

***USER'S MANUAL***  
***Of***  
***NVIDIA***  
***NForce520D (MCP68D)/ NForce520***  
***(MCP65S)***  
***Platform Processor Chipset***  
***M/B For Socket AM2 64-bit Dual Core***  
***AMD Processor***

***NO. G03-M26GTA-F***

***Rev:2.0***

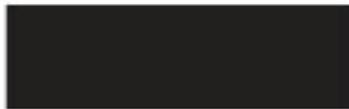
***Release date: Feb. 2008***

**Trademark:**

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## 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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**THIS MANUAL CONTAINS ALL INFORMATION REQUIRED TO USE NF-6100-400 / 405 PPC MOTHERBOARD AND WE DO ASSURE THIS MANUAL MEETS USER'S REQUIREMENT BUT WILL CHANGE, CORRECT ANY TIME WITHOUT NOTICE. MANUFACTURER PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, AND WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS AND THE LIKE).**

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## Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	Feb.2008

### Item Checklist

- NVIDIA nForce 520D / nForce 520 Platform Processor Chipset based motherboard
- Cable for IDE
- CD for motherboard utilities
- Cable for Serial ATA IDE Port
- I/O Back panel
- NVIDIA nForce 520D/ nForce 520 Platform Processor Chipset motherboard User's Manual

## AMD K8 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](http://www.amd.com/us-en/Processors/DevelopWithAMD/0,,30_2252_869_9460^9515,00.html)

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# Chapter 1

## Introduction of nForce 520D / nForce 520 Motherboards

### 1-1 Features of motherboard

The NVIDIA nForce 520D / nForce 520 Platform Processor Chipset based motherboard series are based on the latest NVIDIA nForce 520D(MCP68D)/ nForce 520(MCP65S) Platform Processor Chipset which supports the innovative and supercharged new generation 64-bit AMD Socket AM2 Athlon64 and SempronAM2 or socket AM2+(for nForce 520 chipset) processors with HyperTransport Technology up to 1000MHz. NVIDIA nForce 520D / nForce 520 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 Athlon64 & SempronAM2 or socket AM2+(for nForce 520 chipset) processors with an integrated low-latency high-bandwidth DDRII memory controller and a highly-scalable HyperTransport technology-based system bus up to 1.0GHZ. With utilizing the 64-bit socket-AM2 processor and the dual channel DDRII memory which size is expandable to 8.0GB, nForce 520D / nForce 520 Platform Processor Chipset motherboard series are the real cost-effective and powerful integrated multimedia platform solutions and meet the demanding usage of computing now and future.

And it also supports 1000 MHz HyperTransport speed of data transfer rate, nForce 520D / nForce 520 motherboards support new generation Socket AM2 or socket AM2+(for nForce 520 chipset) processors with an integrated DDRII memory controller which provides 200MHz / 266MHz / 333MHz/ 400MHz memory clock frequency for DDRII400/ DDRII533/ DDRII667 /DDRII800 (AM2 Sempron processor only supports up to DDRII667 memory) DDRII Module up to 8.0GB. The NVIDIA nForce 520D / nForce 520 single chipset offers ULTRA ATA 133 and Serial ATA2 devices with RAID functions to accelerate hard disk drives and guarantee the data security without fail in advanced computing performance.

The motherboards provide optional 10/100 LAN or Gigabit LAN function with Realtek RTL8201CL LAN PHY or M88E8056 PCI-E LAN chip which supports 10/100Mbps or 10/100/1000Mbps data transfer rate. Embedded 8-channel Azalia or 6-channel High Definition Audio CODEC is fully compatible with Sound Blaster Pro® standard that provides you with the home cinema quality and absolutely software compatibility.

The nForce 520D /nForce 520 motherboard series offer one PCI-Express x16 graphics slot of 4Gbyte/sec data transfer rate at each relative direction which gets 3.5 times of bandwidth more than AGP 8X and it's up to a peak concurrent bandwidth of 8Gbyte/sec at full speed to guarantee the ultimate GPU computing performance. Three 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals; the motherboards are designed of tackling the profuse multimedia requirements nowadays. One PCI Express x1 I/O slot offers 512Mbyte/sec concurrently, over 3.5 times more bandwidth than PCI at 133Mbyte/sec.

Embedded USB controller as well as capability of expanding to 10 of USB2.0 functional ports delivering 480Mb/s bandwidth and rich connectivity, these motherboards meet the

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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 7-shift/ CPU Smart Fan* in this motherboard are designed for power user to use the over-clocking function in more flexible ways. But please be caution that the over-clocking maybe cause the fails 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 °C to 90°C). 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.

**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 7-Shift**--- (Shift to Higher Performance)

The CPU voltage can be adjusted up by 31 steps for the precisely over-clocking of extra demanding computing performance.

## 1-2 Specification

Spec	Description
<b>Design</b>	* ATX form factor 4 layers PCB size: 29.5*19.0 cm
<b>Chipset</b>	* NVIDIA nForce 520D (MCP68D)/ nForce 520 (MCP65S) Platform Processor Chipset
<b>CPU Socket AM2 CPU Socket AM2+ (for nForce 520)</b>	<ul style="list-style-type: none"> <li>* Support 64bit AMD Athlon64 940-Pin package utilizes Flip-Chip Pin Grid Array package processor</li> <li>* Support for future AMD Athlon64x2, Athlon 64 &amp; Sempron Socket AM2 processors with HTT Frequency up to 1GHz &amp; DDR2 Memory controller integrated</li> <li>* Support for HTT 1GHz dual core AMD Phenom processors</li> </ul>
<b>Memory Socket</b>	<ul style="list-style-type: none"> <li>* 240-pin DDRII Module socket x 4</li> <li>* Support 4pcs DDRII533/DDRII667/DDRII800 DDRII Modules Expandable to 8.0GB</li> </ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"> <li>* PCI-Express x16 slot 1pcs deliver up to 8GB/s concurrent bandwidth</li> <li>* PCI-Express x1 slot 1pcs delivers up to 512MB/s concurrent bandwidth</li> <li>* 32-bit PCI slot x 3pcs</li> </ul>
<b>Integrate IDE and Serial ATA2 RAID</b>	<ul style="list-style-type: none"> <li>* 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.</li> <li>* Four Serial ATA2 ports provide 300 MB/sec data transfer rate with RAID 0, 1 ,0+1 functions</li> </ul>
<b>Optional LAN</b>	<ul style="list-style-type: none"> <li>* Integrated Realtek RTL8201CL LAN PHY 10/100 or Marvel M88E8056 10/100/1000 PCI Express Gigabit LAN function.</li> <li>* Supports Fast Ethernet LAN function provide 10/100Mb /s or 10/100/1000Mb/s data transfer rate</li> </ul>
<b>Optional Audio</b>	<ul style="list-style-type: none"> <li>* Realtek ALC662 6-channel or ALC883 Azalia 8-channel Audio Codec integrated</li> <li>* Support 8-channel or 6-channel 3D surround &amp; Positioning Audio</li> <li>* Audio driver and utility included</li> </ul>
<b>BIOS</b>	<ul style="list-style-type: none"> <li>* Award 4MB SPI Flash ROM</li> <li>* Award 8MB SPI Flash ROM(for nForce 520)</li> </ul>
<b>Multi I/O</b>	<ul style="list-style-type: none"> <li>* PS/2 keyboard and PS/2 mouse connectors</li> <li>* Floppy disk drive connector x1</li> <li>* Serial port x1</li> <li>* HDMI-SPDIF_OUT header x1</li> <li>* Parallel port header x1</li> <li>* USB2.0 port x 2 and headers x3</li> <li>* Audio connector x1</li> </ul>

