USER'S MANUAL
Of
NVIDIA MCP78S
Based
M/B For Socket AM2+ Quad Core
AMD Processor

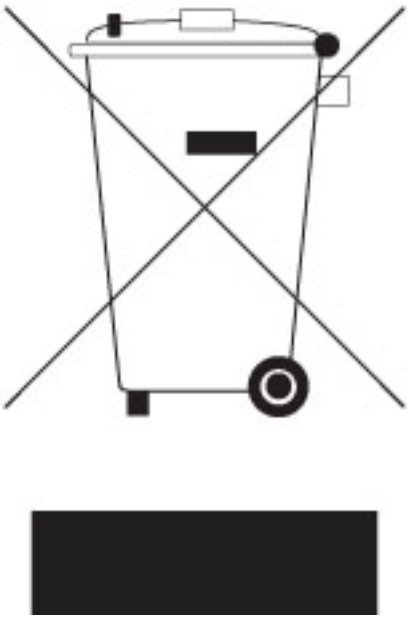
NO. G03-BA300S-F

Rev：1.0

Release date: May. 2008

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



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USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	May 2008

Item Checklist

- ☑ MCP 78S Platform Processor Chipset based motherboard
- ☑ CD for motherboard utilities
- ☑ User's Manual
- ☑ I/O Back panel
- ☑ I/O Back Panel Sticker
- ☑ 4 in 1 cable package
- ☑ Kuroshio Promotion Card

AMD K10 Processor Family
Cooling Solutions

As processor technology pushes to faster speeds and higher performance with increasing operation clock, thermal management becomes increasingly crucial while building computer systems. Maintaining the proper computing environment without thermal increasing is the key to reliable, stable, and 24 hours system operation. The overall goal is keeping the processor below its specified maximum case temperature. Heatsinks induce improved processor heat dissipation through increasing surface area and concentrated airflow from attached active cooling fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, AMD recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.

Please refer to the website below for collection of heatsinks evaluated and recommended for Socket AM2+ processors by AMD. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support Socket-AM2+ processors.

For vendor list of heatsinks and Active cooling fans, please visit：
http://www.amd.com/us-en/Processors/DevelopWithAMD/0,30_2252_869_9460^9515,00.html

Chapter 1

Introduction of MCP78S Motherboards

1-1 Features of motherboard

The MCP78S chipset motherboard series are based on the latest MCP78S Chipset which supports the innovative 64-bit AMD Socket AM2+ dual core multi-tasking Socket AM2+ Athlon64 X2 processors. With an integrated low-latency high-bandwidth DDRII memory controller and a highly-scalable Hyper Transport technology-based system bus up to HT 3.0. MCP78S Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution with the advantages of new generation 64-bit AMD Socket AM2+ and Socket AM2 AMD Phenom™ FX, AMD Phenom™ Athlon64 FX ， Athlon64 X2，Athlon64 & Sempron processors.

The MCP78S Series motherboards support new generation Socket AM2+ processors with an integrated DDRII memory controller for Dual channel DDRII 400/ DDRII533 /DDRII667 /DDRII800/DDRII1066 DDRII Module up to 8GB. Moreover, the motherboard provides also extra 1 Ultra ATA interface for one IDE device of 133 MB / s data transfer rate and six serial ATA interface of 3.0 Gb / s data transfer rate.

The MCP78S motherboards provide 10/100/1000 LAN function with **Realtek RT8211B LAN PHY** Gigabit LAN **Chip** which supports 10/100/1000Mbps data transfer rate. And the embedded Azalia 6-channel Audio CODEC is fully compatible with Sound Blaster Pro standards that offer you with the home cinema quality and satisfying software compatibility.

The MCP78S Series motherboards provide 1 x16@16 lane PCI Express 2.0 slot to support simultaneous operation of graphics card for astonishing performance with brilliant and intense 3D graphics. This PCI-Express2.0 x16@16 deliver up to 8Gbyte/sec data transfer rate at each relative direction. One PCI Express x1 I/O slot offers 512 Mbyte/sec concurrently, over 3.5 times more bandwidth than PCI at 133Mbye/sec, tackling the most demanding multimedia tasks nowadays .The MCP78S motherboards also carry four 32-bit PCI slots to guarantee the rich connectivity for the I/O peripheral devices.

Hybrid SLI® technology provided by MCP78S series motherboards is based on NVIDIA's industry-leading SLI technology. It delivers multi-GPU (graphics processing unit) benefits when an NVIDIA® motherboard GPU is combined with an NVIDIA discrete GPU （GeForce8400GS and GeForce8500GT only）. Hybrid SLI increases graphics performance with GeForce® Boost and provides intelligent power management with HybridPower™. GeForce Boost turbocharges the performance of NVIDIA discrete GPUs when combined with NVIDIA motherboard GPUs. Plug any NVIDIA Hybrid SLI-enabled GPU into any NVIDIA Hybrid SLI-enabled motherboard to enjoy additive performance and more for your money. HybridPower™ unleashes graphics performance when needed and switches to quiet, low-power quiet operation for everyday computing. Plug any NVIDIA Hybrid SLI-enabled GPU into any NVIDIA Hybrid SLI-enabled motherboard for the ultimate control. Dial up performance for demanding 3D games and applications; reduce noise and power consumption

for everyday computing tasks like browsing the Web, word processing, or watching HD videos.

Embedded USB controllers as well as capability of expanding to 10 of USB2.0 functional ports delivering 480Mb/s bandwidth of rich connectivity, these motherboards meet the future USB demands which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Some special features--- CPU Thermal Throttling/ CPU Vcore X-shift / CPU Smart Fan / OC-CON in this motherboard are designed for power user to utilize the over-clocking function in more flexible ways. But please be caution that the over-clocking may cause the failure in system reliabilities. This motherboard provides the guaranteed performance and meets the demands of the next generation computing. But if you insist to gain more system performance with variety possibilities of the components you choose, please be careful and make sure to read the detailed descriptions of these value added product features, please get them in the coming section.

1-1.1 Special Features of Motherboard

CPU Thermal Throttling Technology---(The CPU Overheat Protection Technology)
To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter partially idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 40℃ to 90℃). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working. (For detail operating please read Section 3-11 Bi-turbo Configuration)

CPU Smart Fan---(The Noise Management System)
It's never been a good idea to gain the performance of your system by sacrificing its acoustics. CPU Smart Fan Noise Management System is the answer to control the noise level needed for now-a-day's high performance computing system. The system will automatically increase the fan speed when CPU operating loading is high, after the CPU is in normal operating condition, the system will low down the fan speed for the silent operating environment. The system can provide the much longer life cycle for both CPU and the system fans for game use and business requirements.

CPU Vcore X-Shift--- (Shift to Higher Performance)
The CPU voltage can be adjusted up by 32 steps for the precisely over-clocking of extra demanding computing performance.

OC-CON ---（High-polymer Solid Electrolysis Aluminum Capacitors）
The working temperature is from 55 degrees Centigrade below zero to 125 degrees Centigrade, OC-CON capacitors possess superior physical characteristics that can be while reducing the working temperature between 20 degrees Centigrade each time, intact extension 10 times of effective product operation lives, at not rising degrees Centigrade of working temperatures each time a relative one, life of product decline 10% only too.

1-2 Specification

Spec	Description
Design	● ATX form factor 4 layers PCB size: 30.5cmx22.0cm
Chipset	● MCP78S single Chipset
CPU Socket AM2+	● Support 64bit AMD Athlon64 940-Pin package utilizes Flip-Chip Pin Grid Array package processor ● Support for future AMD Athlon64 940-pin Dual –Core Athlon 64x2 processor, Athlon 64 & Sempron Processors with HTT Frequency 1GHz and the latest AMD Phenom™ FX, AMD Phenom™ processors with HT 3.0.
Memory Socket	● 240-pin DDRII Module socket x 4 ● Support 4pcs DDRII400/DDRII533/DDRII667/DDRII800 Modules Expandable to 8 GB ● Dual channel supported
Expansion Slot	● 1 pcs PCI-Express 2.0 x16 16 lane ● 1pcs PCI-Express x1 slot ● 32-bit PCI slot x 4pcs
Integrate IDE and Serial ATA2 RAID	● One IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s for 2 IDE Devices and for 4 Serial ATA2 ports providing 300 MB/sec data transfer rate with RAID 0, 1, 1+0 ,5 ,JBODfunctions
Gigabit LAN	● Integrated Realtek 8211B Gigabit LAN PHY chip. ● Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000 Mb/s data transfer rate
8 CH-Audio	● Realtek ALC662 Azalia 6-channel Audio Codec integrated ● Audio driver and utility included
BIOS	● Award 8MB Flash ROM BIOS
Multi I/O	● VGA Connector ● HDMI Connector ● PS/2 keyboard and PS/2 mouse connectors ● Audio connector x2 (Line-in, Line-out, MIC/ 6CH Audio) ● USB2.0 port x 4 and headers x 4 ● RJ45 LAN Connector x1 ● Floppy disk driver connector x1 ● Hard disk driver connector x 1 ● Serial port header x1 ● Parallel header x1 ● HDMI-SPDIF header x1

1-3 Performance List

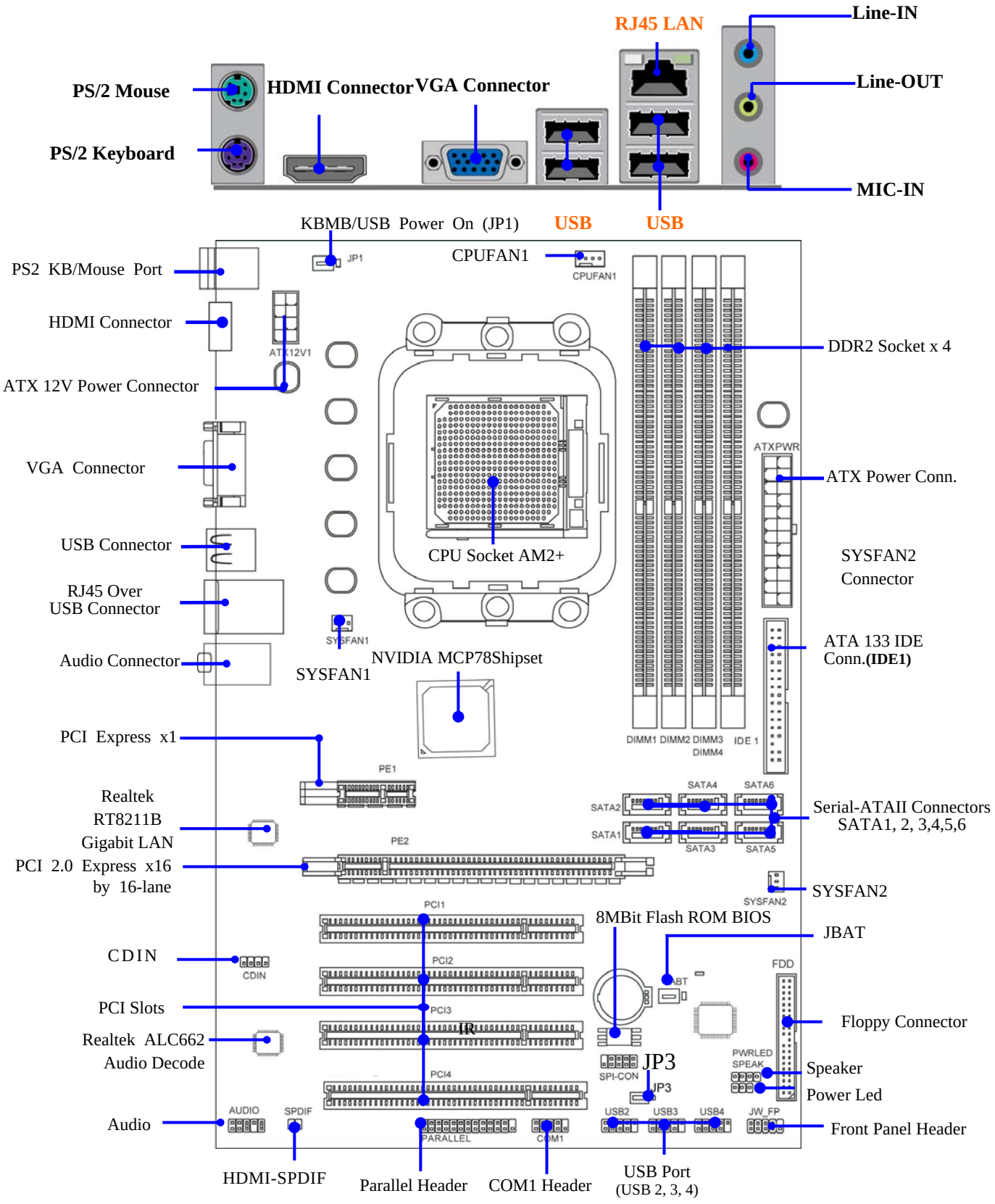
The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark testing results.)

