USER'S MANUAL
Of
AMD 790GX & AMD SB750 Based

M/B For Socket AM3

AMD Processor

*NO. G03-HA08-F*

Rev：1.0

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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.

TABLE OF CONTENT

⚠ CAUTION Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- 0 to 40 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

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Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	Febuary, 2008

Item Checklist

- ☑ AMD790GX Platform Processor Chipset based motherboard
- ☑ User's Manual
- ☑ CD for motherboard utilities
- ☑ Switch Card
- ☑ 8 in 1Cable Package
- ☑ I/O back panel shield

AMD AM3 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 AM3 processors by AMD. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support Socket-AM3 processors.

Chapter 1

Introduction of AMD790GX Motherboards

1-1　　Features of motherboard

The AMD790GX chipset motherboard series are based on the latest AMD790GX Chipset and the SB750 chipset which supports the innovative AMD Phenom™ II X3 processor and AMD Phenom™ II X 4 processors. With an integrated low-latency high-bandwidth DDRIII memory controller and a highly-scalable Hyper Transport technology-based system bus up to HT 3.0. AMD790GX Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution.

The AMD790GX Series motherboards support new generation Socket AM3 processors with an integrated DDRIII memory controller for Dual channel DDRIII800 / DDRIII 1066 / DDRIII 1333 Module up to 8GB, also provide DDRIII 128Mb GPU Memory.The motherboard is embedded with SB750 chipset of providing ULTRA ATA 133 connectors and Serial ATA2 with RAID 0, 1, 10,5 functions which support up to one IDE and six Serial ATA2 devices to accelerate hard disk drives and guarantee the data security without failure in advanced computing performance.

The AMD790GX motherboards provide 10/100/1000 LAN function with RTL8111CVC PCI-E Gigabit LAN which supports 10/100/1000Mbps data transfer rate. And the embedded 8-channel HD Audio CODEC is fully compatible with Sound Blaster Pro standards that offer you with the home cinema quality and satisfying software compatibility.

The AMD790GX Series motherboards deliver outstanding value and performance for gamers, with a true bandwidth design for Multi-GPU configurations. This high bandwidth architecture in the AMD 790GX chipset are with the flexibility for single or dual card configurations. The AMD 790GX chipset provides 2 x16@8 lane PCI Express 2.0 slots to support simultaneous operation of graphics cards for astonishing performance with brilliant and intense 3D graphics.

AMD790GX Series motherboard series offer two PCI-Express2.0x16@ 8lanes graphics slots. When PE4 installed switch card, the PE1 will doubled its bandwidth. Two PCI Express x1 I/O slot tackling the most demanding multimedia tasks nowadays.The AMD790GX motherboards also carry two 32-bit PCI slots guarantee the rich connectivity for the I/O peripheral devices. This motherboard support Hybrid CrossFireX function, the VGA Card on PE1 or PE4 will activate a Hybrid CrossFire with the onboard VGA Card, the performance will be increased 15% to 75%.

Embedded USB controllers as well as capability of expanding to 12 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 / DeBug Port /OC-CON/ DIY Clear / Power On Button/ Reset Button.* 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 causes 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℃ 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 31 steps for the precisely over-clocking of extra demanding computing performance.

Debug Port --- (The Professional Hardware Diagnosis System)
Being bugged of abnormal system failure through the tossed and turned nights no more, the embedded Hardware Debug Port offers you the real-time visual system healthy for the demanding usage of computing. No more bugging by unknown system failure and no more time wasted in the first moment of 24-hour nonstop ping business computing, the embedded Debug Port will turn you into a well training hardware professional with the seeing system situation. (The Post Code please refer to appendix)

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.

DIY Clear… The CMOS button is to facilitate the clear CMOS process for power user overclocking function. The user can easily clear or restore CMOS setting by pressing the button without tacking trouble to remove the case and locate the jumper for clear CMOS .

Power On Button…   You can easily start the computer by pressing down this button for a few seconds, without troubling yourself to locate the front panel jumpers to find the Power on jumper.

Reset Button..:   You can easily restart the computer by pressing down this button for a few seconds, without troubling yourself to locate the front panel jumpers to find the reset jumper**.**

1-2　Specification

Spec	Description
Design	● ATX form factor 4 layers PCB size: 30.5cm x24.5cm
Chipset	● AMD790GX North Bridge Chipset ● AMD SB750 South Bridge Chipset
CPU Socket AM3	● Support AMD AM3 processors: AMD Phenom™ II X3 and AMD Phenom™ II X4 processors ● Support HT 3.0
Memory Socket	● 240-pin DDRIIIModule socket x 4 ● Support 4pcs DDRIII 800/DDRIII 1066 /DDRIII 1333 Modules Expandable to 8GB ● Dual channel supported
Expansion Slot	● 2pcs PCI-Express 2.0x16 by 8 lane ● 2pcs PCI-Express 2.0 x1 slot ● 32-bit PCI slot x 2pcs
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 6 Serial ATA 3Gb/s connectors with RAID 0, 1, 10,5 functions
Gigabit LAN	● Integrated RTL8111CVC PCI-E 10 / 100 / 1000 LAN. ● Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000 Mb/s data transfer rate
8 CH-Audio	● Realtek ALC888 Azalia 8-channel Audio Codec integrated ● Support 8-channel 3D surround & Positioning Audio ● Audio driver and utility included
Sideport Memory	● Embeded DDR III 128Mb sideport memory
BIOS	● AMI 8MB Flash ROM BIOS
Multi I/O	● PS/2 keyboard and PS/2 mouse connectors ● HDMI Connector / DVI Connector / VGA Connector ● ESATA Connector x1 ● RJ-45 Connector x1 ● USB2.0 port x 4 and headers x 4 ● Audio connector x1 (8CH Audio) ● Floppy disk drive connector x1 /Hard Disk Drive Connector x1 ● Serial port header x1 ● HDMI-SPDIF header x1 ● IR 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.)

Performance Test Report

CPU:　　　　　　HDX810WF
DRAM:　　　　　　KINGSTON 1333 1G X2
VGA Card:　　　　onboard
Hard Disk Driver: SAMSUNG 160G SATA

BIOS:　　　　　　A01.ROM
OS:　　　　　　　Windows XP Professional (SERVICE PACK 2)

3D Mark 2001SE	10945
3D Mark 2003	3879
3D Mark 2005	233535694
AQUAMRK3	
PCMark2005	
System / CPU / Memory	4359/5518/3684
Graph / HDD	2723/2921
Content Creation Winstone 2004	44.1
Business Winstone 2004	28.3
Winbench 99 V2.0:	
Business/Hi-end Disk Winmark99	5670
Business/Hi-end Graphic Winmark	22900
SYSMark 2004: SISMark Rating(Internet Content Creation / Office Productivity)	
SYSMark 2004	399
3D Creation/2D Creation	279/477
Web publication	368/226
Communication/Document Creation	181/275
DATA Analysis	231
SISOFT Sandra 2007 : 1.CPU Arithmetic Benchmark 2.Memory bandwidth Benchmark 3.CPU Multi-Media Benchmark ver:1140	
1. Dhrystone ALU　　　　MIPS	17286
Whetstone FPU iSSE3　　　FLOPS	14699
2.Int/Float Buffered iSSE2　　MB/S	4229/4118
3.Integer/Floating-Point　　IT/S	44959/49026
UT2003 Benchmark (flyby/botmatch)	161.024597/69.83204
Quake3 DEMO1 /DEMO2　　FPS	79.7/
Super Pi (1M)　　　　　Second	38.5MB/s
CPUZ　　System / CPU Clock	

1-4 Layout Diagram

Rear I / O for 790GX based motherboard

DVI Connector

ESATA Connector

RJ-45 Connector

Line-IN

RS-OUT

PS/2 Mouse

Line-OUT

PS/2 Keyboard

CS-OUT

SS-OUT

MIC-IN

HDMI Connector

VGA Connector

USB Connectors

KBMB/USB Power On(JP1)   SYSFAN2

CPUFAN

PS2 KB/Mouse Port

HDMI Connector

DDR III Socket x 4

ATX 12V Power Connector

ATX Power Conn.

VGA over DVI Connector

E-SATA Over USB Connector (CN1)

(E-SATA1)

ATA 133 IDE Conn.(IDE1)

RJ-45 Over USB Connector (UL1)

Audio Connector (J1)

CPU Socket AM3

AMD 790GX Chipset

4-pin PWR Connector

DDRIII 128Mb GPU Memory

RTL8111CVC Gigabit LAN

Reset

PCI Express 2.0 x1

Power

PCI Express 2.0 x16 by 8-lane

AMD SB750 Chipset

CHA FAN

PCI Express 2.0 x1

HDMI-SPDIF

Serial-ATAII Connectors SATA1, 2,3,4,5,6

Realtek ALC888 Audio Decode

Clear CMOS (JBAT)

SYSFAN1

8MBit Flash

ROM BIOS

Speaker Power Led

PCI Slots

Front Panel Connector

Audio

CDIN   IR Header

USB Header (USB1, 2,3,4)

Floppy Disk Connector

COM Header

Jumpers

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

Connectors

Connector	Name	Description	Page
ATXPWR1	ATX Power Connector	24-pin Block	P.12
ATX12V	ATX 12V Power Connector	8-pin Block	P.13
KB	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
CN1 for USB	USB2.0 Port Connector	4-pin Connector	P.13
UL1 for RJ45LAN	Gigabit LAN Port Connector	RJ-45 Connector	P.13
J3	Power Connector	4-Pin Block	P.13
J1	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.15
SATA1~SATA6, E-SATA1	Serial ATAII IDE Connectors	7-pin Connector	P.14
CN1 for ESATA	External Serial ATAII Connector	7-pin Connector	P.15
VGA1	D-Sub Connector	15-pin Connector	P.15
DVI	Digital Visual Interface	29-pin Connector	P.15
HDMI	High-Definition Multimedia	19-pin Connector	P.16