## 1-3 Performance List

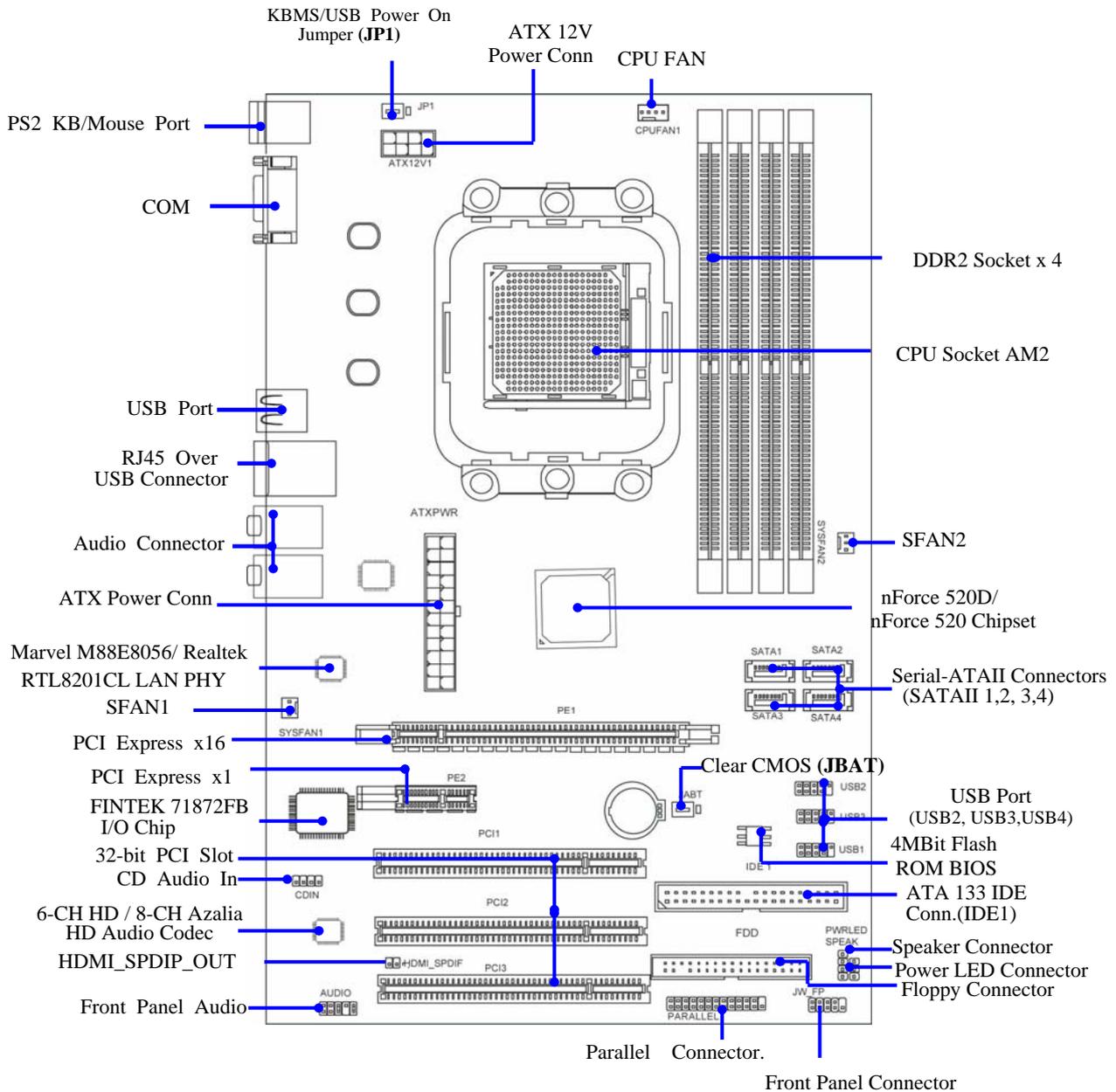
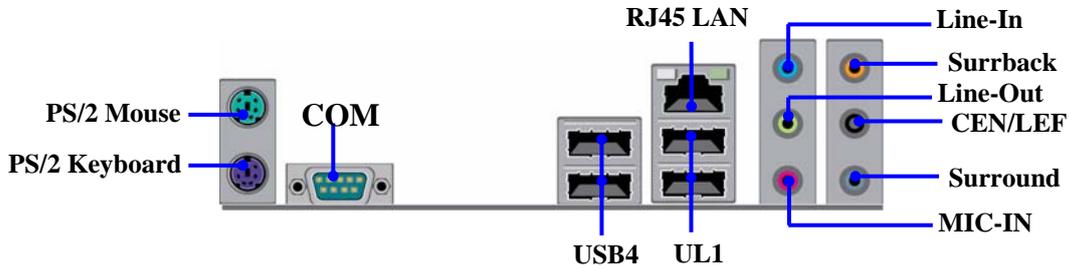
The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark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

### Performance Test Report

**CPU:** AMD Athlon 64x2 4800+  
**DRAM:** CORSAIR 512MB DDR2-800 Memory  
**VGA Card :** GeForce 6800XT 128M (1024X768X32BIT Color)  
**Hard Disk Driver:** MAXTOR IDE 80GB  
**BIOS:** Award Standard default  
**OS:** Windows XP Professional (SERVICE PACK 2)

	nForce 520D
3D Mark 2001SE	20942
3D Mark 2003	7861
3D Mark 2005	3040
3D Mark 2006	2137
AQUAMRK3 (GFX / CPU)	48884
<b>PCMark2004</b>	
System / CPU / Memory	6370 / 6666 / 5179
Graph / HDD	4639/ 3971
Content Creation Winstone 2004	29.3
Business Winstone 2004	28.2
<b>Winbench 99 V2.0:</b>	
Business/Hi-end Disk Winmark99	8140 / 33100
<b>SISMark 2004: SISMark Rating(Internet Content Creation / Office Productivity )</b>	
SISMark 2004	180 (197 / 164)
3D Creation / 2D Creation	186 / 242
/ Web publication	169
Communication / Document	158 / 181
/ Data Analysis	155
<b>SISOFT Sandra 2004 : 1.CPU Arithmetic Benchmark 2.Memory bandwidth Benchmark 3.CPU Multi-Media Benchmark</b>	
1.Dhrystone ALU MIPS	7989
Whetstone FPU iSSE2 FLOPS	6761
2.Int/Float Buffered MB/S	4931 / 4896
3.Integer/Floating-Point IT/S	20776 / 22512
UT2003 Benchmark	59.26 / 36.66
Quake3 DEMO1 / FPS	11.2
Super Pi (1M) Second	201.1 / 315.8 / 2212.0
CPUZ System / CPU Clock	200.9 / 315.8 / 2210.2

# 1-4 Layout Diagram & Jumper Setting



## Jumpers

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

## Connectors

Connector	Name	Description	Page
ATXPWR	ATX Power Connector	24-pin Block	P.12
ATX12V	ATX 12V Power Connector	8-pin Block	P.12
KB	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
USB4	USB Port Connector	4-pin Connector	P.13
UL1	USB/ LAN Port Connector	RJ-45 Connector	P.13
CN1 / CN2	6-CH/8-CH HD Audio Connector	3-phone/6- phone jack Connector.	P.13
COM	Serial Port Connector	9-pin connector	P.14
FDD	Floppy Driver Connector	34-pin Block	P.14
IDE1	Primary IDE Connector	40-pin Block	P.14
SATA1~4	Serial ATAII IDE Connector	7-pin Connector	P.15

## Headers

Header	Name	Description	Page
AUDIO	SPEAKER, MIC header	9-pin Block	P.15
USB1, USB2, USB3	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/IDE LED/Power Button)	Front Panel Header (including IDE activity LED/Reset switch / Power On Button lead)	9-pin Block	P.16
SYSFAN1, SYSFAN2, CPUFAN	FAN Headers	3-pin Block	P.17
CDIN	CD Audio-In Header	4-pin Block	P.17
PARALLEL	Parallel Port Header	25-pin male	P.17
SPDIF	SPDIF Header	2-pin male	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.9
PCI1~ PCI3	PCI Slot	32-bit PCI Local Bus Expansion slots	P.11
PE1	PCI-Express x16 Slot	PCI-Express x16 Expansion Slot	P.11
PE2	PCI-Express x1 Slot	PCI-Express x1 Expansion Slot	P.11

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## Chapter 2

### Hardware Installation

#### 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 Floppy cables, 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) CMOS RAM Clear (3-pin) : JBAT

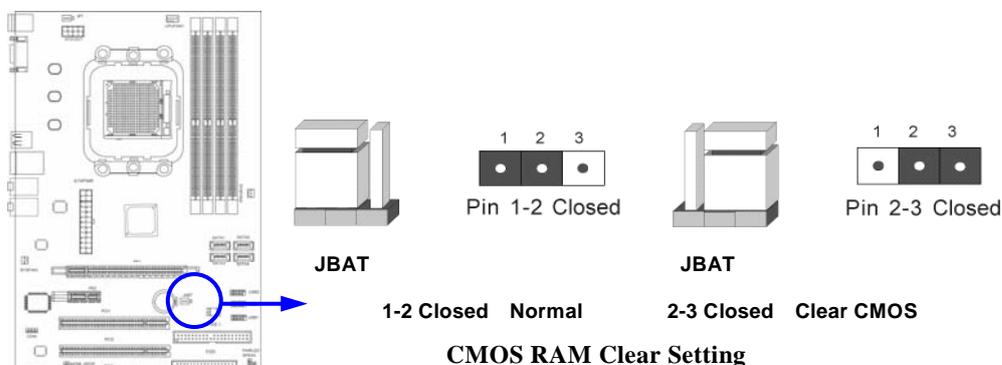
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

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**

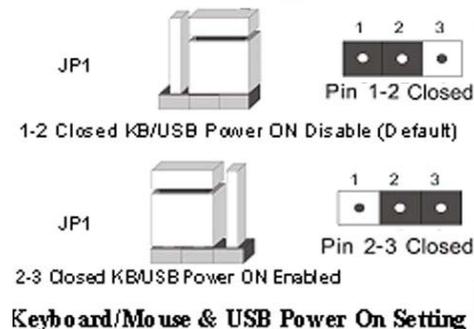
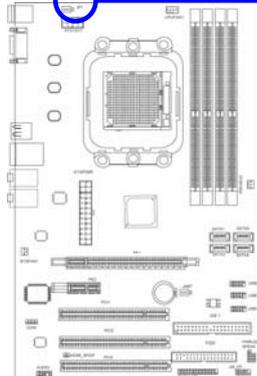
1. **Troubleshooting**
2. **Forget password**
3. **After over clocking system boot fail**



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## (2) Keyboard /USB function Enabled/Disabled: JP1



## 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 devices, and adapter cards.

**Processor slot/socket** - the slot or 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.

**AGP - Accelerated Graphics Port** - a high speed interface for video cards; runs at 1X (66MHz), 2X (133MHz), or 4X (266MHz), or 8X (533MHz).