CPU: AMD K8 Phenom 9600 (AM2 / 512K L2 cache)
DRAM: Crucial DDR2-800 1G X 2 Total 2G Memory (Dual channel)
VGA Card: Onboard VGA share 128M (1024X768X32BIT Color)

Hard Disk Driver: Seagate ST3160811As SATAII
CD-ROM: Pioneer DVD-RW CD-ROM
Floppy Disk Driver: NEC 1.44M FDD
OS: Windows XP Professional SP 2 / Cool & Quiet disable

主板	MCP78S
BIOS	N8G3SL7
GPUZ Clock/ Memory Clock / Shader	500MHZ/400MHZ / 1200MHZ
3D MARK 2001SE	10685
3D MARK 2003	4136
3D MARK 2005	2446
3D MARK 2006	1226
AQUAMRK3(GFX/CPU)	36572(4551 / 9302)
PCMARK2005	
System / CPU / Memory	5165 / 6754 / 4334
Graph / HDD	2334 / 4024
Content Creation Winstone 2004	39.2
Business Winstone 2004	25.8
SysMark 2007: Sysmark Official Rating	
E-Learning	100
Video Creation	120
Productivity	78
3D	121
SysMark 2007 Preview Rating	103
SISOFT Sandra 2008 : 1.Processor Arithmetic Benchmark 2.Memory bandwidth Benchmark 3.CPU Multi-Media Benchmark	
1.Dhrystone ALU MIPS	29970
Whetstone FPU iSSE3 FLOPS	29378
2.Int/Float Buffered iSSE2 GB/S	8.95 / 8.94
3.Integer/Floating-Point SSE2 IT/S	86640 / 113976
DOOM3 FPS	45.1
SuperPi (1M) Second	34s
CPUZ System/Memory/CPU Mhz	200.0 / 400.1 / 2300.2

1-4 Layout Diagram



Jumpers

Jumper	Name	Description	Page
JP1	Keyboard/USB Power On Enabled/Disabled	3-pin Block	P.7
JP3	USB Power On Enabled/Disabled	3-pin Block	P.7
JBAT	Clear CMOS	3-pin Block	P.8

Connectors

Connector	Name	Description	Page
ATXPWR	ATX Power Connector	24-pin Block	P.13
ATX12V	ATX 12V Power Connector	8-pin Block	P.13
VGA	VGA Port Connector	15-pin Female	P.15
HDMI	HDMI Port Connector	9-pin Block	P.15
KB	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.14
US1 for USB	USB2.0 Port Connector	4-pin Connector	P.14
UL3 for USB	USB2.0 Port Connector	4-pin Connector	P.14
UL3 for RJ45LAN	Gigabit LAN Port Connector	RJ-45 Connector	P.14
AUDIO1	8-CH HD Audio Connector	6- phone jack Conn.	P.14
FDD	Floppy Driver Connector	34-pin Block	P.14
IDE1	Primary IDE Connector	40-pin Block	P.14
SATA1, SATA2, SATA3,SATA4, SATA5,SATA6	Serial ATAII IDE Connectors	7-pin Connector	P.15

Headers

Header	Name	Description	Page
AUDIO1	Front Panel SPEAKER, MIC header	9-pin Block	P.16
USB2, USB3,USB4	USB Port Headers	9-pin Block	P.16
SPEAK	PC Speaker connector	4-pin Block	P.16
PWR LED	Power LED	3-pin Block	P.16
JW_FP (Reset Button /Power Button/IDE LED/PowerLED)	Front Panel Header (including IDE activity LED/Reset switch / Power On Button lead)	9-pin Block	P.16
SYSFAN1， SYSFAN 2	FAN Headers	3-pin Block	P.17
CPUFAN	FAN Header	4-pin Block	P.17
CDIN	CD Audio-In Header	4-pin Block	P.18
COM1	Serial Port COM1 Header	9-pin Block	P.18
Parallel	Parallel l Port Header	25-pin Block	P.18
HDMI-SPDIF	SPDIF Out header	2-pin Block	P.18

Expansion Sockets

Socket/Slot	Name	Description	Page
ZIF Socket AM2+	CPU Socket	940-pin mPGAB Athlon64 CPU Socket	P.9
DIMM1~4	DDRII Module Socket	240-pin DDRII Module Socket	P.10
PCI1~ PCI4	PCI Slots	32-bit PCI Local Bus Expansion slots	P.12
PE2	PCI-Express x1Slot	PCI-Express x1 Expansion Slot	P.12
PE1	PCI-Express2.0x16 Slot	PCI-Express 2.0 x16 Expansion Slot	P.12

Chapter 2
Hardware Installation

WARNING! Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

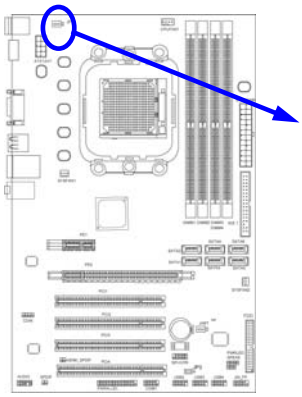
2-1 Hardware installation Steps

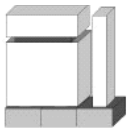
Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver and Utility

2-2 Checking Motherboard's Jumper Setting

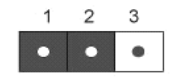
(1) Keyboard/USB function Enabled/Disabled: JP1





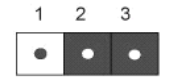
JP1

1-2 Closed KB/USB Power ON Disable (Default)



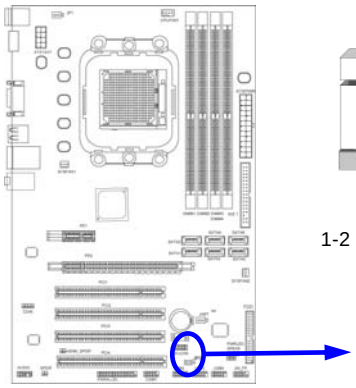
JP1

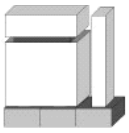
2-3 Closed KB/USB Power ON Enabled



Keyboard/Mouse & USB Power On Setting

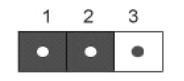
(2) USB function Enabled/Disabled: JP3





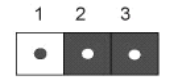
JP3

1-2 Closed USB Power ON Disable (Default)



JP3

2-3 Closed USB Power ON Enabled



USB Power On Setting

(2) CMOS RAM Clear (3-pin): JBAT

A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JPAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

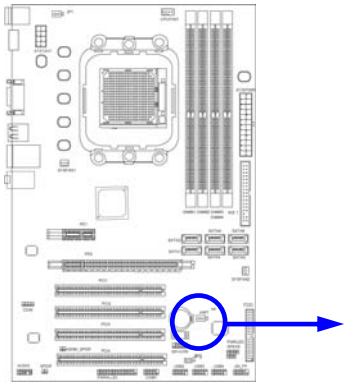
1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

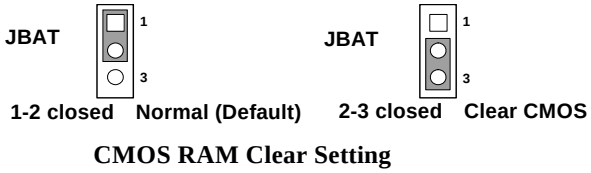
Note: When should clear CMOS

1. Troubleshooting

2. Forget password

3. After over clocking system boot fail





CMOS RAM Clear Setting

2-3 Install CPU

2-3-1 Glossary

Chipset (or core logic) - two or more integrated circuits which control the interfaces between the system processor, RAM, I/O devises, and adapter cards.

Processor socket - the socket used to mount the system processor on the motherboard.

Slot (PCI-E, PCI, RAM) - the slots used to mount adapter cards and system RAM.

PCI - **P**eripheral **C**omponent **I**nterconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

PCI Express2.0- Peripheral Component Interconnect Express2.0, developed in 2003, the speed of each line doubled from the previous PCI-E of 2.5 Gbps to 5 Gbps.

Serial Port - a low speed interface typically used for mouse and external modems.

Parallel Port - a low speed interface typically used for printers.

PS/2 - a low speed interface used for mouse and keyboards.

USB - **U**niversal **S**erial **B**us - a medium speed interface typically used for mouse, keyboards, scanners, and some digital cameras.

Sound (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, game controllers, and MIDI sound devices.

LAN (interface) - **L**ocal **A**rea **N**etwork - the interface to your local area network.

BIOS (**B**asic **I**nput/**O**utput **S**ystem) - the program logic used to boot up a computer and

establish the relationship between the various components.
Driver - software, which defines the characteristics of a device for use by another device or other software.
Processor - the "central processing unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"
Front Side Bus Frequency - the working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.
CPU L2 Cache - the flash memory inside the CPU, normal it depend on CPU type.

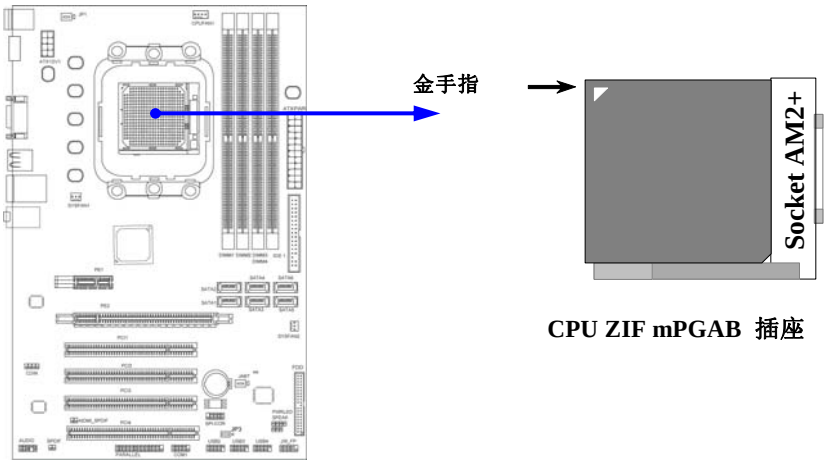
2-3-2 About AMD Athlon64 Socket AM2+ CPU

This motherboard provides a 940-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supports AMD AM2+ processor in the 940 Pin package utilizes Flip-Chip Pin Grid Array package technology.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

WARNING!	Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.



CPU ZIF mPGAB 插座

When you put the CPU into the ZIF socket, No force required to insert of the CPU, and then press the level to locate position slightly without any extra force.

2-4 Install Memory

This motherboard provides four 240-pin DDR2 DUAL INLINE MEMORY MODULES (DIMM) socket for DDR2 memory expansion available from minimum memory volume of 128MB to maximum memory volume of 8 GB DDR SDRAM.

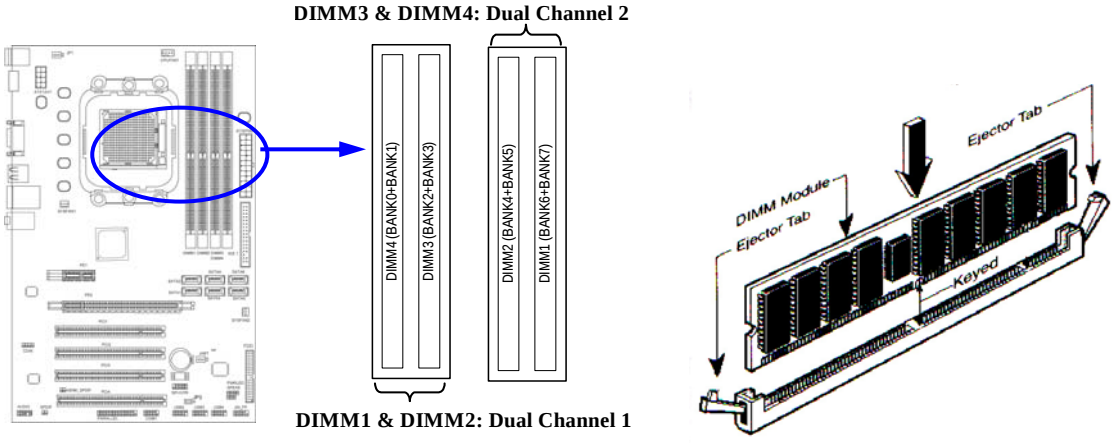
Valid Memory Configurations

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR2 800/DDR2 1066	X1	128MB~2GB
Bank 2, 3 (DIMM2)	DDR2 800/DDR2 1066	X1	128MB~2GB
Bank 4, 5 (DIMM3)	DDR2 800/DDR2 1066	X1	128MB~2GB
Bank 6, 7 (DIMM4)	DDR2 800/DDR2 1066	X1	128MB~2GB
Total	System Memory (Max 8GB)	4	128MB~8GB

Dual channel Limited!