Headers

Header	Name	Description	Page
AUDIO1	Front Panel SPEAKER, MIC header	9-pin Block	P.16
USB1, 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_FP1 (Reset/IDE LED/Power Button)	Front Panel Header (including IDE activity LED/Reset switch / Power On Button lead)	9-pin Block	P.16
SYSFAN1/2, CHAFAN	FAN Headers	3-pin Block	P.17
CPUFAN	FAN Header	4-pin Block	P.17
CDIN1	CD Audio-In Header	4-pin Block	P.17
IR	IR infrared module Headers	5-pin Block	P.18
COM1	Serial Port COM1 Header	9-pin Block	P.18
HDMI-SPDIF	SPDIF Out header	2-pin Block	P.18

Expansion Sockets

Socket/Slot	Name	Description	Page
ZIF Socket AM3	CPU Socket	938-pin PGAB CPU Socket	P.9
DIMM1~4	DDRIII Module Socket	240-pin DDRIII Module Socket	P.10
PCI1~ PCI2	PCI Slots	32-bit PCI Local Bus Expansion slots	P.12
PE2,PE3	PCI-Express 2.0 x1Slot	PCI-Express 2.0 x1 Expansion Slots	P.12
PE1,PE4	PCI-Express 2.0x16 Slot	PCI-Express 2.0x16 Expansion Slots	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
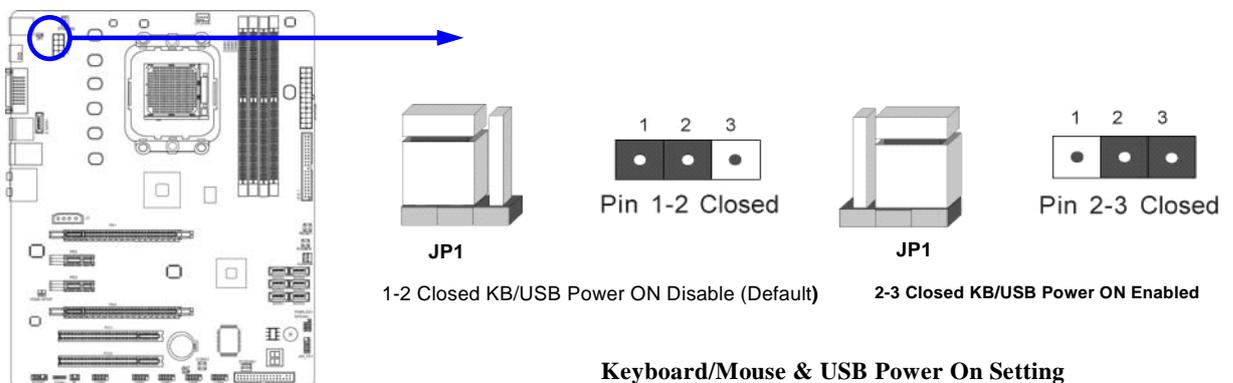
(2) CMOS RAM Clear (3-pin) : JBAT
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

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*

CMOS RAM Clear Setting
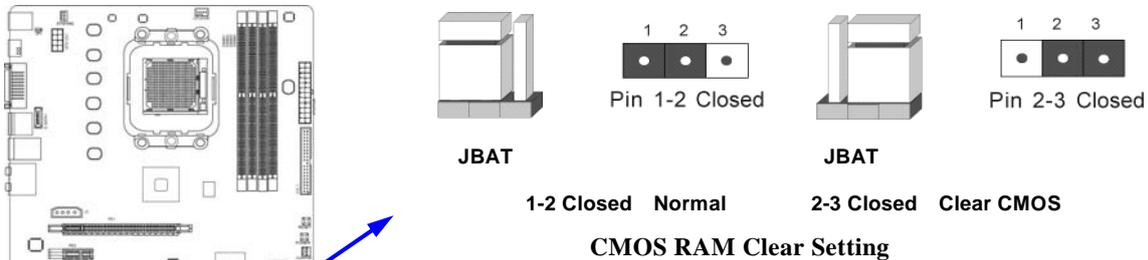
2-3   Install CPU

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 AM3 CPU Installation

This motherboard provides a socket AM3 surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA socket supports AMD AM3 processor.

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.

Colden Arrow

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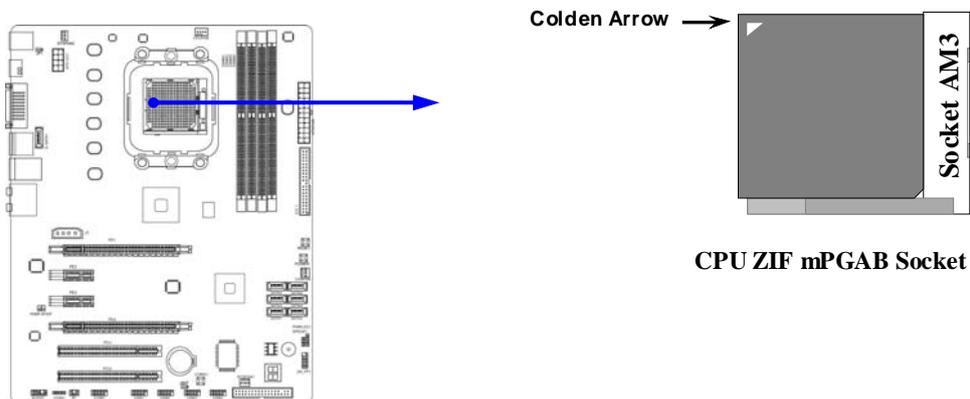
When you put the CPU into the ZIF socket, No force required to insert of the CPU, and then press the level to locate position slightly without any extra force.

2-4   Install Memory

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

Valid Memory Configurations

Bank	240-Pin DIMM	PCS	Maximum Capacity
Bank 0, 1 (DIMM1)	DDR III 800/DDR III 1066/ DDR III1333	X1	2GB
Bank 2, 3 (DIMM2)	DDR III 800/DDR III 1066/ DDR III1333	X1	2GB
Bank 4, 5 (DIMM3)	DDR III 800/DDR III 1066/ DDR III1333	X1	2GB
Bank 6, 7 (DIMM4)	DDR III 800/DDR III 1066/ DDR III1333	X1	2GB
Total	System Memory (Max2GB)	4	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 DDRIII 800/DDRIII 1066/DDRIII 1333 SDRAM module.
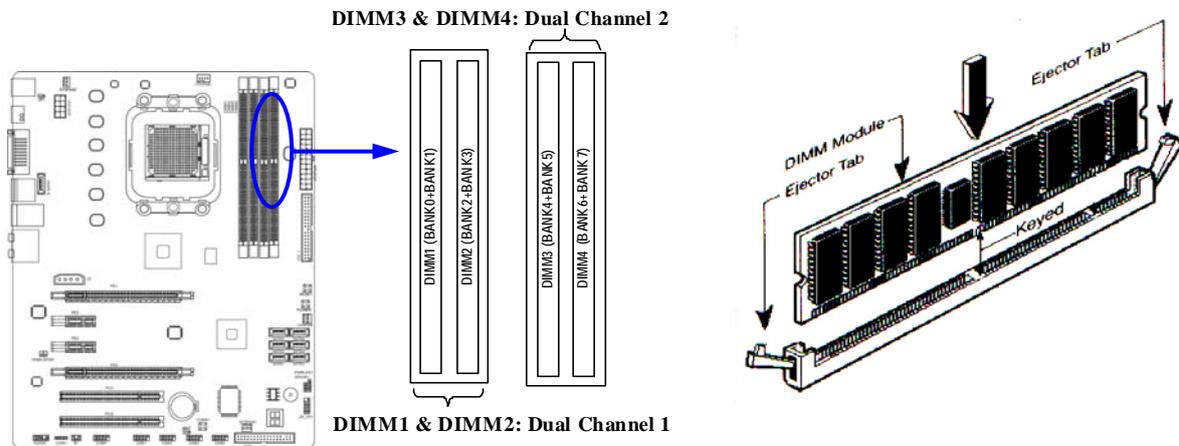
Graph 2-4

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		√						

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 Express2.0 Slot

AMD790GX Series motherboard series offer two PCI-Express2.0x16@ 8lanes graphics slots. When PE4 installed switch card, the PE1 will doubled its bandwidth. Two PCI Express x1 I/O slot tackling the most demanding multimedia tasks nowadays.The AMD790GX motherboards also carry two 32-bit PCI slots guarantee the rich connectivity for the I/O peripheral devices. This motherboard support Hybrid CrossFireX function, the VGA Card on PE1 or PE4 will activate a Hybrid CrossFire with the onboard VGA Card, the performance will be increased 15% to 75%.

PCI-E2.0 x1 Slot

PCI-E 2.0 x16 Slot@8-lane

32-bit PCI Slot
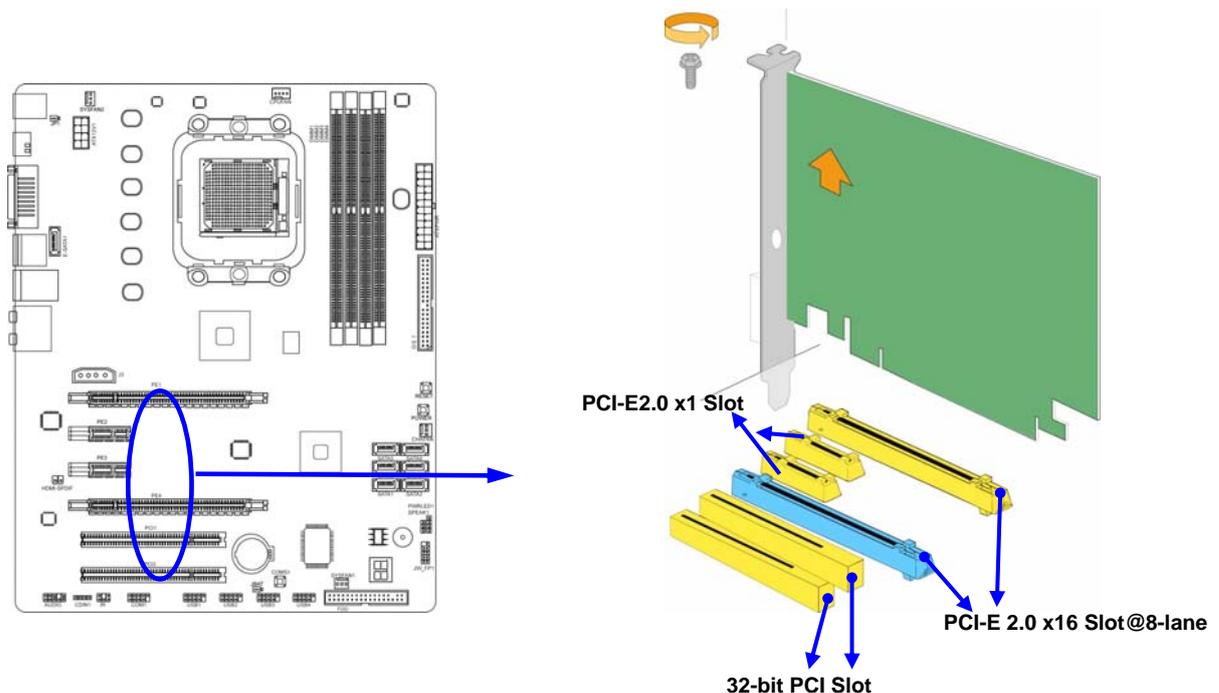
2-6 Connectors, Headers
2-6-1 Connectors
(1)   Power Connector (24-pin block) : ATXPWR1