**PCI - Peripheral Component Interconnect** - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

**PCI Express-** Peripheral Component Interconnect Express- a high speed interface for video cards, sound cards, network interface cards, and modems.

**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 - Universal Serial Bus** - 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) - Local Area Network** - the interface to your local area network.

**BIOS (Basic Input/Output System)** - 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.

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**CPU L2 Cache** - the flash memory inside the CPU, normal it depend on CPU type.

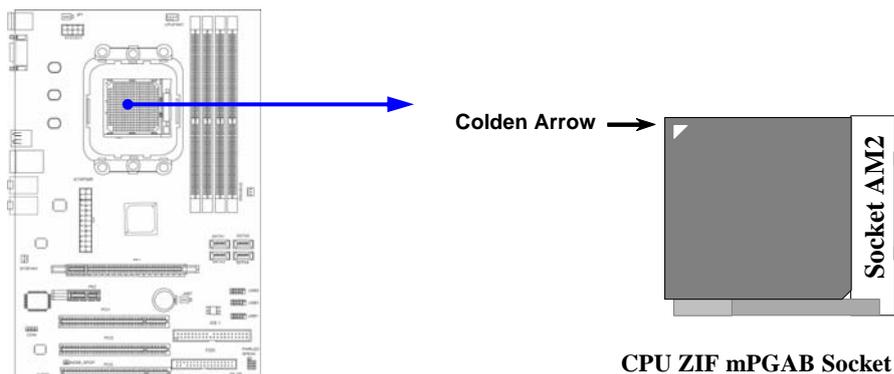
### 2-3-2 About AMD Athlon64 Socket AM2 CPU

This motherboard provides a 940-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supports AMD Athlon64 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.



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

### 2-4 Install Memory

The motherboards provide four 240-pin DDRII DUAL INLINE MEMORY MODULES (DIMM) sites for DDRII memory expansion available from minimum memory size of 128MB to maximum memory size of 8.0GB DDRII SDRAM.

#### Valid Memory CoNF-igurations

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 2, 3 (DIMM2)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 4, 5 (DIMM3)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Bank 6,7 (DIMM4)	DDRII400/DDRII533/DDRII667/DDRII800	X1	128MB~2.0GB
Total	System Memory (Max. 8.0GB)	4	128MB~8.0GB

### **Recommend DIMM Module Combination**

1. **One DIMM Module ---Plug in DIMM1**
2. **Two DIMM Modules---Plug in DIMM1 and DIMM2 for Dual channel function**
3. **Four DIMM Modules---Plug in DIMM1/DIMM2/DIMM3/DIMM4.**

### **For Dual channel Limited!**

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

Generally, installing DDR SDRAM modules to your motherboard is very easy, you can refer to figure 2-4 to see what a 240-Pin DDRII533/DDRII667/DDRII800 DDRII SDRAM module looks like.

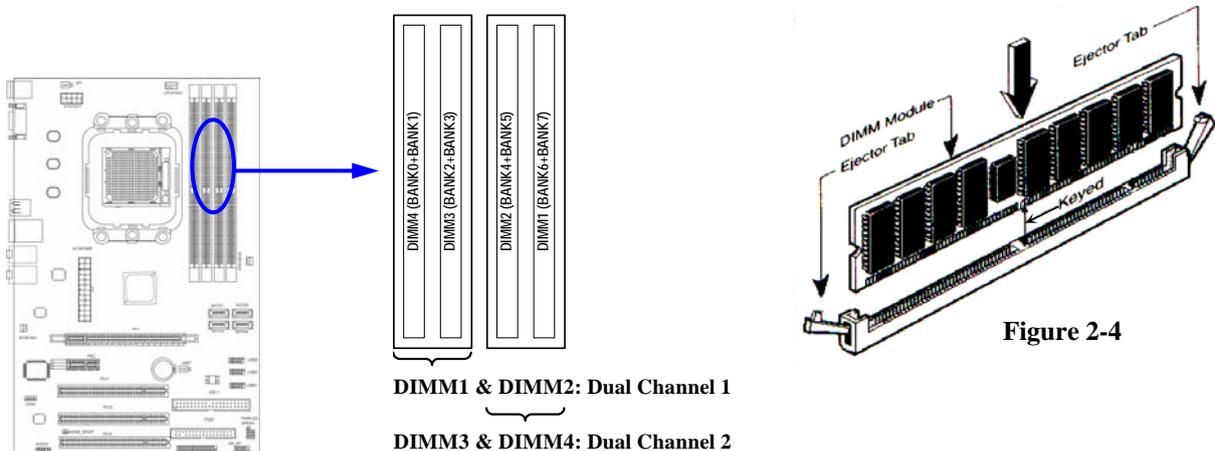


Figure 2-4

**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 indentation on both sides.

## **2-5 Expansion Cards**

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

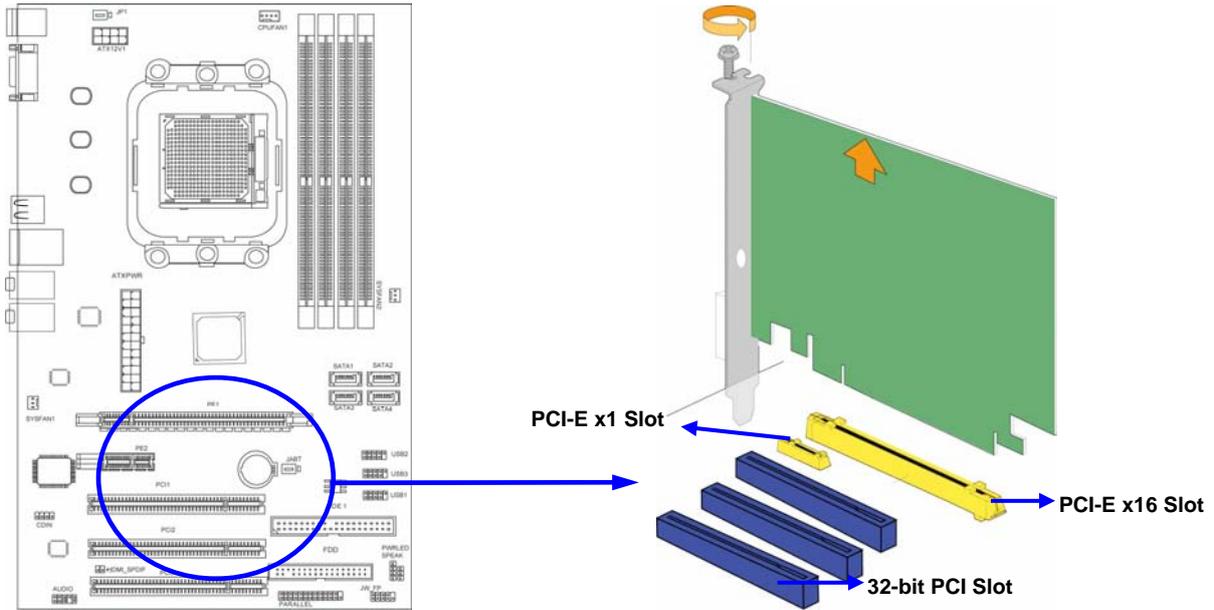
Interrupt request are shared as shown the table below:

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

**IMPORTANT!** 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

The nForce 520D/nForce520 motherboard series offer **one** PCI-Express x16 graphics slot of 4Gbyte/sec data transfer rate at each relative direction which gets 3.5 times of bandwidth more than AGP 8X and it’s up to a peak concurrent bandwidth of 8Gbyte/sec at full speed to guarantee the ultimate GPU computing performance. **Three** 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals; the motherboards are designed of tackling the profuse multimedia requirements nowadays. **One** PCI Express x1 I/O slot offers 512Mbyte/sec concurrently, over 3.5 times more bandwidth than PCI at 133Mbyte/sec Fully compliant to the *PCI Express Base Specification revision 1.0a* , support PCI Express VGA card, and other PCI Express devices.