1. Dual channel function only supports when 2 DIMM Modules plug in either both DIMM1 & DIMM2or DIMM3 &DIMM4, or four DIMM Modules plug in DIMM1~DIMM4.
2. DIMM1 & DIMM2, or DIMM3& DIMM4 must be the same type, same size, same frequency for dual channel function.

Install DDR SDRAM modules to your motherboard is not difficult, you can refer to figure below to see how to install a 240-Pin DDR2 800/DDR2 1066 SDRAM module.



Graph 2-4

NOTE!	When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indention on both sides.

2-5 Expansion Cards

2-5-1 Procedure For Expansion Card Installation

1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.
3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

2-5-2 Assigning IRQs For Expansion Card

Some expansion cards need an IRQ to operate. Generally, an IRQ must exclusively assign to one use. In a standard design, there are 16 IRQs available but most of them are already in use.

Standard Interrupt Assignments

IRQ	Priority	Standard function
0	N/A	System Timer
1	N/A	Keyboard Controller
2	N/A	Programmable Interrupt
3 *	8	Communications Port (COM2)
4 *	9	Communications Port (COM1)
5 *	6	Sound Card (sometimes LPT2)
6 *	11	Floppy Disk Controller
7 *	7	Printer Port (LPT1)
8	N/A	System CMOS/Real Time Clock
9 *	10	ACPI Mode when enabled
10 *	3	IRQ Holder for PCI Steering
11 *	2	IRQ Holder for PCI Steering
12 *	4	PS/2 Compatible Mouse Port
13	N/A	Numeric Data Processor
14 *	5	Primary IDE Channel
15 *	1	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

2-5-3 Interrupt Request Table For This Motherboard

Interrupt request are shared as shown the table below:

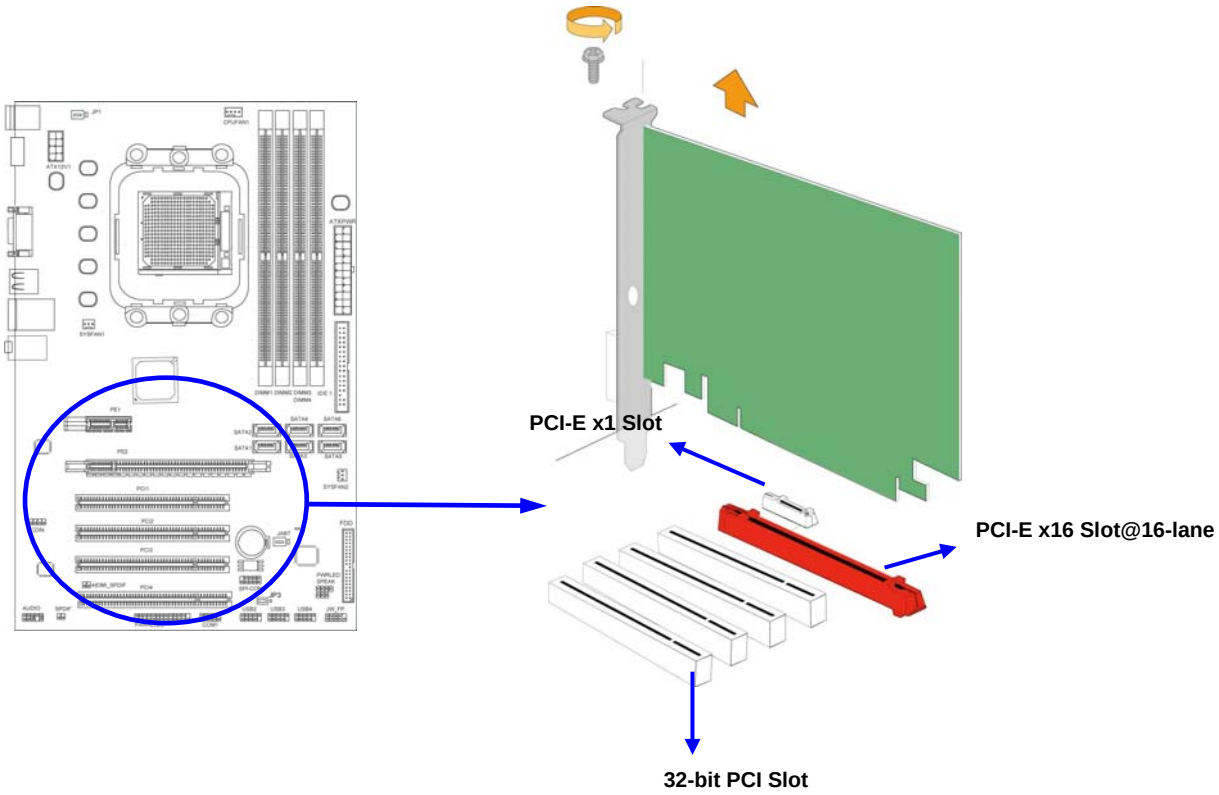
	INT A	INT B	INT C	INT D	INT E	INT F	INT G	INT H
Slot 1	√							
Slot 2		√						
Onboard USB 3			√					
HD Audio/MC97			√					

NOTE! If using PCI cards on shared slots, make sure that the drivers support "Shared IRQ" or that the cards don't need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

2-5-4 PCI Express Slot

One PCI-Express2.0 x16@16 lane graphic slot offer 8Gbyte/sec data transfer rate at each relative direction and up to 16Gbyte/sec concurrent bandwidth at full speed. Fully compliant to the *PCI Express Base Specification revision2.0*, support PCI Express VGA card, and other PCI Express device.

One x1 PCI Express Slot offer 512Mbyte/sec concurrently over 3.5 times more bandwidth than PCI at 133Mbye/sec, tackling the most demanding multimedia tasks nowadays.



2-6 Connectors, Headers

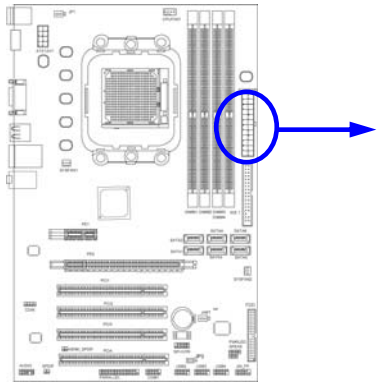
2-6-1 Connectors

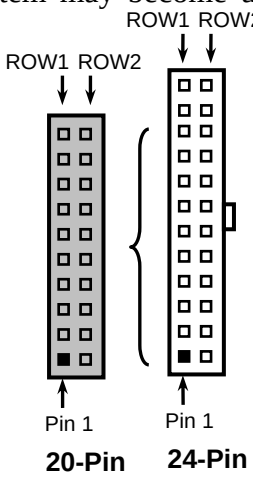
(1) Power Connector (24-pin block) : ATXPWR

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.

** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.

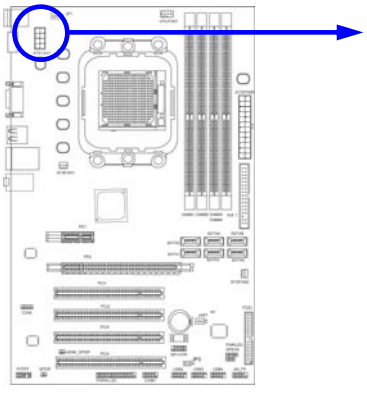


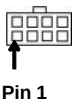


PIN	ROW1	ROW2
1	3.3V	3.3V
2	3.3V	-12V
3	GND	GND
4	5V	Soft Power On
5	GND	GND
6	5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V (for Soft Logic)	+5V
10	+12V	+5V
11	+12V	+5V
12	+3V	GND

(2) ATX 12V Power Connector (8-pin block) : ATX12V

This is a new defined 8-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports Socket AM2+ processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.





(3) PS/2 Mouse & PS/2 Keyboard Connector: KB

The connectors are for PS/2 keyboard and PS/2 Mouse.

(4) USB Port connector:US1,UL3 for USB

The connectors are 4-pin connector that connects USB devices to the system board.

(5) LAN Port connector: UL3 for RJ45 LAN

This connector is standard RJ45 connector for network.It supports 10M/100Mb/1000Mb s data transfer rate

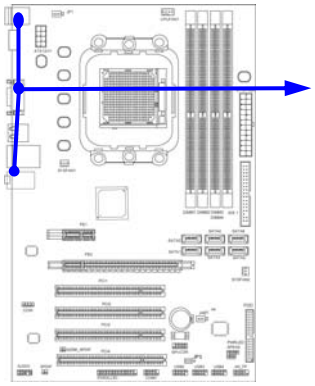
(6) Audio Line-In, Lin-Out, MIC Connector:Audio1

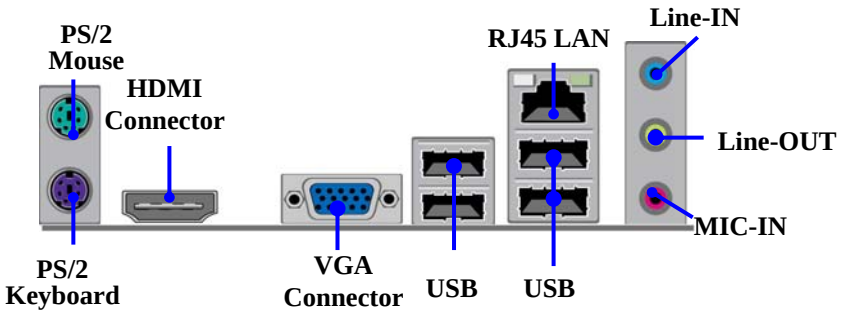
These Connectors are 6 Phone-Jack for LINE-OUT, LINE-IN, MIC audio connections.

Line-in : (BLUE) Audio input to sound chip

Line-out : (GREEN) Audio output to speaker

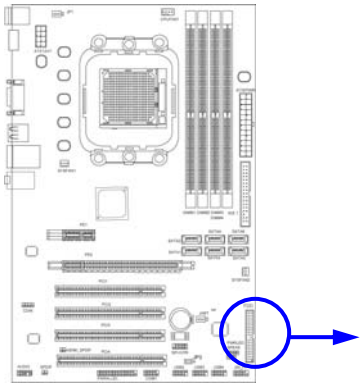
MIC : (PINK) Microphone Connector

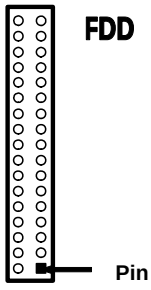




(7) Floppy drive Connector (34-pin block): FDD

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.

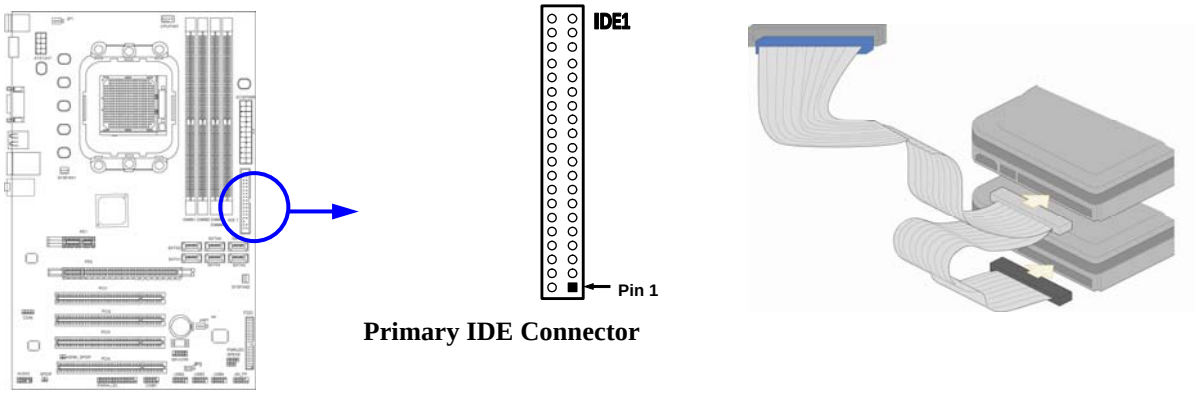




Floppy Drive Connector

(8) Primary IDE Connector (40-pin block): IDE1

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.