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

20-Pin   **24-Pin**
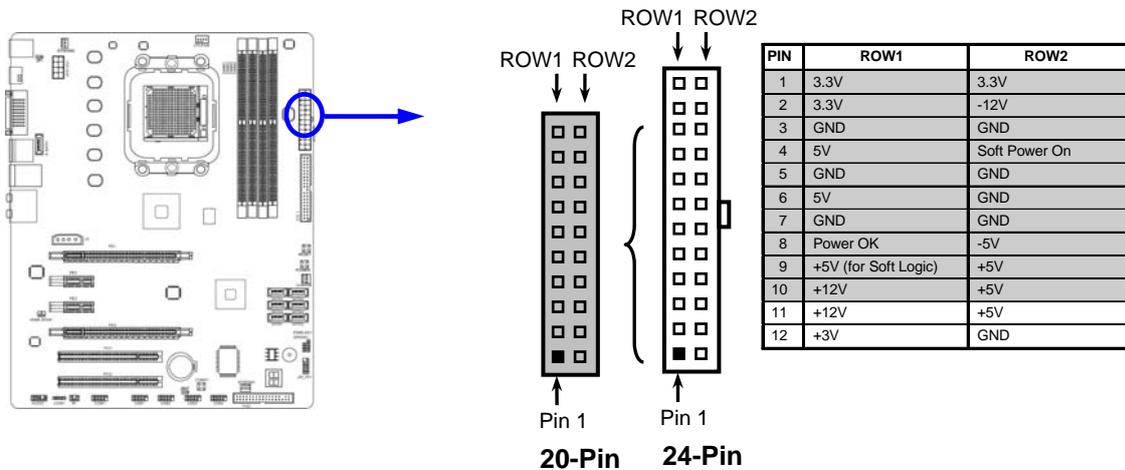
(2) ATX 12V Power Connector (8-pin block) : ATX12V1

This is a new defined 8-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports Socket AM3 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.

Pin 1
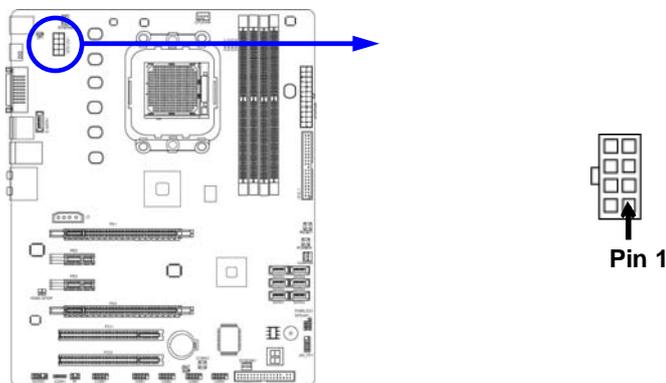
(3) PS/2 Mouse & PS/2 Keyboard Connector: KB

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

(4) USB Port connector: CN1/ UL1 for USB

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

(5) LAN Port connector: UL1 for RJ45 LAN

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

(6) Large 4-Pin Power Connector ：J3 Power Connector

The connectors are 4-pin connector that supports extra 12V / 5V power to your system
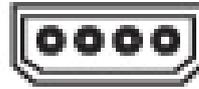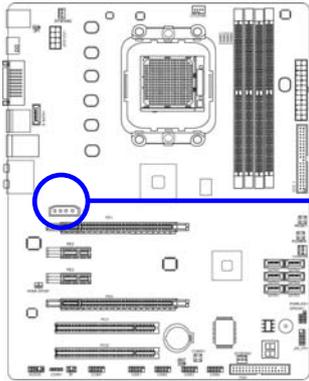
(7) Audio Line-In, Lin-Out, MIC, RS-Out, CS-Out，SS-Out connector : J1

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

Line-in :	(BLUE)	Audio input to sound chip
Line-out :	(GREEN)	Audio output to speaker
MIC :	(PINK)	Microphone Connector
RS-OUT :	(BLACK)	Rear-Surround audio output
CS-OUT :	(ORANGE)	Center/ Subwoofer audio output
SS-OUT:	(GRAY)	Side-Surround audio output
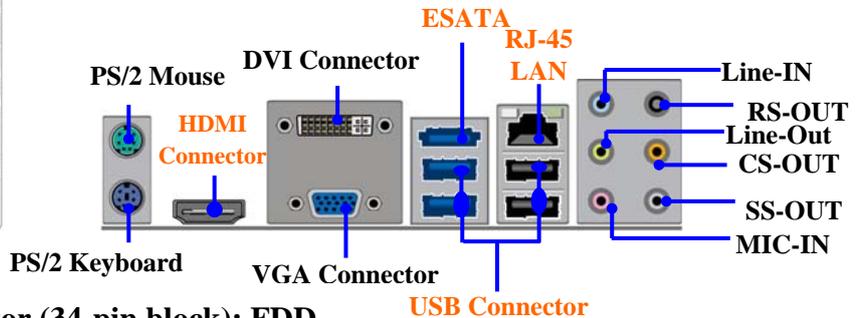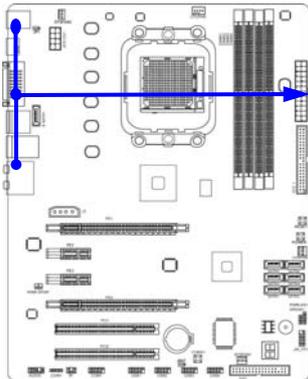
(8) Floppy drive Connector (34-pin block): FDD

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 drives.

Floppy Drive Connector
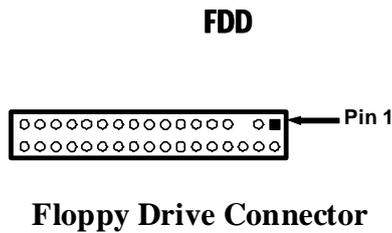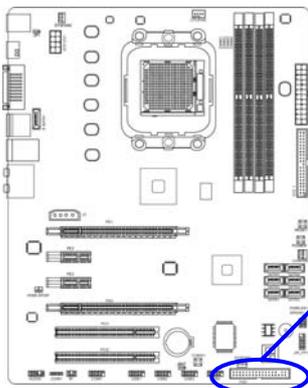
(9) Primary IDE Connector (40-pin block): IDE1

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.

IDE HDD Connector

IDE1

Pin 1
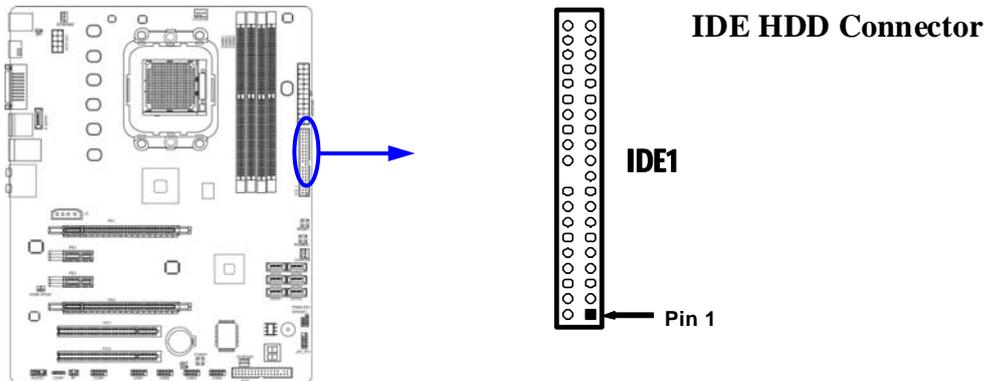
- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".
- For performance issues, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

(10) Serial-ATAII Port connector:SATA1~SATA6; E-SATA1

This connector supports the provided Serial ATA2 IDE hard disk cable to connecting the motherboard with serial ATAII hard disk. E-SATA1 is not for SATA harddrive ,it is only for connecting t one of the SATA device from SATA1~SATA6 to activate the ESATA connector.

E-SATA1

SATA1   SATA2
SATA3   SATA4
SATA5   SATA6
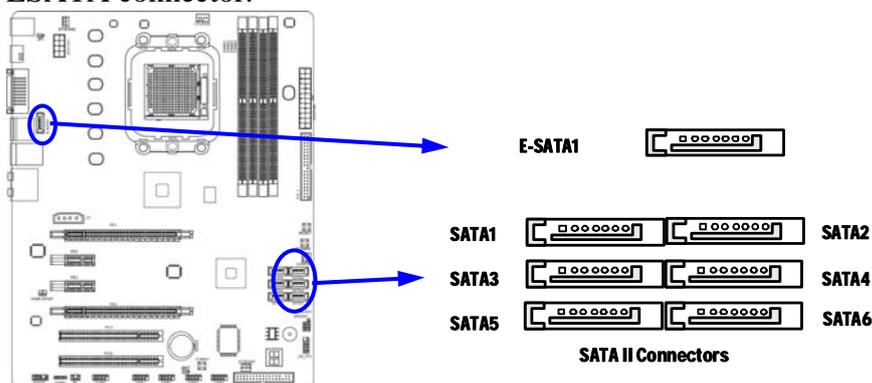
SATA II Connectors

(11) ESATA Port: CN1 for ESATA

This connector supports the External Serial ATA2 (ESATA) enable the full SATA interface speed outside the chassis, up to 3Gb/s. The ESATA port can be enabled only when the E-SATA 1 is connected to one of SATA 1~SATA6.