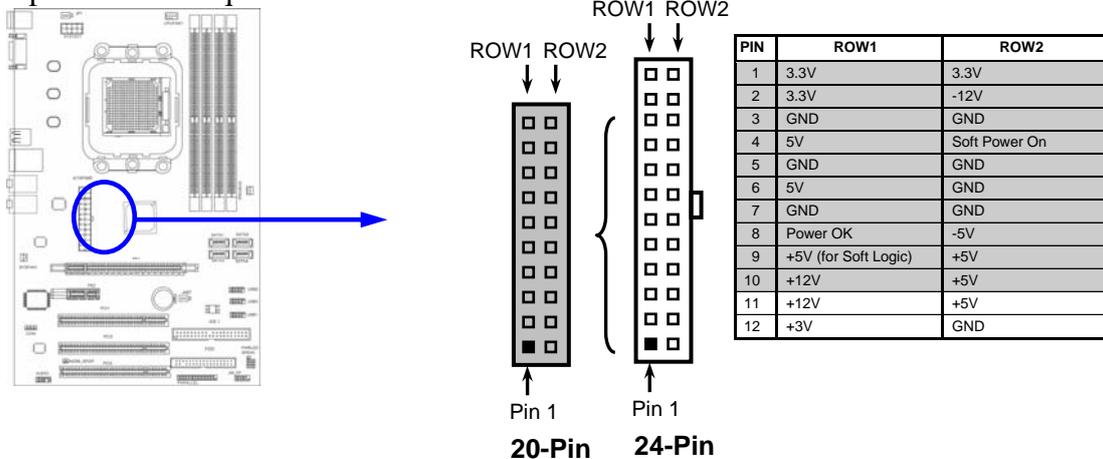
## 2-6 Connectors, Headers

### 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.

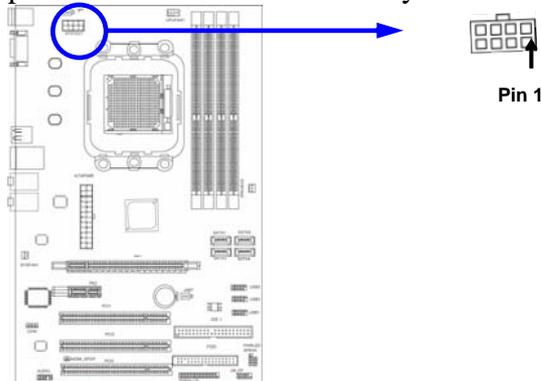


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(2) **ATX 12V Power Connector (8-pin block) : ATX12V**

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: USB4**

These connectors are 4-pin connectors that connect USB devices to the system board.

(5) **LAN Port connector: UL1**

This connector is standard RJ45 connector for Network

The USBLAN1 supports 10M/100Mb/s or 10/100/1000Mbps data transfer rate

(6) **Audio Line-In, Lin-Out, MIC, Surrback, Surround, CEN/LEF Connector : CN1 / CN2**

This Connector are 6 phone Jack for LINE-OUT, LINE-IN, MIC, Surrback, Surround, CEN/LEF

**Line-in : (BLUE)**

Audio input to sound chip

**Line-out : (GREEN)**

Audio output to speaker

**MIC : (PINK)**

Microphone Connector

**Surrback : (ORANGE)**

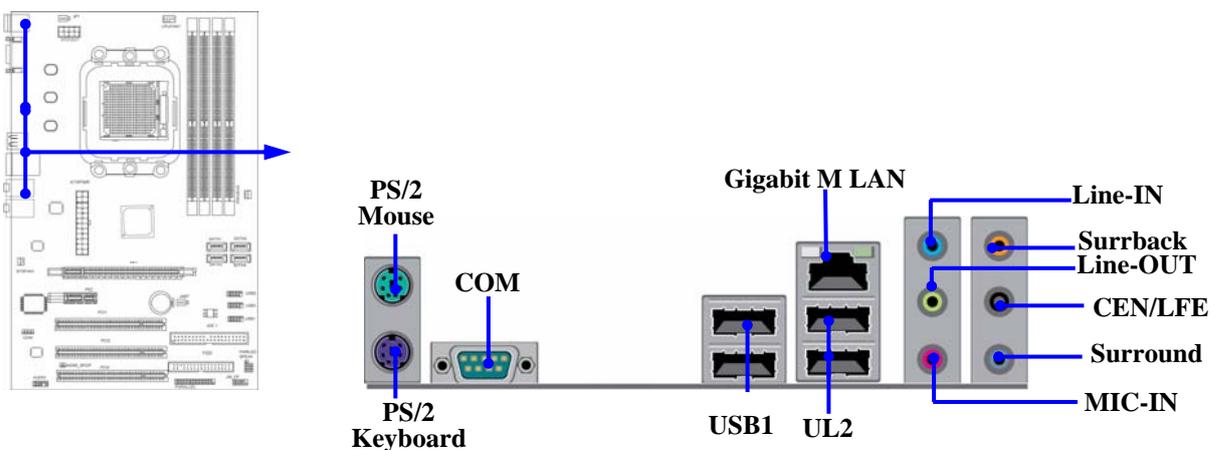
Audio output to speaker-Rear speaker out

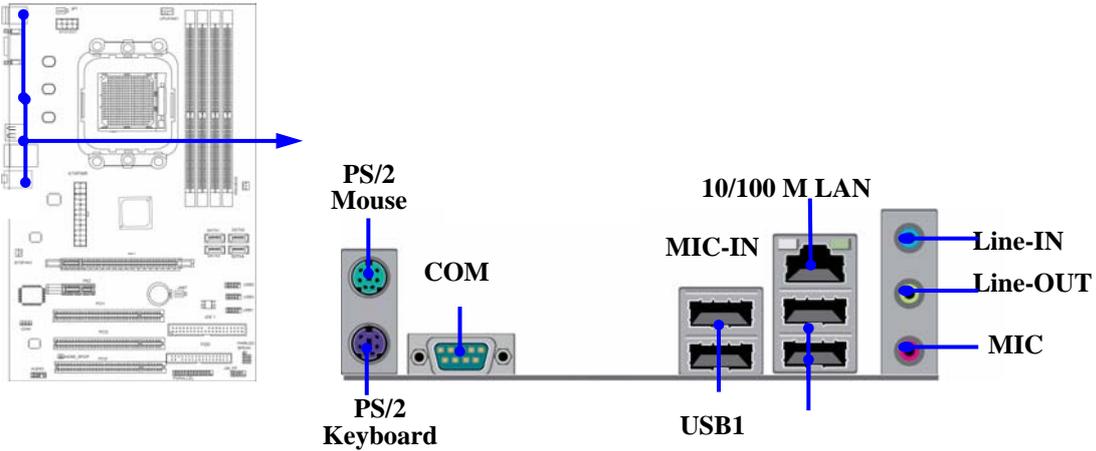
**CEN/LEF : (BLACKNESS)**

Audio output to speaker-Center/Subwoofer speaker out

**Surround: (GRAY)**

Audio output to speaker-Side speaker out



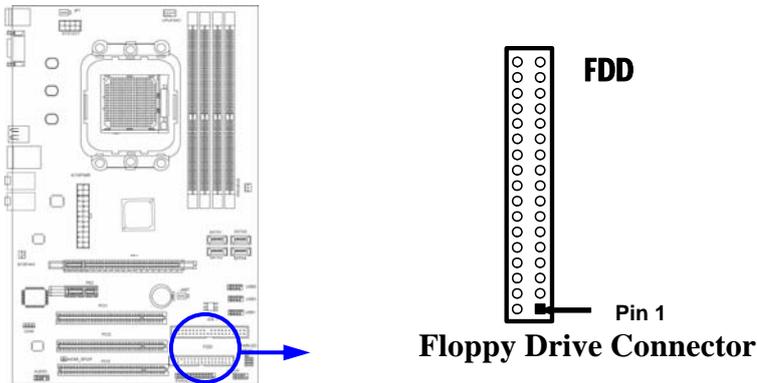


**(7) Serial COM Port Connectors: COM1**

Serial COM ports are the 9-pin D-Subminiature male connectors. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information

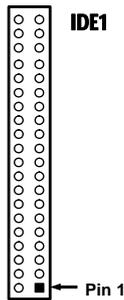
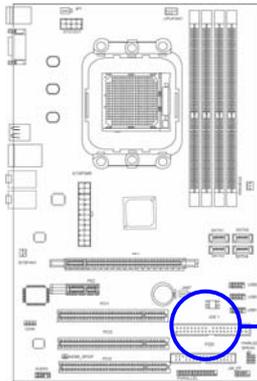
**(8) Floppy drive Connector (34-pin block): FDD**

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 drive.



**(9) 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.

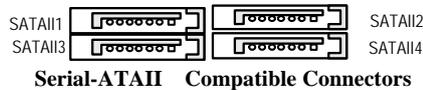
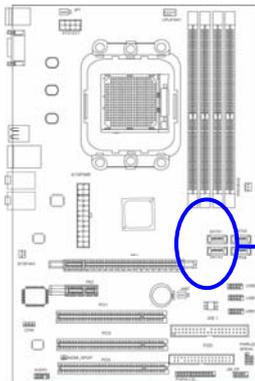


**Primary IDE Connector**

- 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.