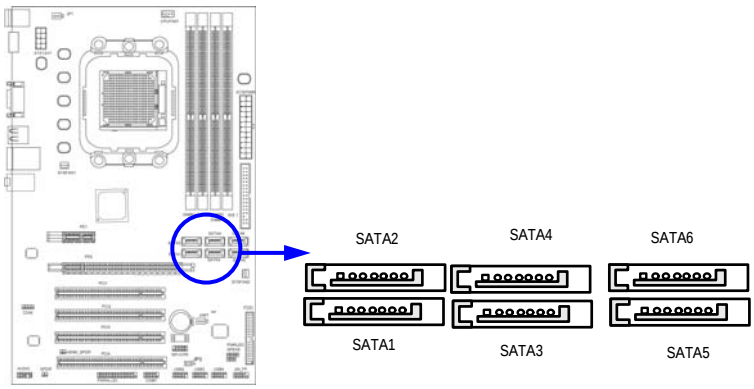


Primary IDE Connector

- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".
- For performance issues, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

(9) Serial-ATAII Port connector: SATA1, SATA 2, SATA3, SATA4, SATA5, SATA6

This connector supports the provided Serial ATA2 IDE hard disk cable to connecting the motherboard with serial ATAII hard disk.



Serial-ATA2 Compatible Connectors

(10) D-Sub 15-pin connector:VGA

VGA connector is the 15-pin D-subminiature female connector ;t is for the display devices, such as the CRT monitor, LCD monitor and so on.

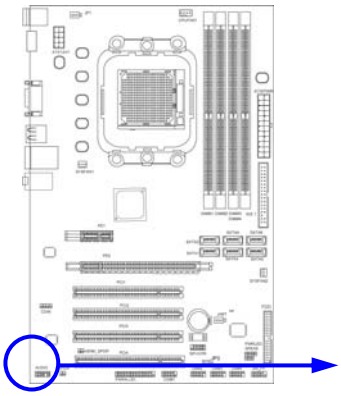
(11)HDMI connector ： HDMI

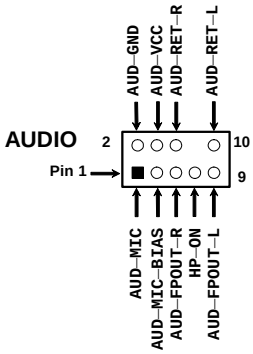
This point-to –point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipments.

2-6-2 Headers

(1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO

These headers connect to Front Panel Line-out, MIC connector with cable.



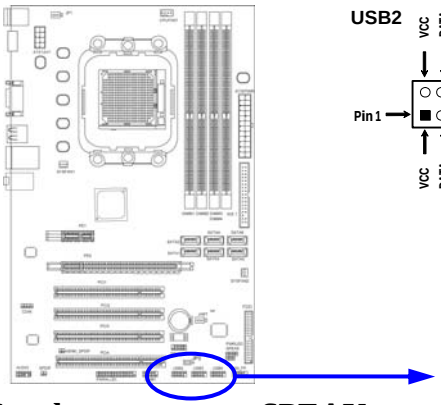


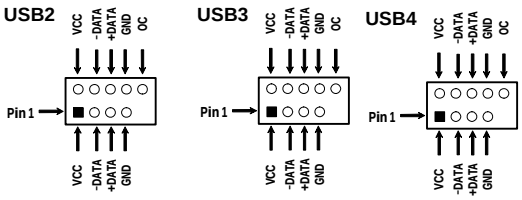
Line-Out, MIC Headers

ALC662

(2) USB Port Headers (9-pin): USB2/USB3/USB4

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.





USB Port Headers

(3) Speaker connector: SPEAK

This 4-pin connector connects to the case-mounted speaker. See the figure below.

(4) Power LED: PWR LED

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

(5) IDE Activity LED: HD LED

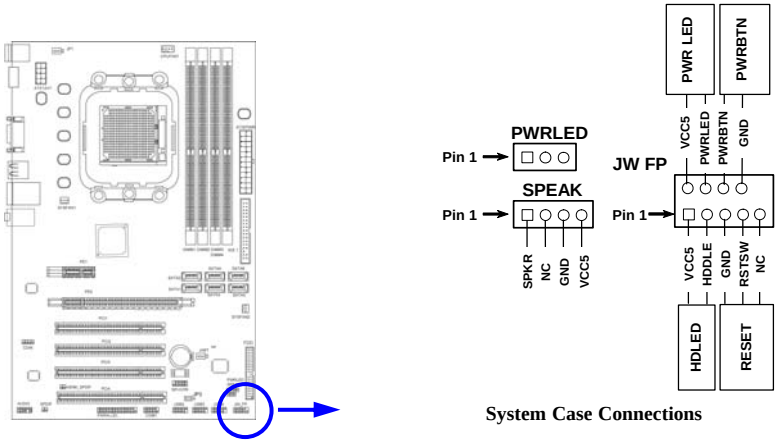
This connector connects to the hard disk activity indicator light on the case.

(6) Reset switch lead: RESET

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the lift of the system's power supply. See the figure below.

(7) Power switch: PWR BTN

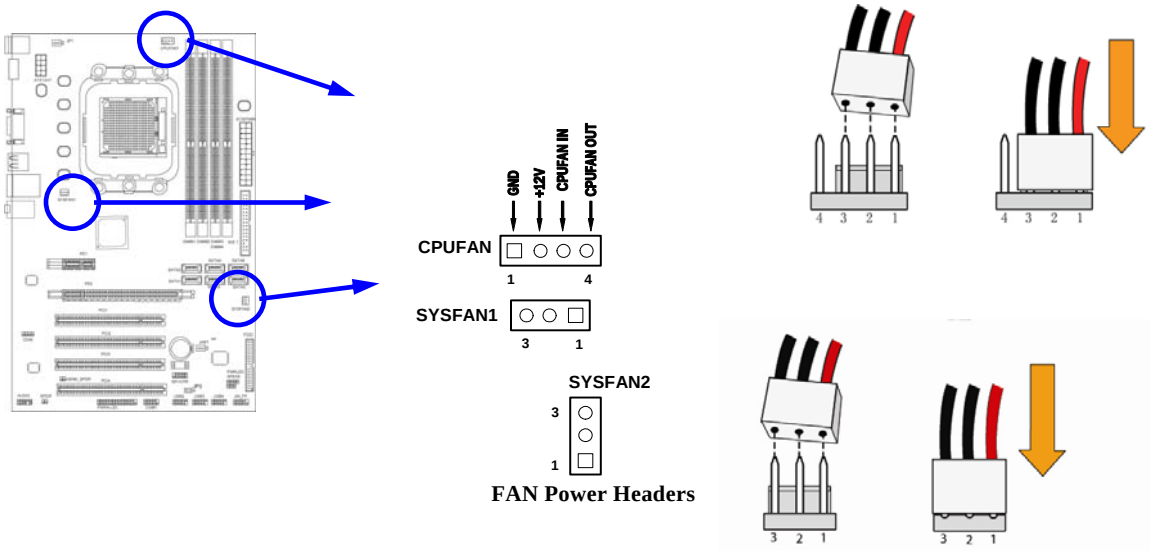
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



System Case Connections

(8) FAN Power Headers: SYSFAN1, SYSFAN2, CHAFAN(3-pin), CPUFAN (4-pin)

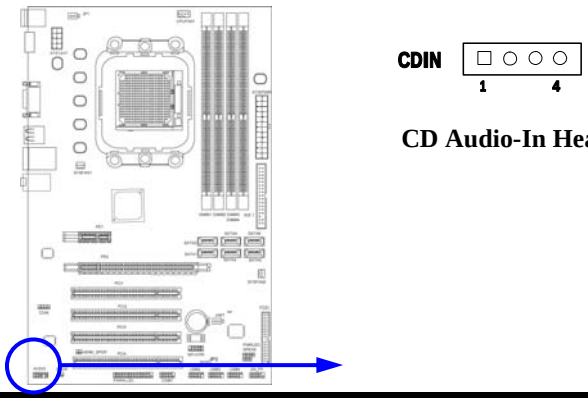
These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



FAN Power Headers

(9) CD Audio-In Headers (4-pin): CDIN1

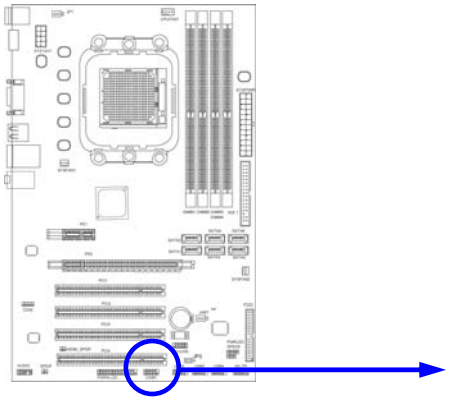
CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.

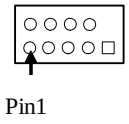


CD Audio-In Headers

(10) Serial COM Port header: COM1

COM1 is the 9-pin block pin-header. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.

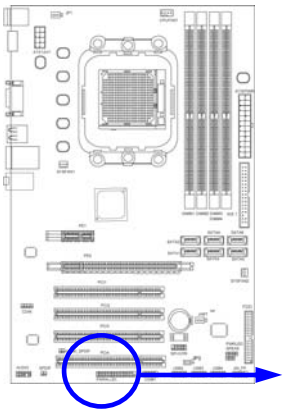


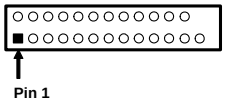


Serial COM Port 9-pin Block

(12) Parallel Port Header (25-pin male): PARALLEL

The On-board Parallel Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.

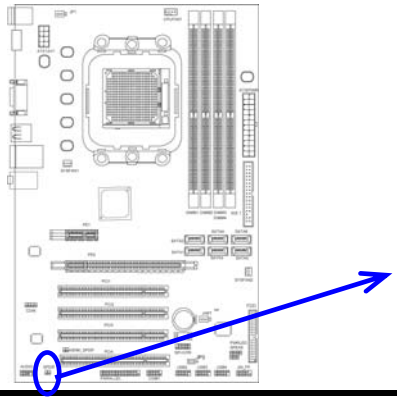


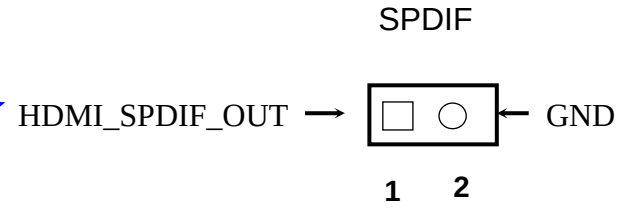


PARALLEL Connector

(13) SPDIF Out header: HDMI-SPDIF

The SPDIF output is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby digital decoder. Use this feature only when your stereo system has digital input function.





2-7 Starting Up Your Computer

1. After all connection are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test is running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Beep	**Meaning**
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click **"Start"** button, click **"Shut down"** and then click **"Shut down the computer?"** The power supply should turn off after windows shut down.