(12) D-Sub 15-pin Connector: VGA1

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

(13) Digital Visual Interface: DVI

This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

(14)   High-Definition Multimedia Interface: HDMI

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

NOTE!	DVI and HDMI Connector can not be used at the same time.

2-6-2 Headers
(1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO1

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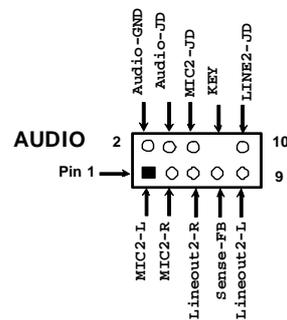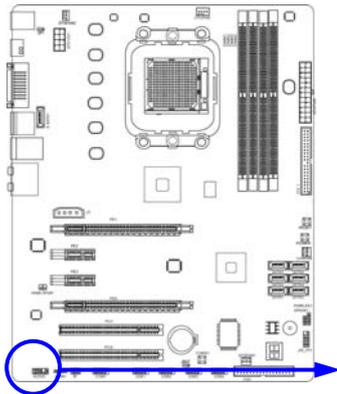
Line-Out, MIC Headers

(2) USB Port Headers (9-pin):   USB1/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.
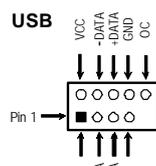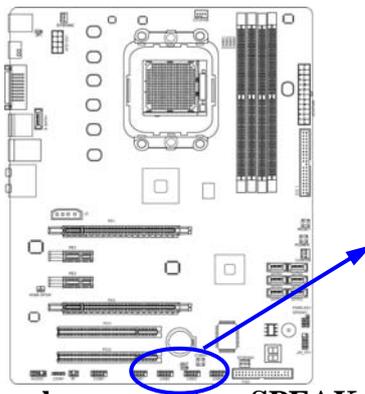
USB Port Headers

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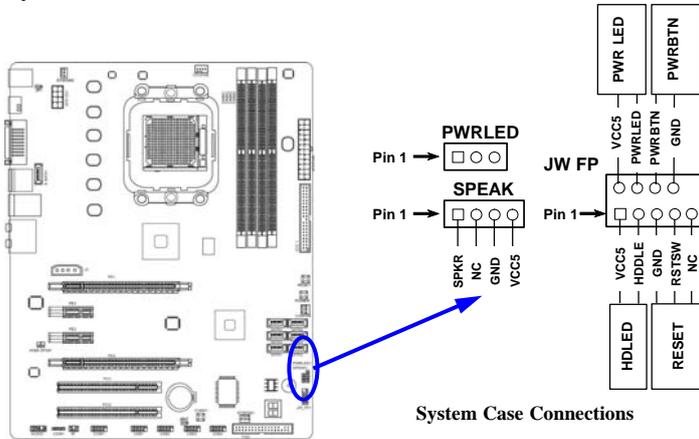
(8) FAN Power Headers: SYSFAN1, SYSFAN2, CHAFAN (3-pin), CPUFAN (4-pin)

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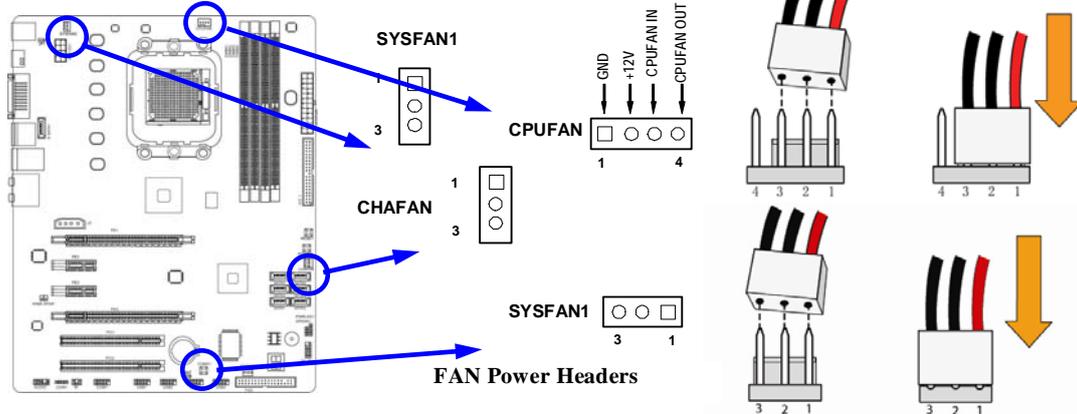
(9) CD Audio-In Headers (4-pin): CDIN1

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

CD Audio-In Headers
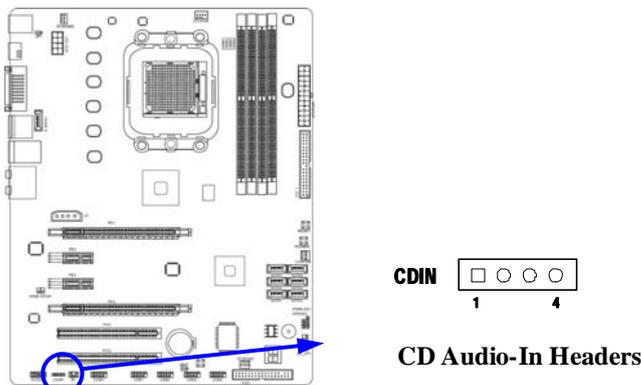
(10)   IR infrared module Headers (5-pin): IR

This connector supports the optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.
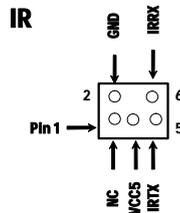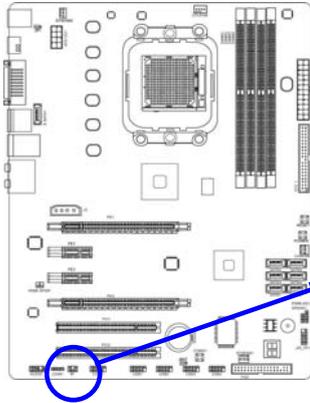
IR infrared module Headers

(11)   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
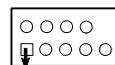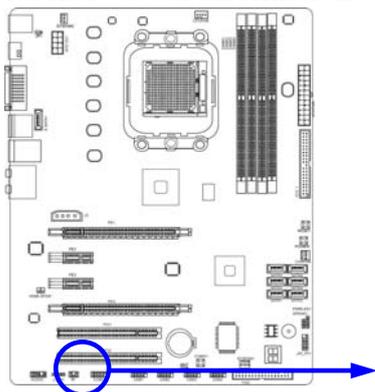
Pin1

Serial COM Port 9-pin Block

(12)   HDMI-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. Some of the VGA Card need connect SPDIF-IN Connector，so its HDMI Port can make sounds .

SPDIF

HDMI_SPDIF_OUT → □ ○ ← GND

1   2
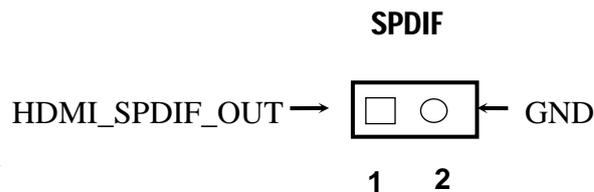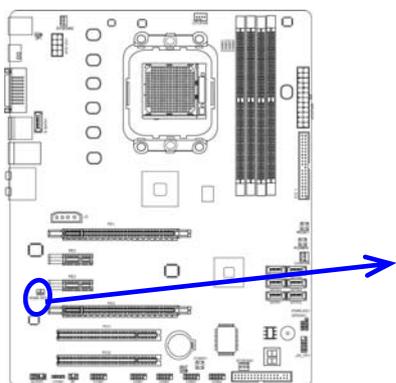
2-7   Starting Up Your Computer

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.

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 <+>/<−> keys when you want to modify the BIOS parameters for the active option.
- Press Home to go to the top of screen; press End to go to the bottom of screen.
- Press Enter to go to sub screen.

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　<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 AMI BIOS 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.

```
         CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

  ┌────────────────────────────────────────────────────────────────────────┐
  │ Standard BIOS Features         │  Thermal Throttling Option              │
  │                                │                                         │
  │ Advanced BIOS Features         │  Power User Overclock Settings          │
  │                                │                                         │
  │ Advanced Chipset Features      │  Password Settings                      │
  │                                │                                         │
  │ Integrated Peripherals         │  Load Optimal Defaults                  │
  │                                │                                         │
  │ Power Management Features      │  Load Standard Defaults                 │
  │                                │                                         │
  │ Miscellaneous Control          │  Save Changes and Exit                  │
  │                                │                                         │
  │ PC Health Status               │  Discard Changes and Exit               │
  ├────────────────────────────────────────────────────────────────────────┤
  │  ↑↓→←: Move  Enter: Select +/-/: Value F10: Save ESC:Exit F1:General Help │
  │                                                                          │
  │      F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults      │
  ├────────────────────────────────────────────────────────────────────────┤
  │         V02.64(C)Copyright 1985-2008, American Megatrends. Inc.          │
  └────────────────────────────────────────────────────────────────────────┘
```

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 Features
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 Settings
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 range of temperature you define.

Load Standard Defaults

This menu uses a minimal performance setting, but the system would run in a stable way.

Load Optimal Defaults

Use this menu to load the BIOS default values these are setting for optimal performances system operations for performance use.

Password Settings

This entry for setting Supervisor password and User password

Save Changes and Exit

Save CMOS value changes to CMOS and exit setup.

Discard Changes and Exit

Abandon all CMOS value changes and exit setup.

3-4   Standard BIOS 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 <+> or <-> and numerical keyboard keys to select the value you want in each item.