**(10) Serial-ATAII Port connector: SATAII1 / SATAII2/ SATAII3/ SATAII4**

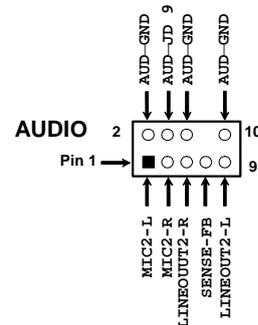
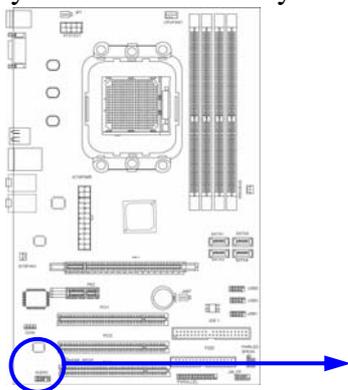
This connector supports the provided Serial ATA2 IDE hard disk cable to connecting the motherboard and serial ATAII hard disk.



**2-6-2 Headers**

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

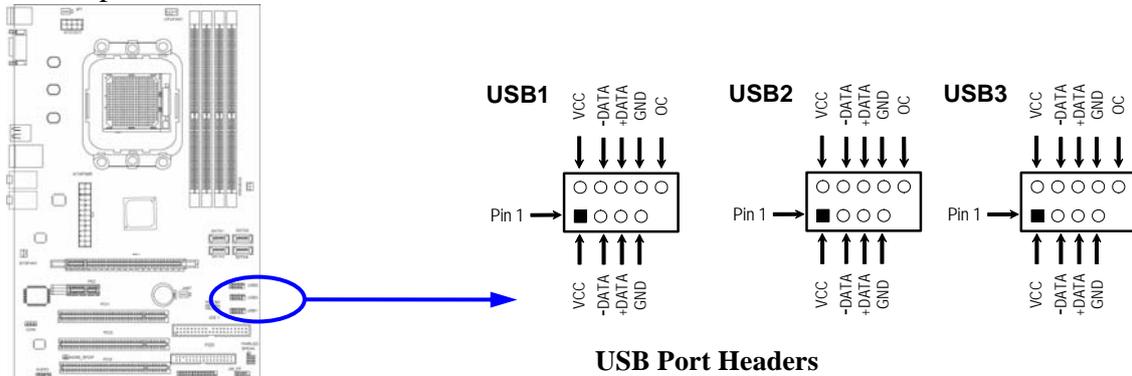
These headers connect to Front Panel Line-out, MIC connector with cable. Without install the cable, this header default setting is 5-6 short, 9-10 short. When you install the cable you have take off these jumpers.



**Line-Out, MIC Headers**

**(2) USB Port Headers (9-pin) : USB1 / USB2/USB3**

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



**(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**

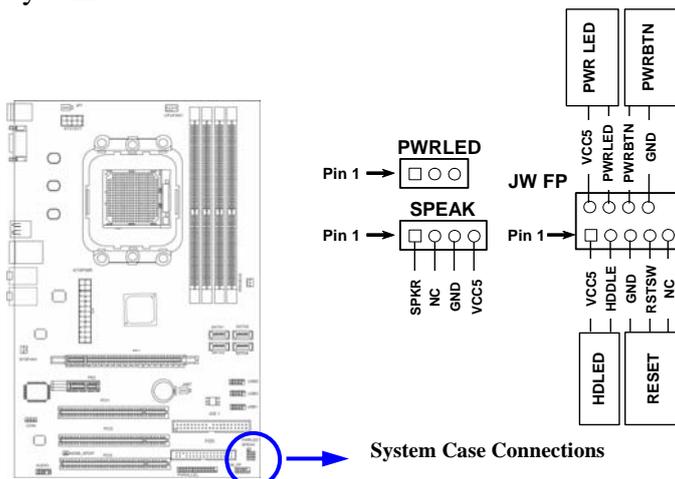
This connector connects to the hard disk activity indicator light on the case.

**(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 life 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.

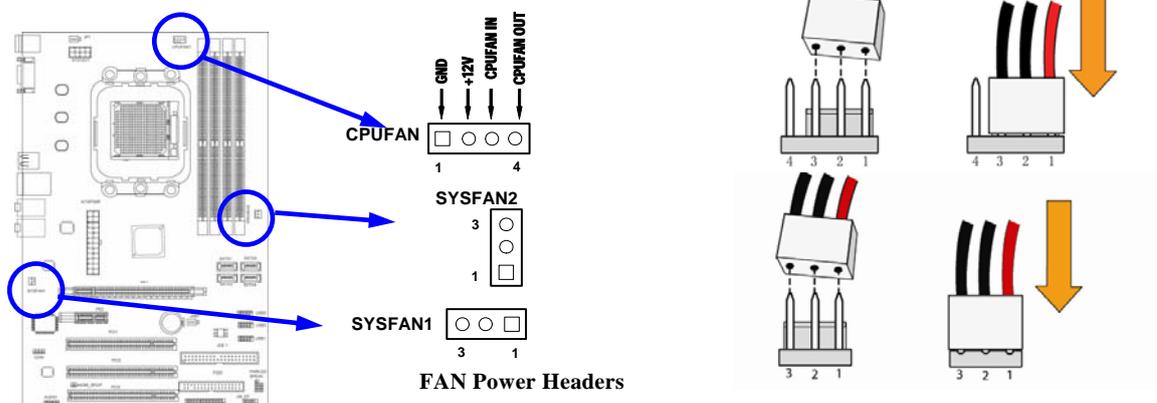


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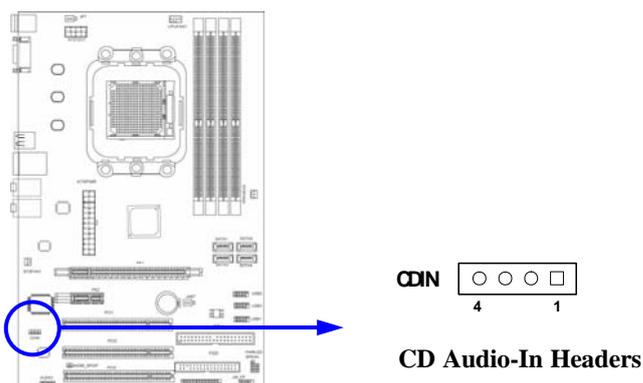
**(8) FAN Power Headers: SYSFAN1, SYSFAN2 (3-pin), CPUFAN1 (4-pin)**

These connectors support cooling fans of 350mA (4.2 Watts) or less, the wire and plug may be different depending on the fan manufacturer. 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.



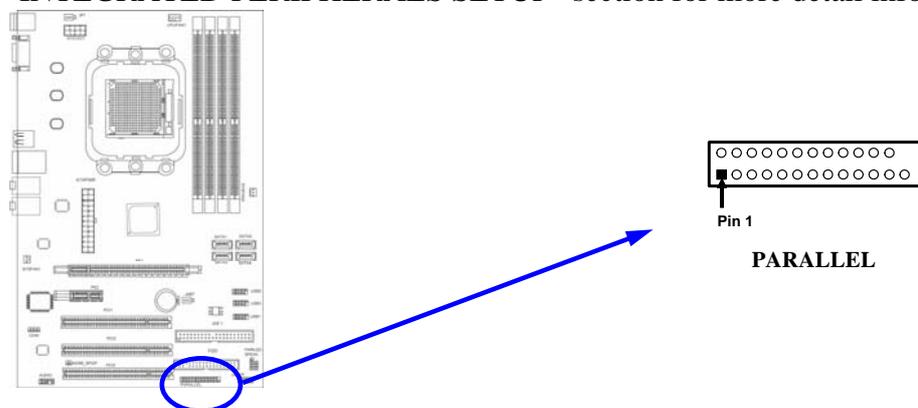
**(9) CD Audio-In Headers (4-pin) : CDIN**

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



**(10) Parallel Port Connector (25-pin male header): PARALLEL**

Parallel Port connector is a 25-pin D-Subminiature Receptacle connector. 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.

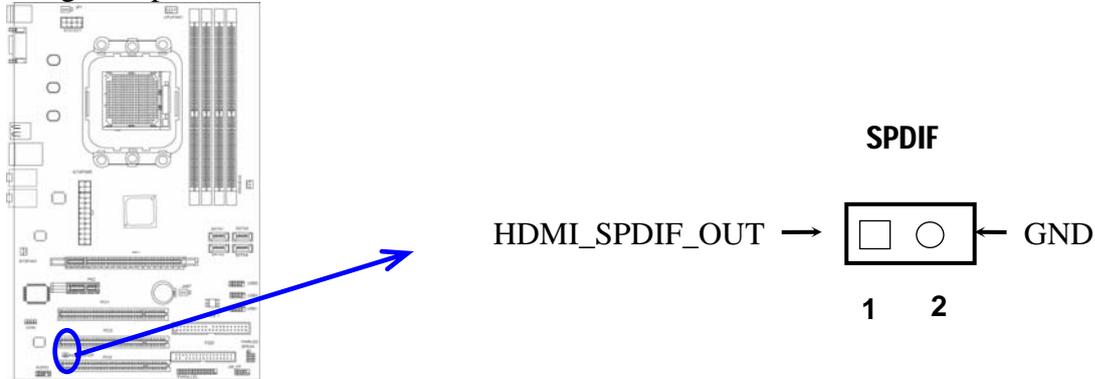


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## (12) SPDIF Out header: SPDIF Out

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.