Chapter 3

Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <F1> to continue, <Ctrl-Alt-Esc> or <Del> to enter Setup

3-2 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from 12 setup functions and 2 exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

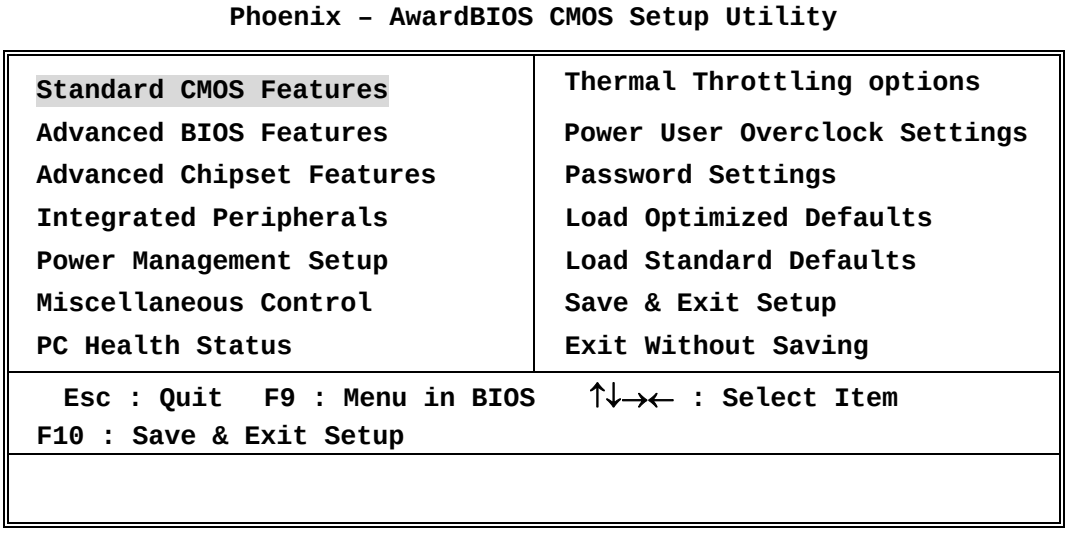


Figure 3-1

Standard CMOS Features
Use this Menu for basic system configurations.

Advanced BIOS Features
Use this menu to set the Advanced Features available on your system.

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.

Miscellaneous Control

Use this menu to specify your settings for **Miscellaneous Control**.

PC Health Status
This entry shows your PC health status.

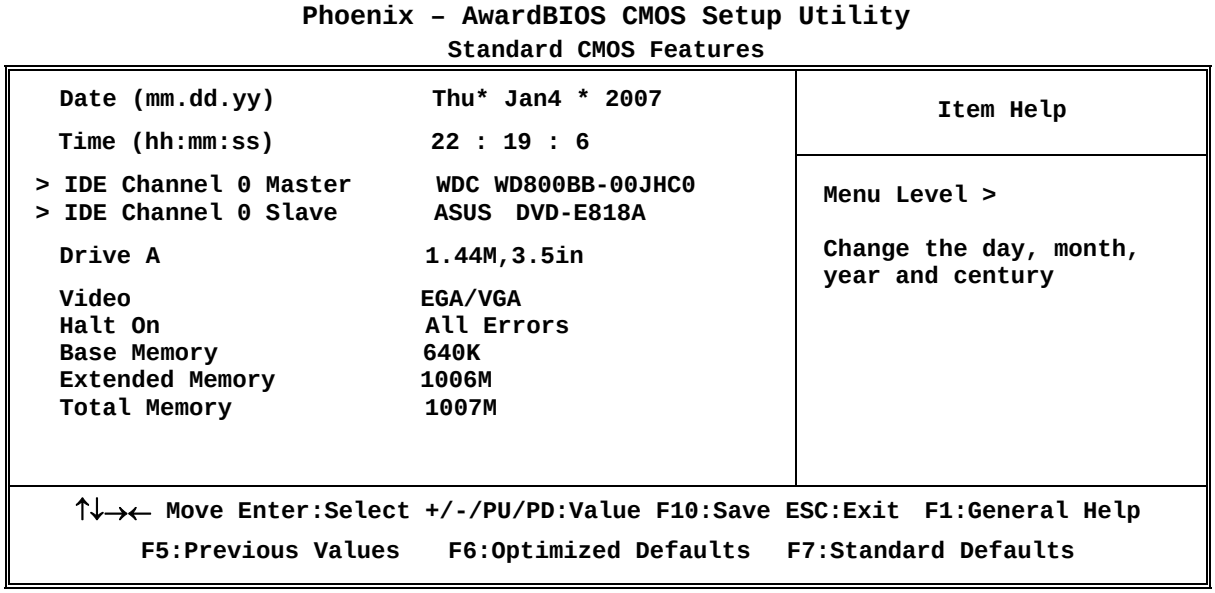
Power User Overclock Options
Use this menu to specify your settings (frequency, Voltage) for overclocking demand

CPU Thermal Throttling Setting
The selection is set for activating the active CPU Thermal Protection by flexible CPU loading adjustment in the arrange of temperature you define.

Load Optimized Defaults
Use this menu to load the BIOS default values these are setting for optimal performances system operations for performance use.
Load Standard Defaults
This menu uses a minimal performance setting, but the system would run in a stable way.
Password Settings
This entry for setting Supervisor password and User password
Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.
Exit Without Saving
Abandon all CMOS value changes and exit setup.

3-4 Standard CMOS Features

The items in Standard CMOS Setup 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
The date 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 depends on the year of the BIOS.

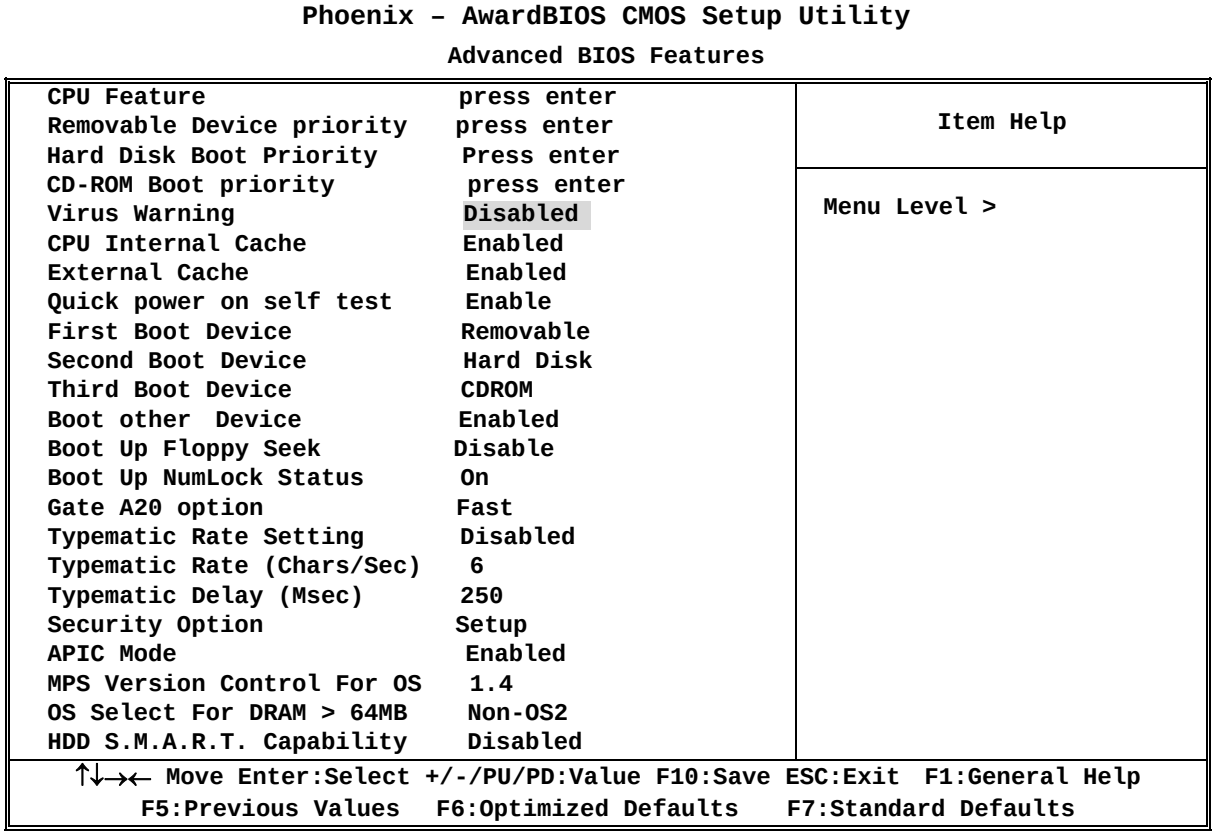
Time
The time format is <hour><minute><second>.

IDE Channel 0 Master / Channel 0 Slave
Press PgUp/<+> or PgDn/<–> to select Manual, None, 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 the type of hard disk drives 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.
If the controller of HDD interface is SCSI, the selection shall be “None”.
If the controller of HDD interface is CD-ROM, the selection shall be “None”

Access Mode The settings are Auto Normal, Large, and LBA.
Cylinder number of cylinders
Head number of heads
Precomp write precomp
Landing Zone landing zone
Sector number of sectors

3-5 Advanced BIOS Features



Hard Disk Boot Priority
The selection is for you to choose the hard disk drives priorities to boot from.

Virus Warning
The selection Allow you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Disabled (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enabled Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

The default value is Enabled.

Enabled (default) Enable cache

Disabled Disable cache

Note: The internal cache is built in the processor.

External Cache

Choose Enabled or Disabled. This option enables the Level 2 cache memory.

Quick Power On Self-Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled (default) Enable quick POST

Disabled Normal POST

First/Second/Third/Fourth Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-3, SCSI, CDROM, LAD and Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

Boot Up NumLock Status

The default value is On.

On (default) Keypad is numeric keys.

Off Keypad is arrow keys.

Gate A20 Option

Normal The A20 signal is controlled by keyboard controller or chipset hardware.

Fast (default) The A20 signal is controlled by port 92 or chipset specific method.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a keystroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before beginning to repeat the keystroke. The settings are 250, 500, 750, and 1000.

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

Setup (default) The system will boot, but access to Setup will be denied if the correct password is not entered prompt.

MPS Version Control For OS 1.4

This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use.

OS Select For DRAM > 64MB

Allows OS2® to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

HDD S.M.A.R.T Capability

This option allow you to enable the HDD S.M.A.R.T Capability (Self-Monitoring, Analysis and Reporting Technology) . You can choose from Enabled and Disabled.

3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Phoenix – AwardBIOS CMOS Setup Utility

Advanced Chipset Features

VGA Settings	press enter	Item Help
DRAM Configuration	press enter	
System BIOS Cacheable	disabled	Menu Level >
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

VGA Settings

Please refer to section 3-6-1

DRAM Configurations

Please refer to section 3-6-2

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

3-6-1 VGA Settings

Phoenix – AwardBIOS CMOS Setup Utility

VGA Settings

Hybrid SLI	Manual	Item Help
IGPU Feature Buffer Control	Auto	
Frame Buffer Size	128M	
Onboard GPU	Auto	Menu Level >
Init Display First	PCIEX	
Onboard VGA GPU Frequency	500MHz	
Onboard VGA Shader Frequency	1200MHz	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

3-6-2 DRAM Configurations

Phoenix – AwardBIOS CMOS Setup Utility

Advanced Chipset Features

Auto configuration	Auto	Item Help
*DRAM CAS Latency Time	Auto	
* DRAM RAS# Active Time(Tras)	Auto/15T	Menu Level >
* Row Precharge Time(Trp)	Auto/9T	
* RAS# to CAS# Delay(Trcd)	Auto/9T	
DRAM Command Rate	Auto (Default)	
DRAM Bank Interleaving	Enabled	
CKE based power down	Per Channel	
Memclock tri-stating	Disabled	
Memory Hole Remapping	Enabled	
Auto Optimize Bottom IO	Enabled	
*Bottom of [31:24] IO Space	C0	
Bottom of UMA DRANM[31:24]	FC	
DDRII Timing Item	Disabled	
*TwTr Command Delay	3bus clocks	
*Trfc0 for DIMM0	75NS	
*Trfc1 for DIMM1	75NS	
*Trfc2 for DIMM2	75NS	
*Trfc3 for DIMM3	75NS	
*(Twr)Write Recovery Time	6bus clocks	
*(Trtp)Precharge Time	3bus clocks	
*(Trc)Row Cycle Time	26 bus clocks	
*(Trrd) RAS to RAS Delay	5 clocks	

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

DRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: Auto, 3, 4 and 5.

DRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: Auto,3, 4 and 5.

