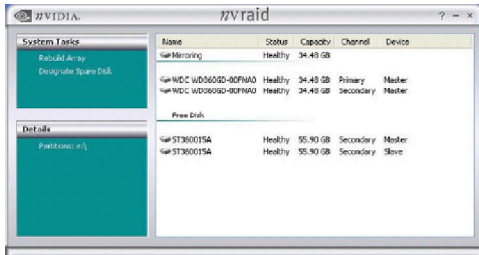
The rebuilding process is very slow (it can take up to a day) and occurs in the background so as not to affect the performance of the system.

• **Rebuilding Applies Only to RAID 1 or RAID 0+1 Arrays**

Rebuilding an array works only when using RAID1 and/or RAID 0+1. Rebuilding does not apply to RAID 0 and JBOD arrays.

• **You Can Use Any Available Free Disk**

You can rebuild a mirrored array using any available Free Disk or Dedicated Disk. For example, the figure below shows a mirrored array using 34.48 GB HD while having two Free Disks each 55.90 GB large.



To use one of these available free disks to rebuild your array, follow the same steps as explained in "Rebuilding a RAID Mirrored Array" on p.B-20, except when prompted to select a disk, choose one of the two available free disks.