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<b>Beep</b>	<b>Meaning</b>
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.

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# 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>.

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## 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 fourteen setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

Phoenix - AwardBIOS CMOS Setup Utility

<b>Standard CMOS Features</b>	Thermal Throttling Options
Advanced BIOS Features	Power User Overclock Settings
Advanced Chipset Features	Password Settings
Integrated Peripherals	Load Optimized Defaults
Power Management Setup	Load Standfard Defaults
Miscellaneous Control	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit    F9 : Menu in BIOS    ↑↓→← : Select Item	
F10 : Save & Exit Setup	

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.

### Thermal Throttling Options

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

### Power User Overclock Settings

Use this menu to specify your settings (frequency, Voltage) for overclocking demand

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## Password Settings

This entry for setting Supervisor password and User password

## 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

Use this menu to load the BIOS default values for the minimal/stable performance system operation.

## 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.

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

Date (hh:mm:ss)	Mon. Jan.1 ,2007	Item Help
Time (hh:mm:ss)	16 : 48 : 35	
> IDE Channel 0 Master	None	Menu Level >
> IDE Channel 0 Slave	WDC WD800BB-00JH	
SATA Channel 1	None	Change the day, month, year and century
SATA Channel 3	None	
SATA Channel 2	None	
SATA Channel 4	None	
Drive A	None	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	52326K	
Total Memory	524288K	
↑↓←→ Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

### 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

### SATA Channel 1, 2, 3, 4

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

Phoenix - AwardBIOS CMOS Setup Utility

Advanced BIOS Features

CPU Feature	Press Enter	Item Help
Removable Device Priority	Press Enter	
Hard Disk Boot Priority	Press Enter	Menu Level >
Virus Warning	Disabled	
CPU Internal Cache	Enabled	
External Cache	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Hard Disk	
Second Boot Device	CDROM	
Third Boot Device	Removable	
Boot other Device	Enabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 option	fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control For OS	1.4	
OS Select For DRAM > 64MB	Non-OS2	
HDD S.M.A.R.T. Capability	Disabled	
Full Screen LoGo Show	Disabled	
Small Logo(EPA) Show	Disabled	
↑↓← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

### Removable Device Priority

The selection is for you to choose the removable devices (Such as USB floppy or other related accessories) priorities to boot from.

### Hard Disk Boot Priority

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The selection is for you to choose the hard disk drives priorities to boot from.

### **Virus Warning**

The selection allows 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.

### **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)**

The selection is to set 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)**

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Sets the delay time after the key is held down before it begins 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.

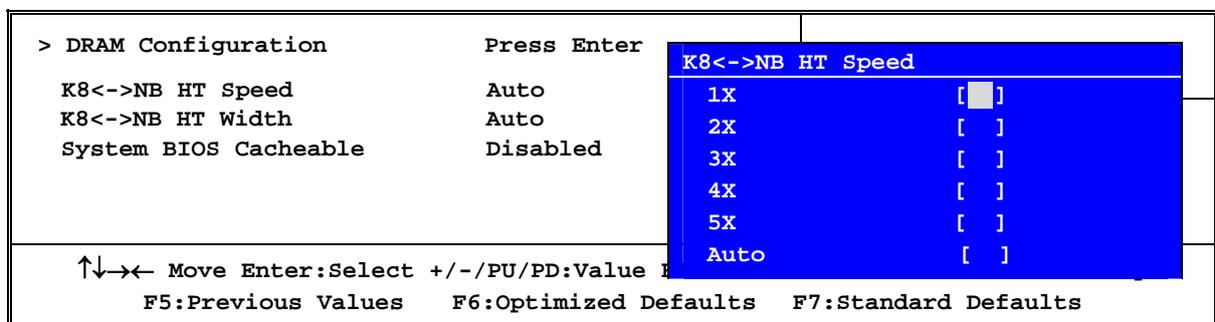
**System** The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

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

## 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



### DRAM Configuration

Please refer to section 3-6-1

### System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFFh, 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 DRAM Configuration

Phoenix - AwardBIOS CMOS Setup Utility

### DRAM Timing Settings

Timing Mode	Auto	Item Help
DQS Training Control	Perform DQS	
Memclock Tristating	Disabled	
Memory Hole Remapping	Enabled	Menu Level >>
Auto Optimized Bottom IO	Enabled	
*Bottom of [31:24] IO space	E0	
(CASL) CAS # Latency	Auto	
DRAM Command Rate	2T	
DDR II Timing Item	Disabled	
* Tw Tr Command delay	3 bus clock	
* Trfc 0 for DIMM 0	75ns	
* Trfc 1 for DIMM 1	75ns	
* Trfc 2 for DIMM 2	75ns	
* Trfc 3 for DIMM 3	75ns	
* (Twr) write Recovery Time	6 bus clock	
* (Trtp) Precharge Time	3 clock	
* (Trc) Row Cycle Time	26 bus clock	
*RAS# to CAS# R/W Delay	Auto	
* (Trcd) RAS# to RAS Delay	5 bus clock	
(Tras) Minimum RAS Active Time	18 bus clock	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

### 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. The settings are: 4T and 3T.

### 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 data. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2T and 3T.

### DRAM CAS Latency

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: 2T and 2.5T.

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## 3-7 Integrated Peripherals

Phoenix - AwardBIOS CMOS Setup Utility

### Integrated Peripherals

IDE Function Setup	Press Enter	Item Help
Onboard Device	Press Enter	
Superior Function Setup	Press Enter	Menu Level >
Init Display	PCI X	
↑↓→← 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 Port 1

Select an address and corresponding interrupt for the serial port. 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.

#### OnChip IDE Function

Please refer to section 3-7-1

#### OnChip Device Function

Please refer to section 3-7-2

#### Init Display First

This item allows you to decide to activate whether PCI Slot or AGP VGA first. The settings are: PCI Slot, AGP Slot.

### 3-7-1 IDE Function Setup

Phoenix - AwardBIOS CMOS Setup Utility

IDE Function Setup

RAID Config	Press Enter	Item Help
OnChip IDE Channel0	Enabled	Menu Level >>
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
IDE DMA Transfer Access	Enabled	
Serial ATA Controller	Enabled	
IDE Pre fetch 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		

#### OnChip IDE Channel0/Channel1

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

#### Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 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/Secondary 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 Prefetch

The selection is for you to set the IDE device as the first priority to activate.

#### 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.

#### Delay for HDD (Secs)

The selection is set for you to extend the time to search for the HDD which needs more time to activate.

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## 3-7-2 Onboard Device

Phoenix - AwardBIOS CMOS Setup Utility

### Onboard Device

HD Audio	Auto	Item Help
PCIE LAN Device	Enabled	
Onboard LAN Boot ROM	Disabled	
*** USB Controller System	***	Menu Level >>
On Chip USB	V1. 1+ V2.0	
USB Memory Type	Shadow	
USB Keyboard/Storage Support	Disabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

### Onboard HD Audio Device

This item allows you to decide to enable/disable the chipset family to support HD Audio. The settings are: Enabled, Disabled.

### USB Controller System

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

### USB Keyboard / Storage Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard or storage. 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

ACPI function	Enabled	Item Help
ACPI Suspend Type	S1(POS)	Menu Level >
Power Management	User Define	
Video off Method	DPMS Support	
HDD Power Down	Disabled	
HDD Down in Suspend	Disabled	
Soft-off by PBTN	Instant off	
Wol(PME#) from soft-off	Disabled	
Wor(RI#) from soft-off	Disabled	
Power-on by Alarm	Disabled	
Day of Month Alarm	0	
Time<hh:mm:ss> Alarm	0 :0:0	
HPET Support	Enabled	
↑↓→← 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.

#### 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

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. The settings are: Delay 4 Sec, Instant-Off.

#### Power-On by Alarm

This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

##### Date(of month) Alarm

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

##### Time(hh:mm:ss) Alarm

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.

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## 3-9 Miscellaneous Control

This section is for setting CPU Frequency/Voltage Control.

### Phoenix - AwardBIOS CMOS Setup Utility

#### Miscellaneous Control

PCIe Spread Spectrum	Disabled	Item Help
SATA Spread Spectrum	Enabled	
HT Spread Spectrum	Disabled	
Flash Write Protect	Enabled	Menu Level >
Resource Controlled By	Auto(ESCD)	
* 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		

### Spread Spectrum

This item allows you to set the CPU Host / SATA / PCI/PCIE clock and Spread Spectrum.

The settings are: Enabled, Disabled.

### Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration

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

### Resource 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 “>”).

The settings are: Auto(ESCD), Manual.

### IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

Please refer to section 3-9-1

### PCI/VGA Palette Snoop

Leave this field at *Disabled*. The settings are Enabled, Disabled.

Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The settings are: Enabled and Disabled.

### 3-10 PC Health Status

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

Phoenix - AwardBIOS CMOS Setup Utility  
PC Health Status

Show H/W Health In Post    Enabled Shutdown Temperature        Disabled SMART FAN Configuration    Press Enter Vcore                            1.35V NB                                1.20V +5V                               4.99V +12V                            12.24V +5VSB                          4.99V VDIMM                          1.85V Voltage Battery               3.04v CPU Temperature              32°C/93°F System 1 Temperature       33°C/91°F SFAN1 Speed                  0 RPM SFAN2 Speed                  0 RPM	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	

#### Shutdown Temperature

This item can let users setting the Shutdown temperature, when CPU temperature over this setting the system will auto shutdown to protect CPU.

#### Show PC Health in Post

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

#### Current CPU Temperature/Current System Temp/Current FAN1, FAN2 Speed/Vcore/Vdd/3.3V/+5V/+12V/-12V/VBAT(V)/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 CPU Throttling Temp           70°C CPU Throttling Beep           Enabled CPU Throttling Duty           87.5%	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	

## CPU Thermal Throttling Temp

This item allows you to activate the CPU Thermal Throttling function when the CPU temperature is over the value which you set to low down the CPU temperature when at high workload to protect processor from damage or accidental shutdown.

## 3-12 Power User Overclock Settings

### Phoenix - AwardBIOS CMOS Setup Utility Power User Overclock Settings

Current FSB Frequency	200MHz	Item Help
*Current DRAM Frequency is	533MHz***	
PCI-E Clock	100MHz	Menu Level >
CPU Clock at next boot is	200MHz	
DIMM Clock Setting	Auto	
CPU Vcore 7-Shift	Default	
VDIMM Select	1.86V(Default)	
NB chip 1.2v select	1.25v(Default)	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

### CPU/DRAM Clock at next Boot is

This item allows you change the CPU Host /DRAM clock for overclock demand. *When the CPU Host clock is over the CPU default value BIOS will auto disabled Bi-Turbo function.*

### CPU Vcore

This item allows you select the CPU Vcore Voltage xx% more than the standard value, by this function for the precise over-clocking for extra demanding of performance.

### VDIMM Select

This item allows you to select the voltage of the DDR Module. The choice are from 1.86 V to 2.42V

### NB Voltage

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

## 3-13 Password Settings

### Phoenix - AwardBIOS CMOS Setup Utility Password Settings

Set Supervisor Password	Press Enter	Item Help
Set User Password	Press Enter	
		Menu Level >
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

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.

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### **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.

## **3-14 Load Standard/Optimized Defaults**

### **Load Standard Defaults**

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

Load Standard Defaults (Y/N)? N

Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

### **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.

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## 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 9X/NT/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 8 selections:**

1. NFORCE           install NFORCE integrated driver
2. SOUND           install ALC HD Codec Audio driver
3. USB2.0           install USB 2.0 driver
4. PC-CILLIN       install PC-CILLIN2007 anti-virus program

- 
- 
- 5. PC-HEALTH      install My Guard PC-Health utility
  - 6. RAIDDISK      Install MCP68D RAID DRIVER DISK(option)
  - 7. BROWSE CD     to browse the contents of the CD
  - 8. EXIT            to exit from MAGIC INSTALL menu

## 4-1 nForce Install nForce Integrated Driver

\* **nForce Integrated driver pack include following device driver:**

**NVIDIA DISPLAY driver :**      If you are using an AGP VGA Card, please install NVIDIA AGP GART driver which provides service routines to your VGA driver and interface directly to the hardware for speedy graphic access.

**NVIDIA SMBUS driver :**        Install NVIDIA SMBUS driver

**NVIDIA SMU driver :**          Install NVIDIA SMU driver

**NVIDIA ETHERNET driver :**    Install NVIDIA 10/100 or 10/100/1000 Fast Ethernet device driver.

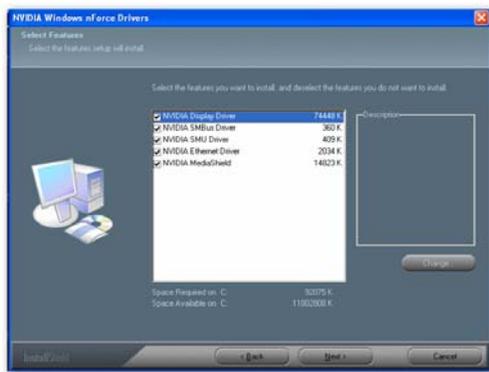
Install NVIDIA firewall and Forceware Network Access Manager utility.

**NVIDIA Media Shield driver :**    Install NVIDIA **Media Shield** driver

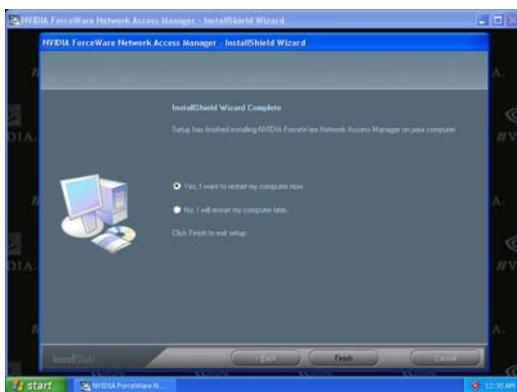


1. Click nForce in the MAGIC INSTALL MENU

2. Click NEXT when nForce Integrated driver Install windows appears



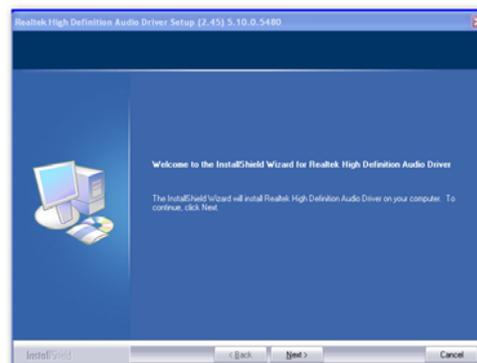
3. Please select the features you wish to install .
4. Click NEXT to install IDE driver and click “Yes” to install the features you select.



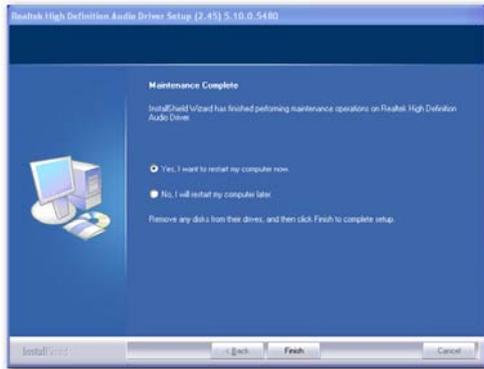
5. Select Finish and restart your computer

\* The path of the file is X:\NFORCE4\DRIVER\SETUP.EXE

## 4-2 SOUND Install ALC 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 FINISH and restart your computer



4. Manual Sound Effect Setting



5. Devices and mixer



6. Audio input and output settings



7. Microphone



8. 3D audio demo settings .

**NOTE: Please upgrade your Windows XP to Service Pack 1 later before you the HD Audio CODEC driver**

## 4-3 USB2.0 Install Intel USB2.0 DRIVER

Windows XP OS

Please install Windows XP service pack 1 or later .

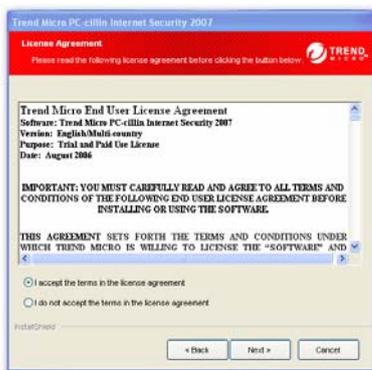
## 4-4 PC-CILLIN Install PC-CILLIN 2007 Anti-virus program



1. Click PC-CILLIN when MAGIC INSTALL MENU appears



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



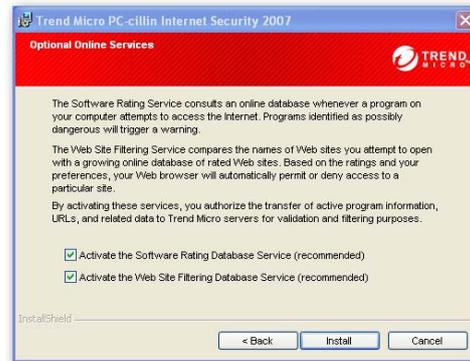
3. This is license agreement, select "I accept the terms in the licence agreement" and Click NEXT



4. The preinstallation checkup process



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



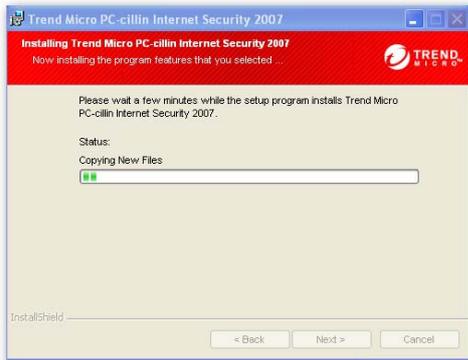
6. Click install after you select to install the optional online services.