Row Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain date. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

RAS-to-CAS Delay

This field let's you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

3-7 Integrated Peripherals

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              Integrated Peripherals
```

Onchip IDE Function	Press Enter	Item Help
Onboard Device Function	Press Enter	
Onchip Superio Function	Press Enter	Menu Level >
USB Device Setting	Press Enter	

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

Onchip IDE Function
Please refer to section 3-7-1

Onboard Device Function
Please refer to section 3-7-2

OnChip Superio Function
Please refer to section 3-7-3

USB Device Setting
Please refer to section 3-7-4

3-7-1 Onchip IDE Function

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              OnChip IDE Function
```

RAID Config	Press Enter	Item Help
Onchip IDE Channel IO	Enabled	
Primary Master PIO	Auto	Menu Level >>
Primary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
IDE DMA transfer access	Enabled	
Serial-ATA Control	Enabled	
IDE Prefecth Mode	Enabled	
IDE HDD Block Mode	Enabled	

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

IDE DMA transfer access
The integrated peripheral controller contains an IDE interface with support for one IDE channels. Select Enabled to activate each channel separately. The settings are: Enabled and Disabled.

Primary Master/Slave PIO
The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-2) for each of the two IDE devices that the onboard IDE interface supports. Modes 0 through 2 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary Master/Slave UDMA
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus

master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings are: Auto, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. The settings are: Enabled, Disabled.

3-7-2 Onboard Device Function

Phoenix – AwardBIOS CMOS Setup Utility

OnChip IDE Function

Onboard HD Audio Device Auto HDMI Audio Auto Onboard LAN Device Auto Machine MAC Address Disabled	Item Help Menu Level >>
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults	

3-7-3 Onchip Superio Fuction

Phoenix – AwardBIOS CMOS Setup Utility

Onchip Superio Function

Onboard FDC Controller Enabled Onboard Serial Port 1 3F8/IRQ4 Onboard Parallel port 378/IRQ7 Parallel port Mode SPP ECP Mode use DMA 3	Item Help Menu Level >>
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults	

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 and Disabled.

Onboard Serial Port1 1

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

Onboard 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 option:

Disabled	
(3BCH/IRQ7)/	Line Printer port 0
(278H/IRQ5)/	Line Printer port 2
(378H/IRQ7)	Line Printer port 1

Parallel Port Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP: Extended Capability Port

SPP/EPP/ECP/ECP+EPP

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP modes 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. 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 channels 3 to 1. 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.

3-7-4 USB Device Setting

Phoenix – AwardBIOS CMOS Setup Utility

USB Device Setting

USB Storage Function	Enabled	Item Help
USB 1.0 Controller	Enabled	
USB 2.0 Controller	Enabled	
USB Operation Mode	High Speed	Menu Level >>
USB Keyboard Function	Enabled	
USB Mouse Function	Enabled	

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

USB1.0/ 2.0 Controller

Setting options:[Disabled],[Enabled].

Usb Operation Mode

The settings are High Speed and Full/Low Speed.

USB Keyboard/Mouse /Storage Function

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB Mouse /keyboard. The settings are: Enabled, Disabled.

3-8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.

Phoenix – AwardBIOS CMOS Setup Utility

Power Management Setup

PS2 KB/MS Waken up by (S4/S5)	Disabled	Item Help
ACPI function	Enabled	
Power Management	User Define	
Video off Method	DPMS Support	Menu Level >
HDD Power Down	Disabled	
HDD Down In Suspend	Disabled	
Power Button Function	Instant off	
HPET Support	Enabled	
AC Loss Auto Restart	Always OFF	
Wake-up on PCI/LAN/PCI E PME	Disabled	
Wake-up on Ring	Disabled	
Power-on by Alarm	Disabled	
* Day of Month Alarm	0	
*Time (hh:mm:ss) Alarm	0:0:0	

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

ACPI Function

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled.

Power Management

This item allows you to set the configuration for power management by 3 options: User Define, Min Saving or Max Saving.

HDD Power Down (Disabled)

The IDE hard drive will spin down if it is not accessed within a specified length of time.Options are from 1 Min to 15 Min and Disable.

AC Loss Auto Restart

This item allows user to set the AC loss auto restart mode by 3 options: Former-Sts, Always-on or Always-off.

Video Off Method

This determines the manner in which the monitor is blanked.

DPMS (default)	Initial display power management signaling.
Blank Screen	This option only writes blanks to the video buffer.
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.

Power Button Function

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake up Alarms. This item lets you install a software power down that is controlled by the power Button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down.

Power-on by Alarm

When set to Enabled, additional fields become available and you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time .

Date (of month)

You can choose which month the system will boot up. Set to 0, to boot every day.

Time (hh:mm:ss)

You can choose what hour, minute and second the system will boot up.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work

3-9 Miscellaneous Control

Phoenix – AwardBIOS CMOS Setup Utility

Miscellaneous Control

SATA Spread Spectrum	Disabled	Item Help
PCI Spread Spectrum	Disabled	
IGPU Spread Spectrum	Disabled	
Reset Configuration Date	Disabled	Menu Level >
Resource Controlled by	Manual	
* IRQ Resource	Press Enter	
PCI /VGA Palette SNOOP	Disabled	
****PCI Express Relative Items	****	
Maximum Payload Size	4096	

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

SATA Spread Spectrum

This item allows you to set the SATA Spread Spectrum as Disabled or Power Spread.

PCI Spread Spectrum

This item allows you to set the PCI Spread Spectrum asDisabled, 1%, 2%, 3% or 5%.

IGPU Spread Spectrum

This item allows you to enable or disable iGPU spread spectrum.

Reset Configuration Data

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

PCI/VGA Palette Snoop

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

IRQ Resources

Names the interrupt request (IRQ) line assigned to the USB on your system. Activity of the selected IRQ always awakens the system.

Maximum Payload Size

This item allows you to set the configuration of maximum payload size as 128, 256, 512, 1024, 2048 or 4096.

3-10 PC Health Status

This section shows the Status of you CPU, Fan, and Warning for overall system status. This is only available if there is Hardware Monitor onboard.

Phoenix – AwardBIOS CMOS Setup Utility

PC Health Status

Show PC Health in post	Enabled	Item Help
Smart FAN Configuration	Press Enter	
Vcore	1.36V	
NB	1.20V	Menu Level >
5VSB(V)	5.08V	
+5V	5.08V	
+12V	12.33V	
VDIMM	1.88V	
VBAT	3.36V	
CPU Temperature	34°C /93F	
System Temperature	26°C/80F	
CPUFAN	2325 RPM	
SYS FAN1	0 RPM	
SYS FAN2	0 RPM	

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

Show PC Health in Post

During Enabled, it displays information list below. The choice is either Enabled or Disabled

PS CPU Smart FAN Configurations

CPU Full-Speed Temp

This item allows you setting the FAN works in full speed when the temperature over the value which out set. If the temperature below the value but over the Idle Temperature, the FAN will works over 60% of full speed, and the higher temperature will gain higher FAN speed, after over the temperature which this item setting, the FAN works in full speed.

CPU Idle Temp

This item allows you setting the FAN works in 60% of full speed, when the temperature lower than the temperature which you setting.

Current CPU Temperature/System Temperature/SYSFAN1, SYSFAN2 Speed/Vcore/ /NB/5VSB/VDIMM/ VBAT(V)/ +5V/+12V/5VSB(V)

This will show the CPU/FAN/System voltage chart and FAN Speed.

3-11 Thermal Throttling Options

Phoenix – AwardBIOS CMOS Setup Utility

Thermal Throttling Options

CPU Thermal-Throttling	Disabled	Item Help
*CPU Thermal-Throttling Temp	85°C	
*CPU Thermal-Throttling Beep	Enabled	
*CPU Thermal-Throttling Duty	50.0%	Menu Level >

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

3-12 Power User Overclock Setting

Phoenix – AwardBIOS CMOS Setup Utility

Power User Overclock Setting

Profile Load	Press Enter	Item Help
Profile Save	Press Enter	
Hyper Transport Settings	Press Enter	
PCI E Clock	100	
*** Current HOST Frequency	is 200MHz ***	
CPU Clock at next boot is	Auto	Menu Level >
DRAM Clock at next boot is	Auto	
CPU Voltage	Default	
CPU Vcore X-shift	Default	
LDT Voltage	1.20V(Default)	
NB Voltage	1.10V(Default)	
VDIMM Voltage	1.84V(Default)	

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

Hyper Transport Settings
Users can set the configuration for KB <-> NB HT Speed as Auto /200MHz/400MHz/600MHz/800MHz/1 GHz and KB <-> NB HT Width as ↓8 ↑8, ↓16 ↑16 or Auto.

PCI E Clock
Users can set the configuration for PCI E Clock from a Minimum of 200 to a Maximum of 200.

DRAM Clock at Next Boot
This item allows you to set DRAM clock.

CPU Voltage
Users can set the configuration for CPU voltage from 0.8000V to 1.5500V and the default setting is 1.3500V.

CPU Vcore X-Shift
This item allows you select the CPU Vcore voltage by a precise percentage unit, from a minimum of 1.6% to a maximum of 50%.

LTD voltage
Users can set the LTD voltage from a minimum of 1.14V to a maximum of 1.44V, the default setting is 1.20V.

NB Voltage
This item allows you to select value of Voltage for North Bridge Chipset.

VDIMM Voltage
This item allows you to set the voltage of DRAM DIMM from a minimum of 1.73V to a maximum of 2.74V by 16 stages.

3-13 Load Standard Defaults

Load Standard Defaults
When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:
Load Standard Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for stable performance system operations.

3-14 Load Optimized Defaults

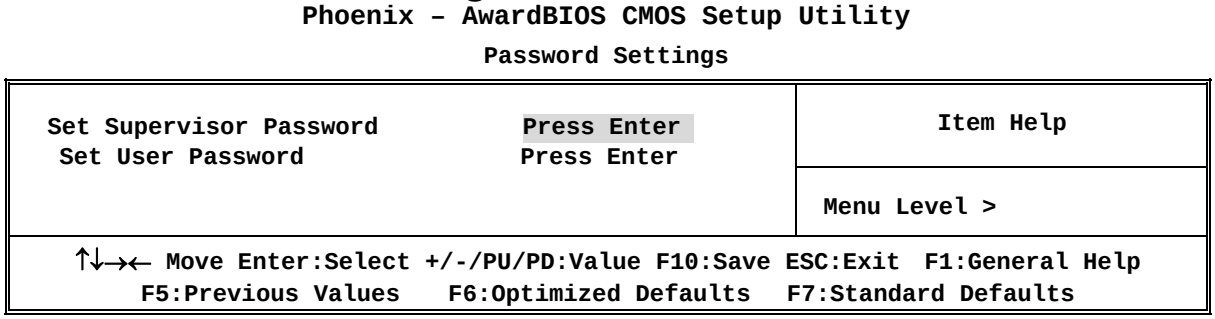
Load Optimized Defaults

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

Load Optimized Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for optimal performance system operations.

3-15 Password Settings



You can set either supervisor or user password, or both of them. The differences are:

Supervisor password: Can enter and change the options of the setup menus.

User password: Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, 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.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

Chapter 4

DRIVER & FREE PROGRAM INSTALLATION

Check your package and there is A MAGIC INSTALL CD included. This CD consists of all DRIVERS you need and some free application programs and utility programs. In addition, this CD also include an auto detect software which can tell you which hardware is installed, and which DRIVERS needed so that your system can function properly. We call this auto detect software MAGIC INSTALL.

MAGIC INSTALL supports WINDOWS 2K/XP

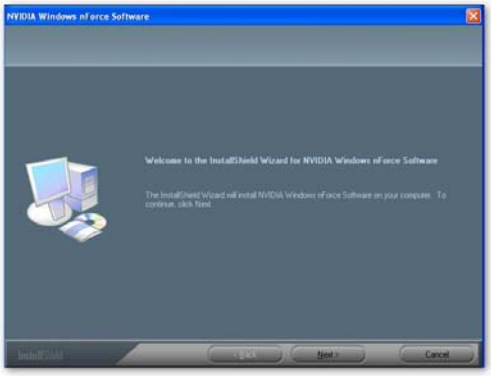
Insert CD into your CD-ROM drive and the MAGIC INSTALL Menu should appear as below. If the menu does not appear, double-click MY COMPUTER / double-click CD-ROM drive or click START / click RUN / type X:\SETUP.EXE (assuming X is your CD-ROM drive).