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                        Standard BIOS Features
┌──────────────────────────────────────────────┬─────────────────────────┐
│  Language                  English            │ Help Item               │
│                                               │                         │
│  System Date               Wed 01/07/2009     │  Select the Current default│
│  System Time               22 : 46 : 33       │ language used by the BIOS│
│  Primary IDE Master         Not Detected      │                         │
│  Primary IDE Slave          Not Detected      │                         │
│  Primary SATA Channel 5     Not Detected      │                         │
│  Primary SATA Channel 6     Not Detected      │                         │
│  Primary SATA Channel 1     Not Detected      │                         │
│  Primary SATA Channel 3     Not Detected      │                         │
│  Primary SATA Channel 2     Not Detected      │                         │
│  Primary SATA Channel 4     Not Detected      │                         │
│                                    1          │                         │
│  FLOPPY A                  1.44MB, 3 ─ ″       │                         │
│                                    2          │                         │
│                                               │                         │
│  System Memory                                │                         │
│  Size: 768 MB                                 │                         │
├──────────────────────────────────────────────┴─────────────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help│
│     F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults      │
└──────────────────────────────────────────────────────────────────────────┘
```

Language

Use this item to select the current default language used in BIOS. The Optional settings are: Chinese (GB): English.

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

Primary IDE Master / Slave
SATA Channel 1, 2, 3, 4, 5, 6
While entering setup, BIOS   auto detest the presence of IDE devices. This displays the status of auto detection of IDE devices.
Type: The optional settings are: Not Installed; Auto; CD/DVD and ARMD
LBA/Large Mode: The optional settings are Auto; Disabled.
Block (Multi-Sector Transfer): The optional settings are: Disabled and Auto.
PIO Mode: the optional settings are: Auto, 0, 1, 2, 3 and 4.
DMA MODE: the optional settings are Auto, SWDMAn, MWDMAn , UDMAn.
S.M.A.R.T.:   This option allows you to enable the HDD S.M.A.R.T Capability (Self-Monitoring, Analysis and Reporting Technology). The optional settings are Auto; Disabled; and ENABLED.
32 Bit Data Transfer: the optional settings are: Disabled and Enabled.

Floppy A
This item is for specific floppy disk drive settings. Select according to the specification of the floppy disk you use.

System Memory
This item will show information about the memory modules(s) installed.

3-5   Advanced BIOS Feature

```
        CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                            Advanced BIOS Features
┌──────────────────────────────────────────────────────┬─────────────────────┐
│  Advanced Settings                                     │   Help Item         │
│ ────────────────────────────────────────────────────  │                     │
│  WARNING: Setting wrong values in below sections       │                     │
│  May cause system to malfunction                       │   Configure CPU     │
│                                                        │                     │
│                                                        │                     │
│  CPU Configuration          Press Enter                │                     │
│  Boot Sector Virus Protection   Disabled               │                     │
│  Removable Drives            Press Enter               │                     │
│  Quick Boot                 Enabled                    │                     │
│  1ST BOOT Device            1st Floppy Drive           │                     │
│  Boot up Num-Lock           On                         │                     │
│  ACPI APIC Support          Enabled                    │                     │
│  MPS Revision               1.4                        │                     │
│  Quiet Boot                 Disabled                   │                     │
├──────────────────────────────────────────────────────┴─────────────────────┤
│    ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│      F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults         │
└──────────────────────────────────────────────────────────────────────────────┘
```

Boot Sector Virus Protection
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.

Removable Drives

Use this item to specify the boot device priority sequence from available removable drives.

Quick Boot

Allows BIOS to skip certain tests while booting. This will decrease the needed to boot the system.

1st Boot Device

Specify the boot sequence from the available devices. A device enclosed in parenthesis has been disabled in corresponding type menu.

Boot Up NumLock Status

The default value is On.

On (default)   Keypad is numeric keys.
Off   Keypad is arrow keys.

ACPI APIC Support

Include ACPI APIC table pointer to RSDT pointer list.

MPS Revision

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

Quiet Boot

The optional settings are Enabled and Disable.

Disabled: Display normal POST message.

Enabled: Displays OME logo instead of POST message.

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.

```
        CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                          Advanced Chipset Features
┌─────────────────────────────────────────────────────┬─────────────────────┐
│ Memory Configuration               Press Enter       │                     │
│ Internal Graphics Configurations   Press Enter       │     Help Item       │
│ PCI Express Configuration          Press Enter       │                     │
│ HDMI Audio                         HDMI              ├─────────────────────┤
│ NB Power Management  Feature        Auto             │     Options         │
│ Primary Video Controller      PCI-GFX0-GPP-IGFX      │      Auto           │
│                                                      │      HDMI           │
│                                                      │      DVI            │
├──────────────────────────────────────────────────────┴─────────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
│      F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults        │
└─────────────────────────────────────────────────────────────────────────────┘
```

NB Power Management Features

Dynamic clock gating for IOC/NT/MCU/CFG.

HDMI Audio

Use this item to select HDMI audio, the optional settings are: Auto, HDMI and DVI.

Primary Video Controller

This item is for user to choose primary video controller.

3-6-1　Memory Configuration

```
      CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                            Memory Configuration
 ┌──────────────────────────────────────────────────────┬──────────────────┐
 │ DRAM Timing Mode                    Auto              │   Help Item      │
 │ Memory CLK:                         533MHz, N/A       │                  │
 │ CAS Latency (Tcl):                  7 CLK, N/A        │   Options        │
 │ RAS/CAS Delay(Trcd):                7 CLK, N/A        │     DCT0         │
 │ Row Precharge Time(Trp):            7 CLK, N/A        │     DCT1         │
 │ Min Active RAS(Trrd):               20 CLK, N/A       │     Both         │
 │ RAS/RAS Delay (Trrd)                 4 CLK, N/A       │                  │
 │ Row Cycle(Trc)                       21CLK, N/A       │                  │
 │ Write Recover Time(Twr)              8 CLK, N/A       │                  │
 │                                                       │                  │
 │ Bank Interleaving                    Auto             │                  │
 │ Channel Interleaving                XOK of Address Bits│                 │
 │ Enabled clock to AC1 DIMMs           Disabled         │                  │
 │ Mem CLK Tristate C3/ATL VID          Disabled         │                  │
 │ Memory Hole Remapping                Enabled          │                  │
 │ DCI Unganged Mode                    Always           │                  │
 │ Power Down Enabled                   Enabled          │                  │
 │ Power Down Mode                      Channel          │                  │
 │                                                       │                  │
 ├──────────────────────────────────────────────────────┴──────────────────┤
 │  ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help│
 │     F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults       │
 └──────────────────────────────────────────────────────────────────────────┘
```

Bank Interleaving

Use this item to enable bank memory interleaving.

Enable Clock to ALL DIMMs

Enable unused clocks to DIMMS when memory slots are not populated.

Mem CLK Tristate during C3 and Alt VID.

Enable and disable Mem CLK Tri-stating during C3 and Alt VID

Memory Hole Remapping

Enable Memory Remapping around Memory Hole.

DCT Unganged Mode

This allows selection of unganged DRAM MODE (64- bit width).

Auto=Ganged Mode; Always= Unganged Mode.

Power Down Enable

Enable or Disable power down mode.

Power Down Mode

Set the DDR power down mode. The optional settings are Channel; Chipset.

3-6-2 Internal Graphics Configurations

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                      Internal Graphics Configurations
```

Internal Graphics Configurations		Help Item
Internal Graphics Mode	UMA+SIDEPORT	Options
UMA Frame Buffer Size	Auto	Disabled
		UMA
GFX Engine Clock Override	Enabled	SIDEPORT
GFX Engine Clock	700	UMA+SIDEPORT
Surround View	Disabled	
FB Location	Above 4G	

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

UMA Frame Buffer Size

The optional settings are: Auto; 32MB; 64 MB; 128 MB; 256 MB and 512 MB.

Surround View

The item is for Hyprid CrossFire function. The optional settings are: Enabled; Disabled.

3-6-3 PCI Express Configuration

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                      PCIExpress Configuration
```

PCI Express Configuration		Help Item
GFX Dual slot configuration	Auto	Options
Gfx Slots Power Limit. W	25	Auto
Port # 02 Features	Press Enter	Enabled
Port # 03 Features	Press Enter	Disabled
Port #04 Features	Press Enter	
Port #05 Features	Press Enter	
Port #07 Features	Press Enter	
Port #09 Features	Press Enter	
Port #10 Features	Press Enter	
NB-SB Port Features	Press Enter	

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

Port #02 Features ~ Port #03 Features

Press Enter and set values in the sub-items as Gen2 High Speed Mode, Link ASPM, Link width and Slot Power Limit,w.

Port #04 Features~ Port #10 Features

Press Enter and set values in the sub-items as Gen2 High Speed Mode, and Link ASPM.

NB-SB Port Features

Press Enter and set values in the sub-items as NB-SB Link ASPM,;NP NB-SB VC1 Traffic Support and Link Width.

3-7 Integrated Peripherals

```
       CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                              Integrated Peripherals
 ┌──────────────────────────────────────────────────┬─────────────────────────┐
 │   Onboard SATA Device              Press Enter     │                         │
 │   Onboard Device Control           Press Enter     │       Help Item         │
 │   Super IO Configuration           Press Enter     │                         │
 │                                                    │                         │
 │                                                    │                         │
 ├────────────────────────────────────────────────────────────────────────────┤
 │  ↑↓→←  Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit  F1:General Help│
 │     F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults           │
 └──────────────────────────────────────────────────────────────────────────────┘
```

3-7-1   Onboard SATA Device