6. Click INSTALL, Start to install the software



Setup Complete and click FINISH



7. The process of installing Trend Micro PC-CLINIC Internet Security 2007



8. Click the Finish bottom to complete the installation process and restart your computer to put the drive to work.

**Note :** Please install ACROBAT READER for reading PC-CILLIN 2007User Manual which locates at the path

“X:\acrobat\adberdr6\_enu\_full.exe”.

## 4-5 PC-HEALTH Install MyGuard Hardware monitor Utility



1. Click PC-HEALTH when MAGIC INSTALL MENU appears



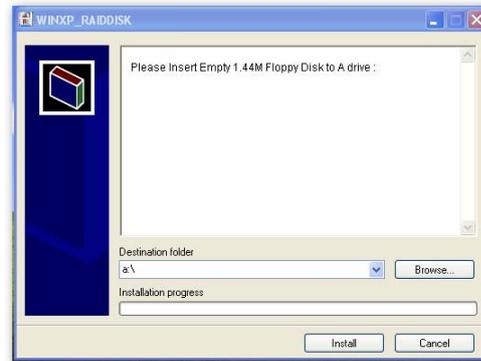
2. Click NEXT after you choose to modify, repair or remove the program.,



3. Select the features you want to install, and 4. Click FINISH to complete the installation. then click NEXT.

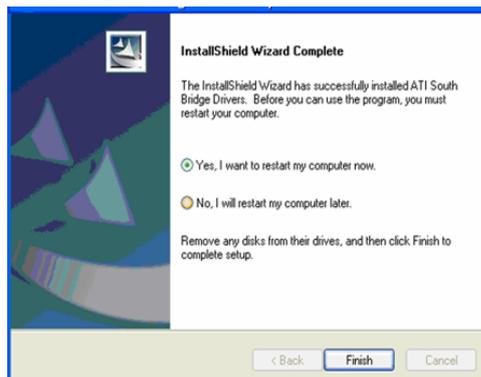
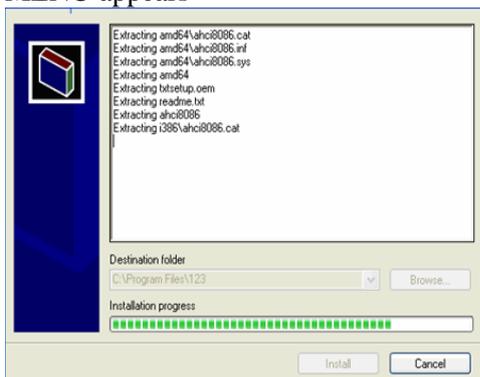
**NOTE: MAGIC INSTALL will auto detect file path X:\NFORCE4\MYGUARD\SETUP.EXE**

## 4-6 RAID DISK Install MCP68D WINXP RAID DRIVER DISK



1. Click RAIDDISK when MAGIC INSTALL MENU appears

2. Select Install to begin the installation.



3. The installprocess

4. Click FINISH and restart your computer to complete the install process.

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

## 4-7 HOW TO UPDATE BIOS

Before updating the BIOS, users have to “Disable” the “Flash Part Write Protect” selection in “Miscellaneous Control” of BIOS SETUP. Otherwise the system will not allow you to upgrade BIOS by Award Flash Utility.

**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 **MCP68D** 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/CC/R”  
 xxxxxx.BIN is the file name of latest BIOS it can be MCP68D03.BIN or MCP68D2.BIN  
 SN means don't save existing BIOS data  
 PY means renew existing BIOS data  
 CC means clear existing CMOS data  
 R means restart computer

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

## 4-8 nForce Platform RAID Function Installation

### Step 1.

Please get into the location: BIOS setup \ Integrated Peripherals \ Onchip IDE function \ RAID Configuration to enable the RAID function and choose the RAID hard drive channel.

Phoenix - AwardBIOS CMOS Setup Utility  
 RAID Configuration

RAID Enable	Enabled	Item Help	
IDE Primary Master RAID	Disabled		
IDE Primary Slave RAID	Disabled	Menu Level >>	
IDE Secondary Master RAID	Disabled		
IDE Secondary Slave RAID	Disabled		
SATA Channel 1	RAID Enabled		
SATA Channel 2	RAID Enabled		
SATA Channel 3	RAID Enabled		
SATA Channel 4	RAID Enabled		
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults			

### Step 2.

After the System boot up in the second page, you can find the NVIDIA 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 now, then you can select the RAID functions on your

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own with the optional RAID functions as below,

1. Mirroring
2. Striping
3. Striping Mirroring
4. Spanning

Array 1 : NVIDIA MIRROR 74.50G

- Array Detail -

RAID Mode : Mirroring						
Striping Width : 1			Striping Block: 64K			
Adapt	Channel	M/S	Index	Disk Model Name	Capacity	
WD800JB-75JMA0	1	75.50GB	0	Master	0	WDC
WD800JB-75JMA0	1	75.50GB	0	Master	0	WDC

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

### 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

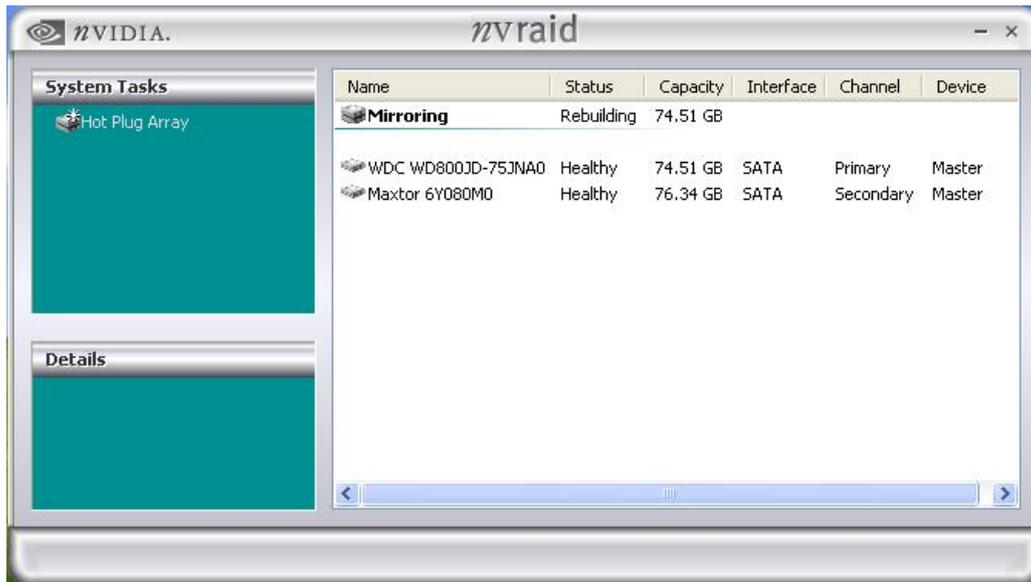
Once you have the SATA driver diskette ready, you may start to install Windows XP or Windows 2000 on your System.

#### 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



## 4-9 Pro Magic Plus Function Introduction

### What's Pro Magic Plus?

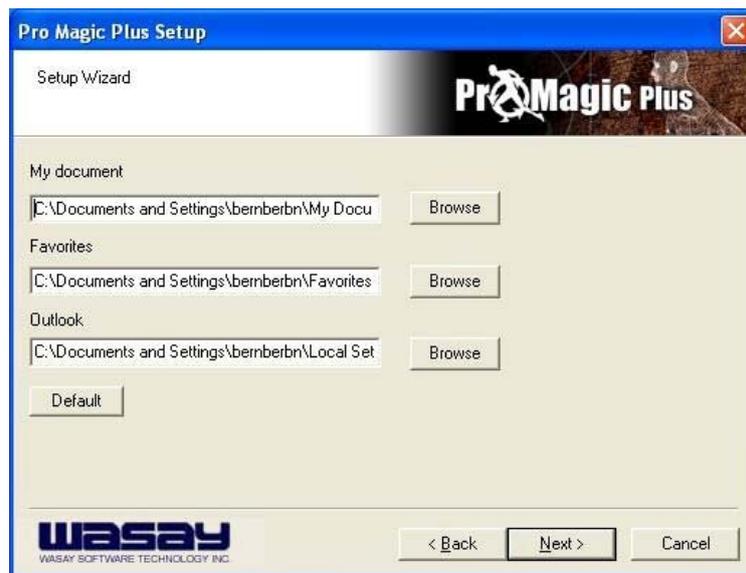
Tired with reinstall OS each time when it doesn't work? Does your computer often crash down or unable to work after having installed new software? Have you had great losses and troubles because of computer problems? Still using time-consuming backup software that occupies lots of HD space?

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 Uninstall** – 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)

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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).



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**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

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*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.