From MAGIC INSTALL MENU you may take 9 selections:

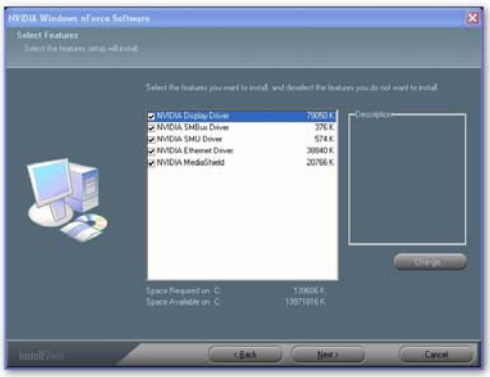
1. nFORCE install nFORCE integrated driver
2. SOUND install ALC 888HD Audio driver
3. USB2.0 install USB2.0
4. RAIDDISK install RAID SATA Driver and Utility
5. PC-CILLIN install PC-CILLIN2007 anti-virus program
6. PC-HEALTH install My Guard PC-Health utility
7. HDMI install HDMI
8. BROWSE CD to browse the contents of the CD
9. EXIT to exit from MAGIC INSTALL menu

4-1 NFORCE Install nFORCE Integrated Driver

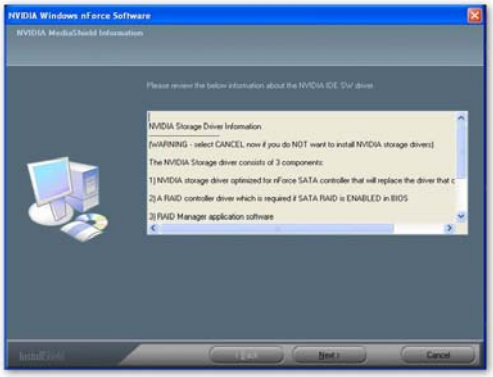
1. Click nFORCE in the MAGIC INSTALL MENU appears.



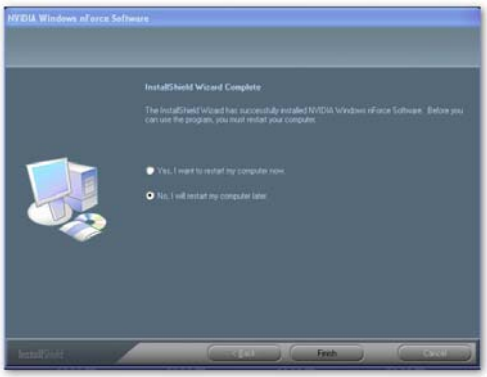
2. Click NEXT when nFORCE software driver pack appears.



3. Select the feature setup will install then click “Next”



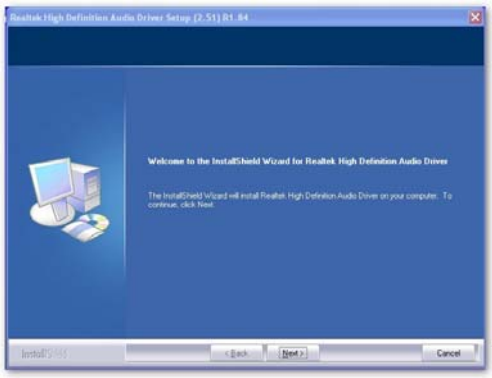
4. Review the information then click NEXT



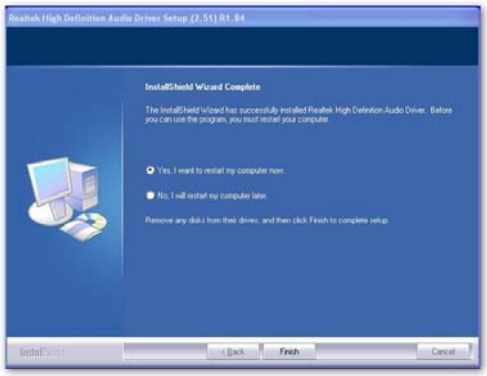
5. choose“NO,I will restart my computer Later”, then click FINSH

4-2 SOUND Install ALC662 HD Codec Audio Driver

1. Click SOUND when MAGIC INSTALL MENU appears



2. Click NEXT When Realtek High Definition Audio driver windows appear



3. Click SOUND when MAGIC INSTALL MENU appears

NOTE: Please upgrade your Windows XP to Service Pack 1 / Windows 2000 to Service Pack 4 or later before you the HD Audio CODEC driver.

4-3 USB2.0 Install USB 2.0 Integrated Driver

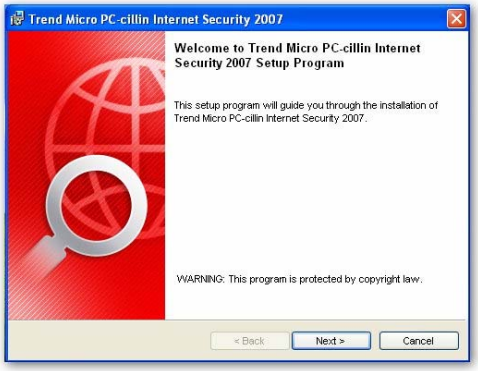
Click USB2.0 when MAGIC INSTALL MENU appears

4-4 RAIDDISK Install RAID DISK Integrated Driver

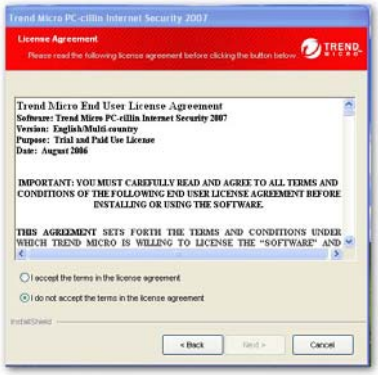
Click RAIDDISK when MAGIC INSTALL MENU appears

4-5 PC-CILLIN Install PC-CILLIN 2007 Anti-virus Program

1 Click PC-CILLIN when MAGIC INSTALL MENU appears



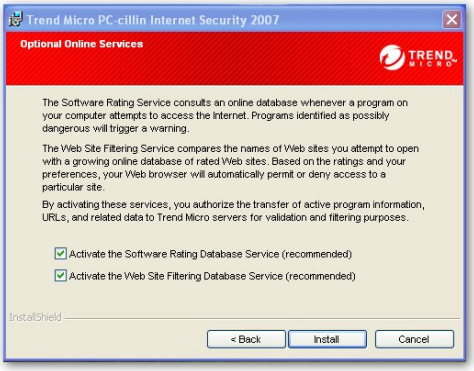
2. Please select Next when the "Trend Micro internet security" install shield wizard windows appears



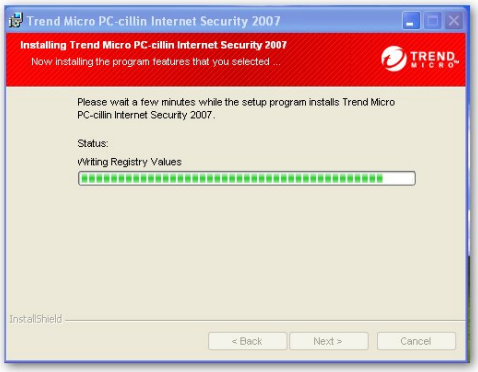
3 .This is the license agreement, select "I Accept the terms" and Click NEXT.

4The preinstallation checkup process.

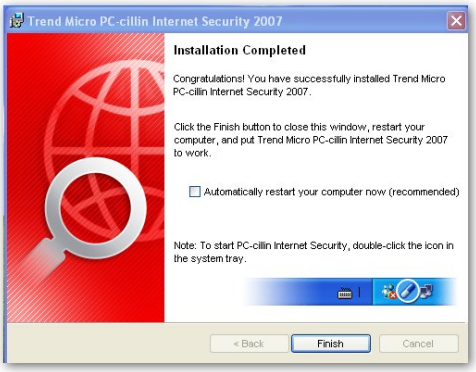
5.Click Next after you select the features you want to install and the folder to install it.



6. Click Install after you select to install the optional online services.



7. Wait while the computer installing online services.

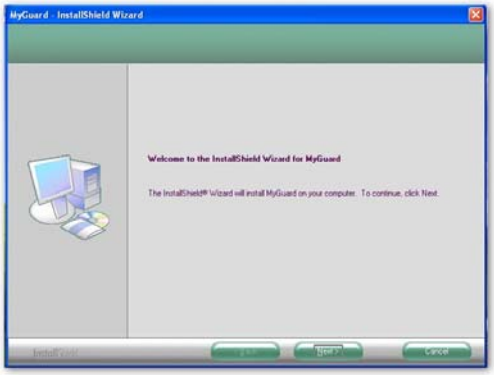


8. Click “automatically restart your computer now ”and Finish to activate this function.

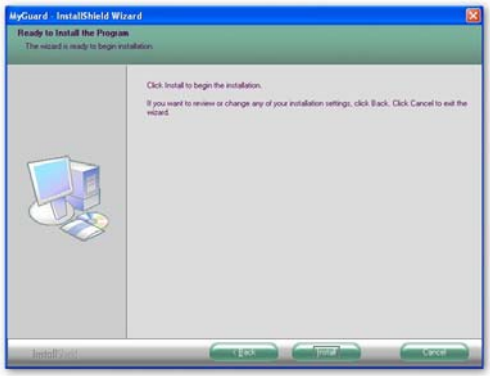
Note : Please install ACROBAT READER for reading PC-CILLIN 2007 User Manual which locates at the path “X:\acrobat\adberdr6_enu_full.exe”.

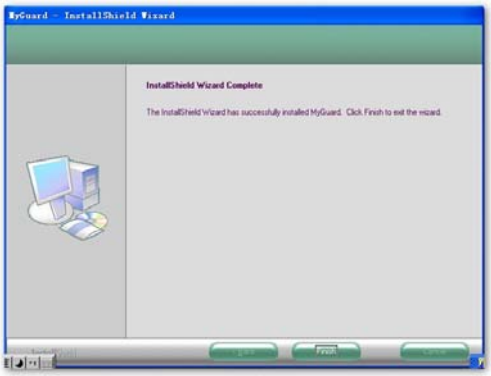
4-6 PC-HEALTH Install MyGuard Hardware monitor Utility

1. Click PC-HEALTH when MAGIC INSTALL MENU appears



2. Click Next on Install shield wizard Window appears





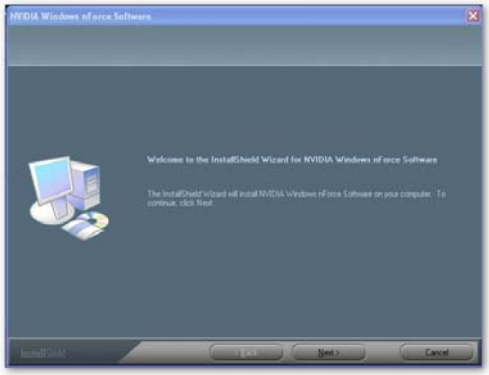
3. Click Install to begin the installation.

4. Click Finish to complete the installation.

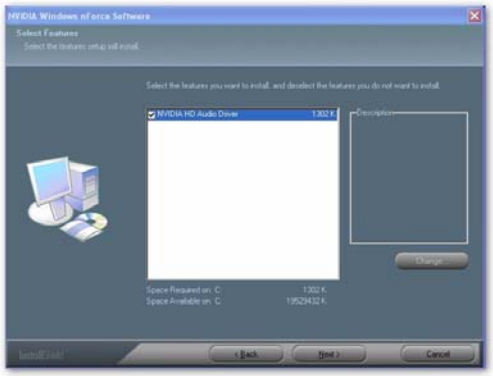
NOTE: MAGIC INSTALL will auto detect file path X:\NF-ORCE4\MYGUARD\SETUP.EXE

4-7 HDMI

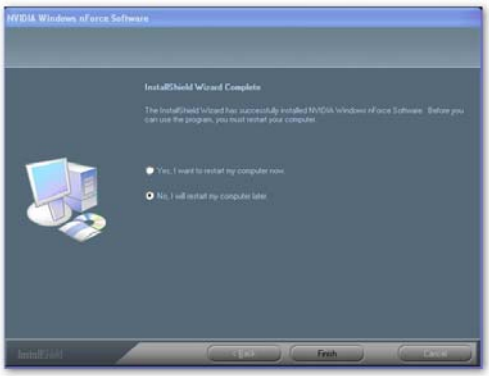
1. Click PC-HEALTH when MAGIC INSTALL MENU appears.