```
       CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                              Onboard SATA Device
 ┌──────────────────────────────────────────────────┬─────────────────────────┐
 │   Onchip SATA Channel              Enter           │                         │
 │   Onchip SATA  Type                Native IDE      │       Help Item         │
 │   SATA IDE Combined Mode           Enabled         │                         │
 │   PATA Channel Config           SATA as Secondary  │  Select the time out value for│
 │                                                    │ detecting ATA/ATAPI device(s)│
 │   Onboard PCI IDE Controller        Both           │                         │
 │   Hard Disk Write Protect          Disabled        │                         │
 │   IDE Detect  Time Out(Sec)          35            │                         │
 │   ATA (PI) 80 Pin Cable Detect    Host & Device    │                         │
 │                                                    │                         │
 ├────────────────────────────────────────────────────────────────────────────┤
 │   ↑↓→←  Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help │
 │      F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults           │
 └──────────────────────────────────────────────────────────────────────────────┘
```

OnChip SATA Channel

Press Enter to enable or disable CnChip SATA Channel.

0n Chip SATA Type

Press Enter to select the SATA type. The optional settings are: Native IDE; RAID; AHCI; Legacy IDE.

Onboard PCI IDE Controller
The optional settings are Disabled; Primary ; Secondary and Both.

SATA IDE Combined Mode
The optional settings are : Enabled; Disabled.

PATA Channel Config
The optional settings are: SATA as Primary and SATA as Secondary.

Onboard PCI IDE Controller
The optional settings are: Disabled; Primary; Secondary and Both.
Disabled: to disabled the integrated IDE controller;
Primary: to enable only the primary IDE controller;
Secondary: to enable only the secondary IDE controller;
Both: to enable both IDE controllers.

3-7-2　OnChip　Device Control

```
     CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                           OnChip  Device Control
┌────────────────────────────────────────────────────┬─────────────────────┐
│ Onboard PCIE LAN  Device              Enabled        │                     │
│ Onboard PCIE Lan BootRom              Disabled        │     Help Item       │
│ HD Audio Azalia  Device               Enable          ├─────────────────────┤
│ Azalia Front Panel                    Auto            │     Options         │
│ USB configuration                     Press Enter     │     Disabled        │
│                                                       │     Enabled         │
├────────────────────────────────────────────────────┴─────────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help│
│     F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults        │
└────────────────────────────────────────────────────────────────────────────┘
```

Onboard PCI E Lan
Use this item to enable or disable Onboard PCI E Lan
HD Audio Azalia Device
This item allows you to decide to enable/disable the chipset family to support HD Audio.The optional settings ar: Auto; Enabled and Disabled.
USB Configuration
Press Enter to set values for sub-items as: Legacy USB Support, USB 2.0 Controller Mode BIOS EHCI Hand-off etc..

3-7-3　Super IO Configuration

```
     CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                           Super IO Configuration
┌────────────────────────────────────────────────────┬─────────────────────┐
│                                                       │     Help Item       │
│ Configure F71887F Super IO Chipset                    │                     │
│                                                       │                     │
│  Onboard Floppy  Controller         Enabled           │ Select the ACPI State used│
│  Serial Port 1 Address              3F8/IRQ4          │ for system suspend. │
│  IrDA Mode Select                   IrDA(1.6 us)      │                     │
│  IrDA Duplex Mode                   Half Duplex       │                     │
│  IRTX Pin Select                    Normal            │                     │
│  IRRX Pin Select                    Normal            │                     │
│  IRTX to RX peplex Select           No Delay          │                     │
│  IRRX to TX Delay Select            No Delay          │                     │
├────────────────────────────────────────────────────┴─────────────────────┤
│   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help│
│     F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults        │
└────────────────────────────────────────────────────────────────────────────┘
```

Onboard Floppy 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.
Serial Port1 Address
Use this item to select serial port address for serial port one.
IrDA Mode Select
This item allows BIOS to select mode for serial port 2.
The optional settings are: IrDA(1.6 ns) and IrDA (3/16 bit).
IrDA Duplex Mode

This item allows BIOS to select full or half duplex for serial port 2(IR Mode).The optional settings are: Full Duplex; Half Duplex.

IrTX Pin Select

The optional settings are: Normal and Inverse.

This item allows BIOS to select transmit pin in a normal condition or inverse the IRTX(IR Mode).

IrRX Pin Select

The optional settings are: Normal and Inverse.

This item allows BIOS to select receiver pin in normal condition or inverse the IRRX(IR mode).

IRTX to RX Delay Select

The optional settings are: No Delay and Reception Delay.

This item allows BIOS to select IR from RX to TX 4 characters time delay for serial port2(IR mode)

IRRX to TX Delay Select

The optional settings are: No Delay and Transmission Delay.

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.

```
      CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                            Power Management Setup
┌──────────────────────────────────────────────┬──────────────────────────────┐
│   Power Management Feature                     │                              │
│                                                │         Help Item            │
│   Suspend Mode                 S1(POS)         │                              │
│   Power management/APM          Enabled        │                              │
│   Suspend Time Out             Disabled        │  Disable/Enable              │
│   Power Button Mode             On/Off         │ RTC to generate a wake event │
│   Video Power Down Mode          Suspend       │                              │
│   Hard Disk Power Down MODE      Suspend       │                              │
│   Hard Disk Time Out (Minute)    Disabled      │                              │
│   Restore on AC Power Loss       Disabled      │                              │
│   RTC Resume                    Disabled       │                              │
├──────────────────────────────────────────────┴──────────────────────────────┤
│    ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help  │
│      F5: Previous Values F6: Fail-Safe Defaults F7: Optimal Defaults          │
└──────────────────────────────────────────────────────────────────────────────┘
```

Advanced ACPI Configuration

Use this section to configure additional ACPI options.

Power Management/APM

Use this item to enable or disable AMI based power management and APM support.

Suspend Time Out

If it is set Enabled and no activity during this time period, the BIOS will place the system into suspend low power state. The optional settings are: Enable; 1~64 minutes.

Power Button Mode

The optional settings are: On/Off; Suspend.

Video Power Down Mode

The optional settings are: Disabled; Standby and Suspend.

Restore on AC Power Loss

The optional settings are: Disabled; Power on; Power Off and last state.

3-9 Miscellaneous Control

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                        Miscellaneous Control
```

Advanced PCI/PnP Setting	Help Item
WARNING: Setting wrong values in below sections may cause system to malfunction	Options Clear NVRAM during System Boot
Clear NVRAM No	
Plug &Play O/S No	
PCI Latency Timer 64	
Allocate IRQ to PCI VGA Yes	
Palette Snooping Disabled	
PCI IDE Bus Master Disabled	
Off Board PCI/ISA IDE Card Auto	
IRQ Resources Press Enter	

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

Plug &Play O/S
The optional settings are: No; Yes
No: Let the BIOS configure all the devices in the system.
Yes: Let the operating system configure Plug and Play devices, not required for boot if your system has a Plug and Play system.

PCI Latency Timer
Value in units of PCI clocks for PCI device latency timer register.

Allocate IRQ for PCI VGA
The optional settings are: No; Yes.
Yes: Assigns IRQ to PCI VGA card if card requests IRQ.
No: Does not assign IRQ to PCI VGA card even card requests an IRQ.

Palette Snooping
The optional settings are: Enabled; Disabled.
Enable: inform the PCI device that an ISA graphics devices is installed in the system so the card will function correctly.

PCI IDE Bus Master
The optional settings are: Enabled; Disabled.
Enable: BIOS uses PCI busmastering for reading/writing IDE devices.

Offboard PCI/ISA IDE Card
Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

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.

```
       CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                             PC Health Status
```

PC Health Status		Help Item
Smart FAN Configuration	Press Enter	
H/W Health Function	Enabled	
CPU Temperature	: 60°C/140°F	
System Temperature	: 37°C/98°F	
CPUFAN Speed	: 3546RPM	
SYSFAN1 Speed	: N/A	
SYSFAN2 Speed	: N/A	
VCORE	: 1.320V	
VNB-PCIE	: 1.120V	
5V	: 4.746V	
12V	: 11.968V	
5VSB	: 4.746V	
VDIMM	:1.520 V	

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

H/W Health Function,

it displays information list below when set as below. The choice is either Enabled or Disabled.

CPU Temperature/ System Temperature/ CPUFAN Speed /SYSFAN1 Speed/SYSFAN2 Speed/VCORE/VNB-PCIE/5V/12V/5VSB/VDIMM

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

3-10-1 Smart FAN Configuration

```
       CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                           Smart FAN Configuration
```

		Help Item
FAN1 Mode Setting	Auto Fan by RPM	
Temperature1 Limit of Hig	050	
Temperature1 Limit of Sec	040	Fan Configuration Mode
Temperature1 Limit of Thi	030	Setting
Temperature1 Limit of Low	020	
FAN1 Highest Setting	100	
FAN1 Second Setting	080	
FAN1 Third Setting	070	
FAN1 Forth Setting	060	
FAN1 Lowest Setting	050	

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

Smart FAN Configurations FAN1 Mode Setting
The optional settings are: Auto Fan by RPM; Auto Fan by Dutycycle; Manual Mode by RPM and Manual Mode by Dutycycle.

3-11　　Thermal Throttling Options

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
```
Thermal Throttling Options

		Help Item
CPU Thermal-Throttling	Enabled	
CPU Throttling Temp	70°C	
CPU Throttling Duty	50%	Options
		Disabled
		Enabled

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

CPU Thermal Throttling

Use this item to enable or disable CPU thermal Throttling. The optional settings are: Enable; Disabled. When set as Enabled, the two following items will show.

CPU Thermal Throttling Temp.

Use this item to set CPU thermal Throttling temperature. The selectable arrange is from 40 to 100 °C.

CPU Thermal Throttling Duty

Use this item to set CPU Thermal Throttling Duty. The selectable range is from: 12.5% to 87.5%.

3-12　Power User Overclock Setting