2. Choose NEXT



3. Choose NVIDIA HD AUDIO Driver then choose next



4. Choose finish.

4-8 HOW TO UPDATE BIOS

STEP 1. Prepare a boot disc. (You may make one by click START click RUN type SYS A: click OK)

STEP 2. Copy utility program to your boot disc. You may copy from DRIVER CD

X:\FLASH\AWDFLASH.EXE or download from our web site.

STEP 3. Download and make a copy of the latest BIOS for 770 SERIES motherboard series from the web site to your boot disc.

STEP 4. Insert your boot disc into A:,
Start the computer, type "Awdflash A:\xxxxxx.BIN /SN/PY/CD/CH/WB/CC/R"
xxxxxx.BIN is the file name of latest BIOS

SN	means	don't save existing BIOS data
PY	means	renew existing BIOS data
CD	means	clear DMI data after programming
CH	means	update HOLE
WB	means	always programming BootBlock
CC	means	clear existing CMOS data
R	means	restart computer

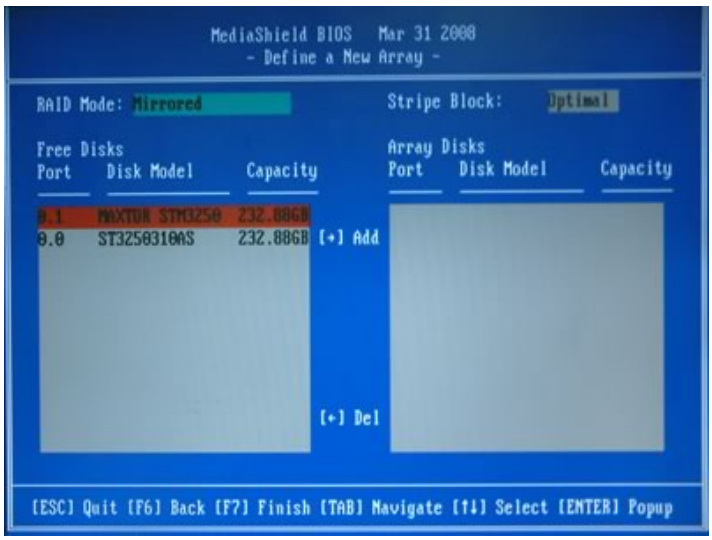
STEP 5. Type ENTER to update and flash the BIOS, then the system will restart automatically.

4-9 Nvidia Platform RAID Function Installation

Step 1.

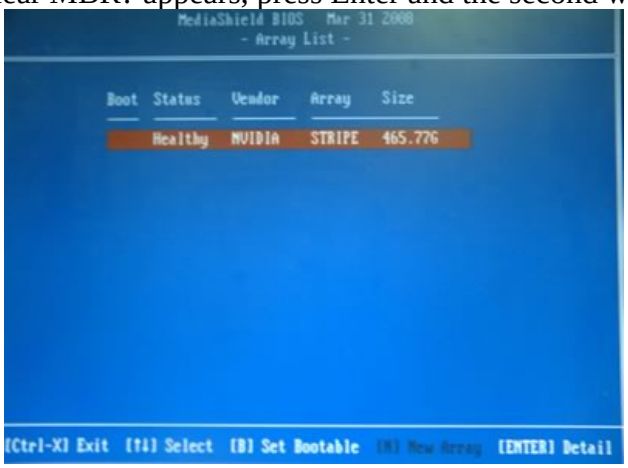
Please get into the location: BIOS setup \ Integrated Peripherals \ Onchip IDE function \ RAID Config, select RAID and enable the RAID function. After the System reboots, you can find the AMD RAID IDE ROM BIOS windows appear. It will ask you to "Press F10 to enter RAID setup utility …" ?

Please press "F10" key to RAID utility in the Media Shield BIOS—Define a New Array shown up:



Select the disks you want to enable the RAID function. Add then from Free Disks to Array Disks with navigate key →or +. You could remove the added disks from Array Disks with navigate key ←or -, if you want to cancel the previous setting.
Users can select RAID Mold from the following items with navigate keys: ↑ or ↓.

1. Mirrored（RAID 1） 2. Stripped (RAID 0）
3. Stripped Mirrorred（RAID 0+1） 4. Spanned （RAID 5）
And when Stripe Block is highlighted, users can choose from 8K/16K/32K/64K/128K/Optimal with the navigate key: ↑， ↓
Then press F7 and the following dialogue should appear: All data on new(or added)disks may be overwritten. Continue? Press Enter to overwrite the data:
Another dialogue: Clear MBR? appears, press Enter and the second window should appear:



Type B to boot the disks enabled the RAID function, or press Enter to have a view of Array Detail information

Step 3.

Making RAID driver diskette before Install WindowsXP/2000

Before you install the Windows XP or Windows 2000, you will need to make a RAID driver diskette before you start to install the Operating System.

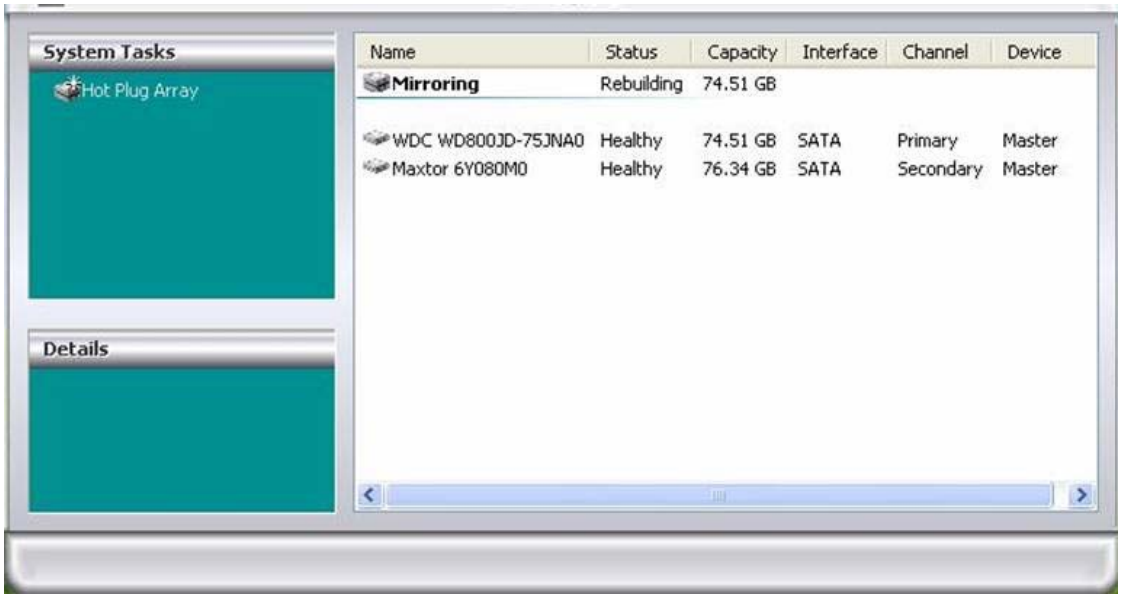
How to make a RAID driver diskette?

1: Insert the diskette which is being formatted in floppy drive on a system which can start OS.
2: After booting OS insert the bundle CD in your CD-ROM
3: Copy all the files from \NF-orce4\RAIDDisk to floppy diskette
Once you have the SATA driver diskette ready, you may start to install Windows XP or Windows 2000 on your System.

Installation of Windows XP/ Windows 2000

For installation of Windows XP or Windows 2000, please insert Windows XP or Windows 2000 CD into the CD-ROM drive. Then remove the floppy diskette, and boot the system. At the very beginning, you will see the message at the bottom of screen, “Press F6 if you need to install a third party SCSI or RAID driver….”
At this moment, please press <F6> key and follow the instructions of Windows XP or Windows 2000 for the proper installation.

Execute Start → programs → NVIDIA corporation → RAID manager , you can view RAID function status or rebuild RAID function from Windows OS



4-10 Pro Magic Plus Function Introduction

What's Pro Magic Plus?

Tired with reinstall OS each time when it doesn't work? Does your computer often crash down or unable to work after installed new software? Have you had great loses and troubles because of computer problems? Still using time-consuming backup software that occupies lots of HD space?

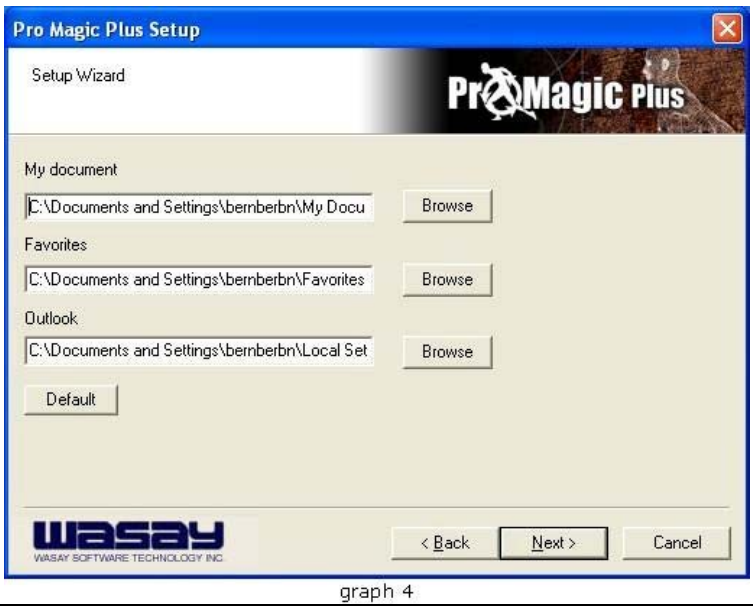
Pro Magic Plus- an instant system recovery software tailored to solve these problems for you. It combines various application tools (e.g. anti-virus, backup software, uninstall software, multi-boot software) to satisfy your needs of all sorts of system protections.

What functions does Pro Magic Plus have?

1. **Instant System Restoration** – Regardless of mis-operation or system crash, install Pro Magic Plus beforehand would allow you to instantly restore your system back by simply reboot your computer.
2. **Easy-to-use** – Auto installation from CD ROM; Supports Mouse
3. **System Uninstal**l – Pro Magic provides a protection mode, which allows user to freely test any software. If user does not want to keep the software, just reboot the computer to restore back to the previous state, and Pro Magic will remove it completely from you computer.
4. **Password Security** – Pro Magic provides double password protection, including user password for entering each OS and manager password for managing 'Pro Magic', which can effectively prevent others from using your computer without permission or data from being stolen. (disable item for OEM version)
5. **Complete Protection** – Pro Magic not only protects the system disk, but also can protect your data disk, and does not require to reboot when backup or restore data disk.
6. **Multipoint Save/Restore –** You can backup your system whenever you need and restore them back to anytime you wish, 1 hour, 1 day or 1 month ago. Restore points are unlimited. (disable item for OEM version)

7. **Data Disk Protection** – Pro Magic Plus now comes with data disk protection, provides complete protection for your computer! (disable item for OEM version)

8. You can choose to change the default path of 'My Document', 'My Favorite' and 'Outlook Express', so that when you are restoring the system, data in these folders will not be restored as well. (This is optional, you can leave it as it is).



graph 4

NOTE: Functions of each version will differ from each other, and will be based on the function descriptions of each version.

System Requirements

- ◇ First OS must be Windows 98 SE/ME/2000/XP
- ◇ Support Only Windows OS (No Linux)
- ◇ Windows server OS and Windows NT not supported
- ◇ Minimum of Intel 486 or above, 16MB of memory or above
- ◇ Minimum of 500MB free/usable space or above
- ◇ Support for SCSI & SATA Hard disk

Pro Magic Plus only supports SCSI hard disk with Windows 2000 or OS above

Notice Before Installation

1. Before install Pro Magic Plus, turn off all anti-virus software. (Include BIOS anti-virus function)
2. Pro Magic Plus does not support multiple PRI partitions. If you have multiple PRI partitions, please repartition your HD before installation.
3. If your HDD is not fully partitioned (with un-partitioned/unused space at end of HDD), please repartition the HDD before install Pro Magic Plus.

APPENDIX

How to use the sticky label

Accompanied with your motherboard there is a sticky label for the back panel. It servers the dustproof function and could also enhance the looks of your motherboard.

1. Tear out the sticker and dispose the paper without stickiness.
2. Tear out the semi blow holes of the sticky paper if your motherboard has corresponding connectors.
3. Apply the label with stickiness to the back panel of the motherboard; strike lightly with your hand to secure the firmness.