```
CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
```
Power User Overclock Setting

		Help Item
AMD Overclocking Configuration		
Advanced Clock Calibration	Disabled	Options
CPU/HT Reference Clock(MHz)	200	Disabled
PCI E Reference Clock (MHz)	100	Auto
SB Reference Clock(MHz)	100	All Cores
Spread Spectrum	Disabled	Per Core
Processor Frequency Multipli	Auto	
Over Voltage Configuration		
ADD Compatibility	Disabled	
CPU Vcore Adjust	Default	
CPU Vcore-Shift	Default	
Set Memory Voltage	1.61 V	
NB-Core Voltage Setting	1.30V	
NB -PCIE Voltage Setting	1.15V	
NODEQ PCI-X2 HT Link		
Link Speed	Auto	
Link Width	Auto	
CPU-NB FID	Auto	
DRAM Command Rate	2T	
Memory Clock Mode	Auto	
AMD Overclocking Configuration	Press Wnter	

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

Link Speed

The HyperTransport link will run at this speed if it slower than or equal to system clock and this board is capable

Link Width

The HyperTransport link will run at this width.

AMD Overclocking Configuration

The optional settings are: Disable; Enabled.
This item tells BIOS whether to use the setup options below this to configure the P-States or whether to configure the P-States automatically.

CPU/HT Reference Clock

Use this item to set CPU/HT Reference Clock. The optional setting range is:190~400 MHz.

PCI E Reference Clock

The optional setting range is:90~250 MHz.

SB Reference Clock

The optional setting range is:90~150 MHz.

Spread Spectrum

The optional settings are: Disabled; SRC CLK; CPUHT CLK and All CLK.

Processor Voltage

The optional settings are: Auto; 0.800V~1.350V.

AOD Compatibility

Choose Enabled means only AMD over drive can adjust voltage
Choose Disabled means only BIOS can adjust voltage

CPU Vcore 7-Shift

Use this item to set value in CPU Vcore 7-Shift function. The optional settings are: Defaults and a range from 5% to 35%.

Set Memory Voltage

Use this item to set memory voltage. The optional setting rang is from 1.85V to 2.10V.

NB-Core Voltage Setting

The optional settings are from 1.20v to 1.35v.

NB-PCIE Voltage Setting

The optional settings are from 1.15v to 1.25v.

Memory Clock Mode

The optional settings are: Auto; Limit and Manual.

3-13 Password Settings

```
        CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.
                              Password Setting
```

Security Settings		Help Item
Supervisor Password: Not Installed		Install or change the password
User Password: Not Installed		
Change Supervisor Password Press Enter		
Change User Password Press Enter		
Boot Sector Virus Protection Disabled		
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5: Previous Values F6: Fail-Safe Defaults F7: Optimal 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.

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 Optimal Defaults/ Load Standard Defaults

Load Optimal Defaults

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

Load Optimal Defaults?
【OK】   【Cancel】

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

Load Standard Defaults

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

Load Standard Defaults?
【OK】   【Cancel】

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

3-15 Save Changes and Exit / Discard Changes and Exit

Save Changes and Exit

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

Save configuration changes and exit setup?
【OK】   【Cancel】

Pressing <OK> save the   values you made previously and exit BIOS setup.

Discard Changes and Exit

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

Discard changes and exit setup?
【OK】   【Cancel】

Pressing <OK> to leave BIOS setting without saving previously set values.

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 XP/Vista

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 11 selections:
1. ATI   to install ATI integrated driver pack
2. Sound   to install ALC 888 HD audio codec driver
3. LAN   to install Realtek gigabit ethernet NIC driver
4. RAIDDISK   to install   ATI SATA Driver and Utility
5. Norton   to install Norton 2009 Anti-virus Program
6. PC-HEALTH   to install MyGuard   hardware monitor utility
7. Fusion   to download Fusion drives and tools
8. HDMI   to install ATI HDMI audio driver
9. OVERCLOCK   to install overclock driver utility
10. BROWSE CD   to browse the contents of the CD
11. EXIT   to exit from MAGIC INSTALL menu

4-1 ATI　Install ATI Integrated Drive Pack
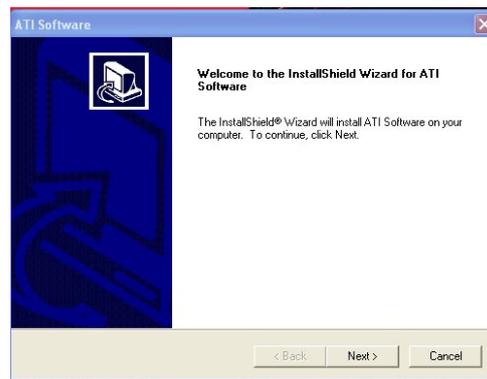
1. Click ATI in the MAGIC INSTALL MENU appears.

2. Click NEXT when ATI software driver pack appears.
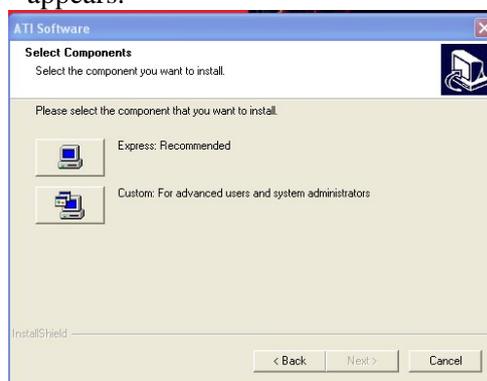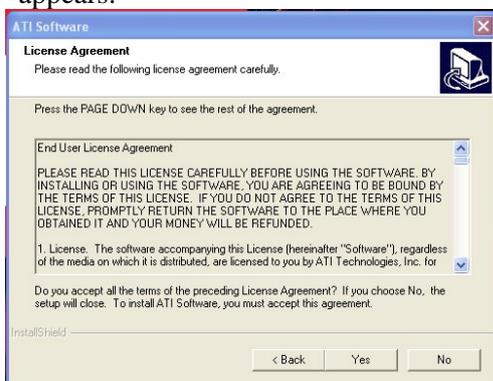
3. Click "Yes" to accept the license agreement and start installation.

4. Select the component you wish to install.
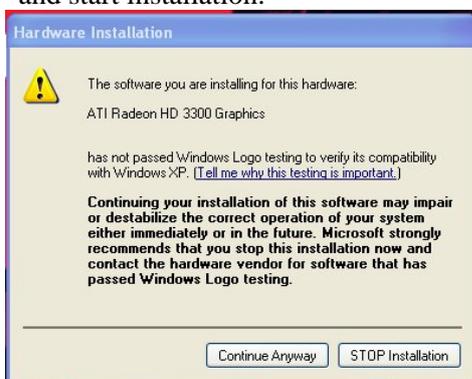
5. When this appears, select Continue Anyway and then wait for the installation process.

6. Choose whether you want to restart the computer and　then click Finish.

4-2   SOUND   Install ALC888 HD Audio Codec Driver

1. Click SOUND when MAGIC INSTALL MENU appears.
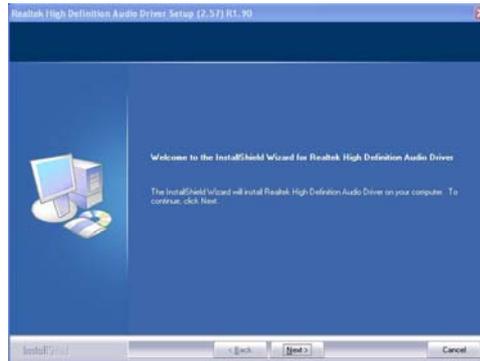
2. Click NEXT When Realtek High Definition Audio driver windows appear.

3. Click FINISH and restart your computer.

4. Manual Sound Effect Setting.

5. mixer setting.

6. Audio input and output setting.

7. Microphone effect setting.

8. 3D demo setting.

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   LAN   Install Realtek Gigabit Ethernet NIC Driver

1 Click LAN when Magic Install Menu appears
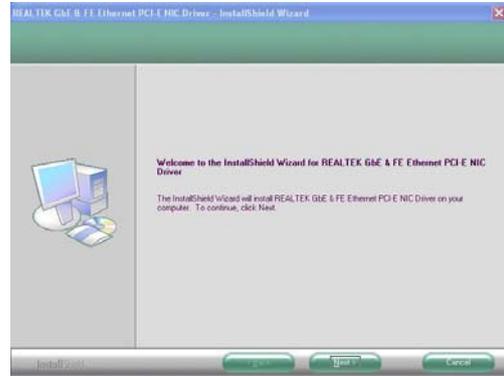
2. Click NEXT, install REALTEK LAN and Fast Ethernet NIC Driver
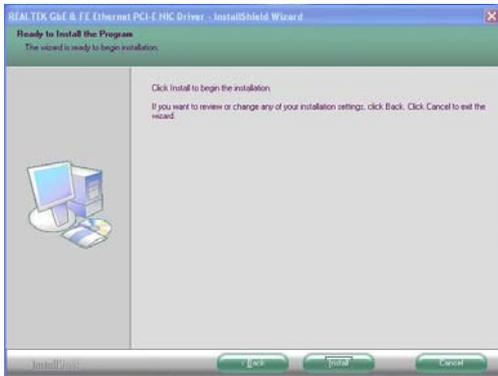
3 Click install to begin the installation.
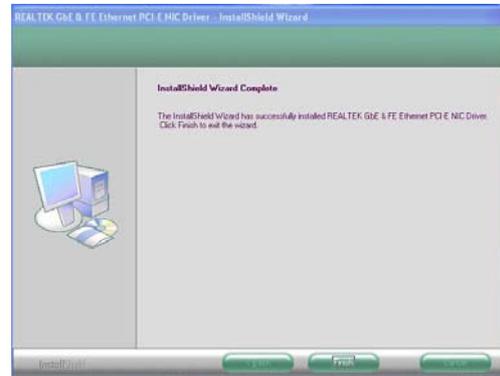
2. After driver installation completed, Click Finish..

4-4 RAIDDISK   Install ATI SATA Driver and Utility

1 Click RAIDDisk when MAGIC INSTALL MENU appears

2. Copy the files to floppy   disk and restart the computer with floppy disk as the first booting disk and then follow   the steps shown on the screen to finish RAID function settings.

4-5　Norton　Install Norton 2009 Anti-virus Program

1 Click Norton when Magic Install menu appears.

2.　Click AGREE & INSTALL after reading Unser License Agreement.

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
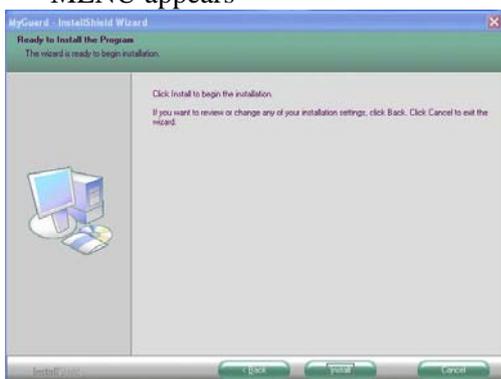
3.　Click Install to begin the installation.

4.　Click Finish to complete the installation.

4-7 Fusion　　Download Fusion Drivers and Tools

Click Fusion when Magic Install menu appears to visit AMD official website
http://game.amd.com/us-en/drivers_fusion.aspx?p=1　to download fusion drivers and tools.
Please make sure that you net is connected well and you operating system is Windows Vista before running downloaded programs.

4-8 HDMI   Install ATI HDMI Audio Driver

1. Click HDMI when MAGIC INSTALL MENU appears
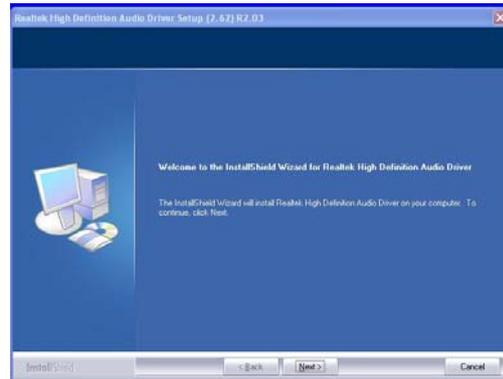
2. Click Next on Install shield wizard Window.

3. Select if you want to restart the computer and then click Finish.

4-9   OVER CLOCK   Install OVERCLOCK Drive Utility

1. Click OVER CLOCK when MAGIC INSTALL MENU appears
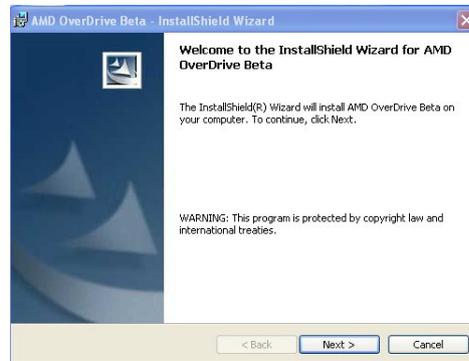
2. Click Next

3. Choose "I accept the terms in the license agreement".
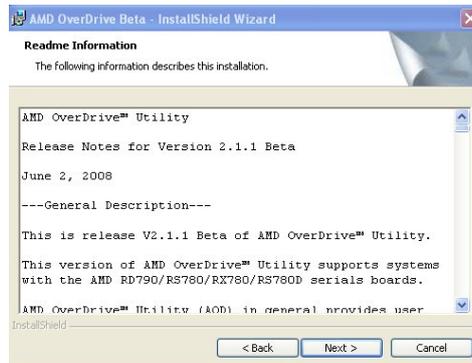
4. The information describe the installation, Click Next
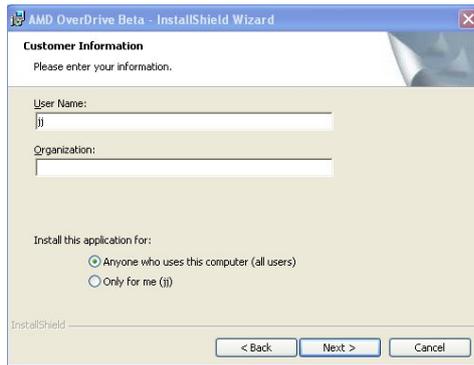
5. Type in Customer Information and then click Next.

6. Select the Destination Folder and then Click Next.
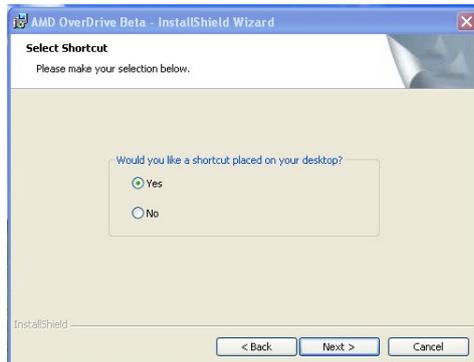
7. Decide whether you want a shortcut on your desktop and then click Next.
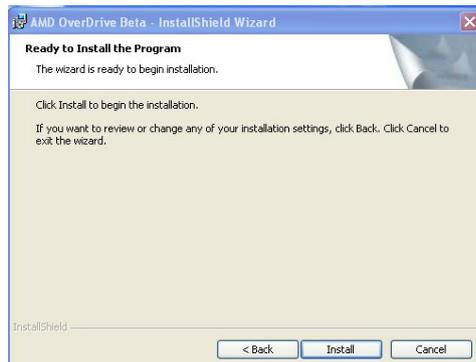
8. Click Install to begin installation.

9. Wait for the installation process.
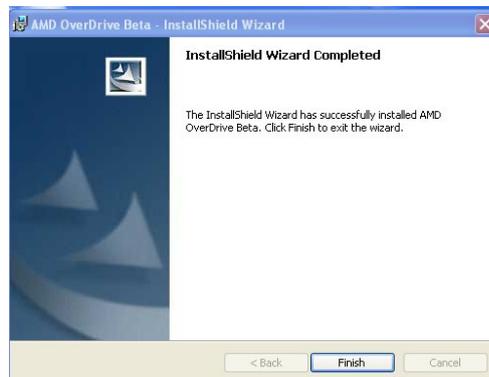
10. Finish the installation.

4-10 How to Update BIOS

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

STEP 2. Download upgrade tools and the latest BIOS files of the motherboard from official website and then make a copy of it to your bootable floppy disk after decompressing these files

STEP 3. Insert the disk into A: ,start your computer and then type in "A:\xxxxxx.BAT"(xxxxxxx being the file name of the latest BIOS)

STEP 4. Type Enter to update and flash the BIOS. The system will restart automatically when BIOS is upgraded.

4-11 AMD Platform RAID Function Installation

Please set these choice in the BIOS as RAID：BIOS setup \Integrated Peripherals \Onboard SATA Device \ Onchip SATA Device. When the below figures appeared, please press [Ctrl-F] into figure 2

[figure1]

Function: press[1] key, showing the RAID; press [2] key，building RAID; press [3] key, delete the RAID; press[4] key, showing the information of controller.

[figure2]

press[1] key，showing the RAID，as the below figure
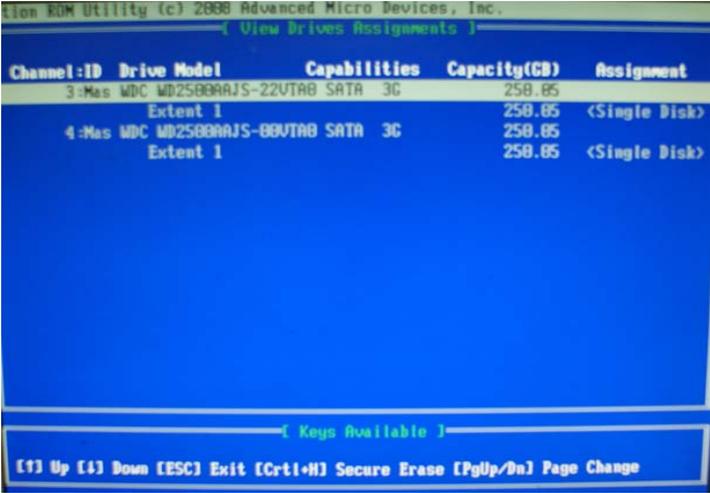
[figure3]

Press [2] key, the interface of RAID, as figure 4.

RAID function:

              1.RAID 1   2. RAID 0   3. RAID 10   4. RAID5
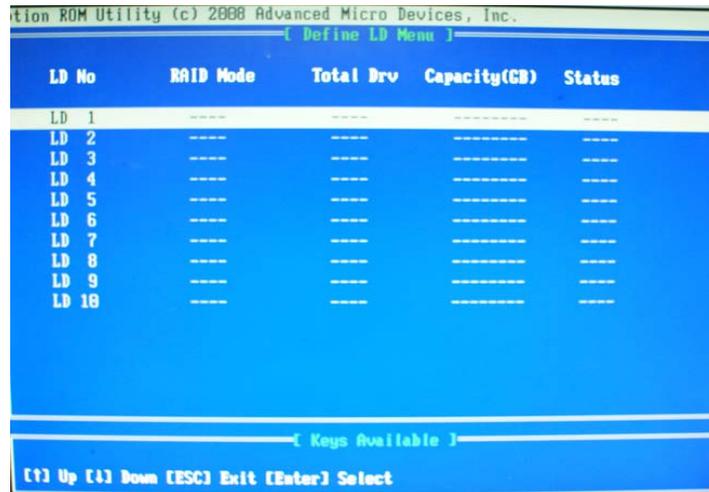
[figure4]

Choose LD 1 then press Enter.

Take Raid0 for example, use [↑] [↓] to shift the cursor, press space key to change the choice,
    press [Ctrl-Y] to keep.

Set Assignment mode as [Y], press [Ctrl-Y] to keep , then figure 5 appeared, erase the MBR.
  choose [Ctrl-Y],figure 6 appeared. Press any key, finished the RAID.
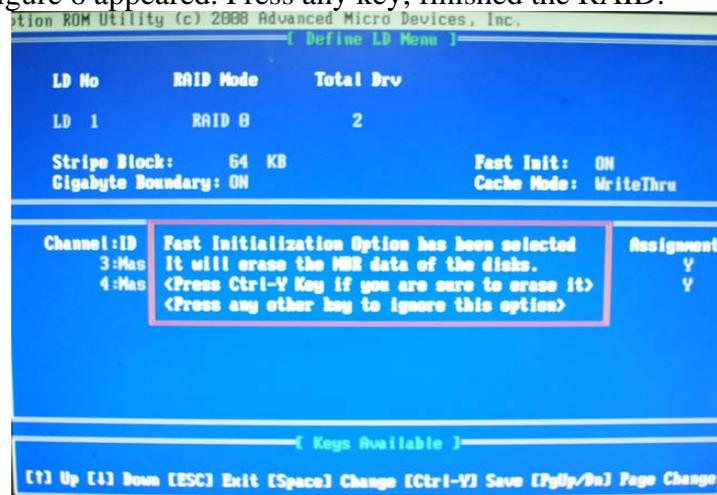
[figure5]
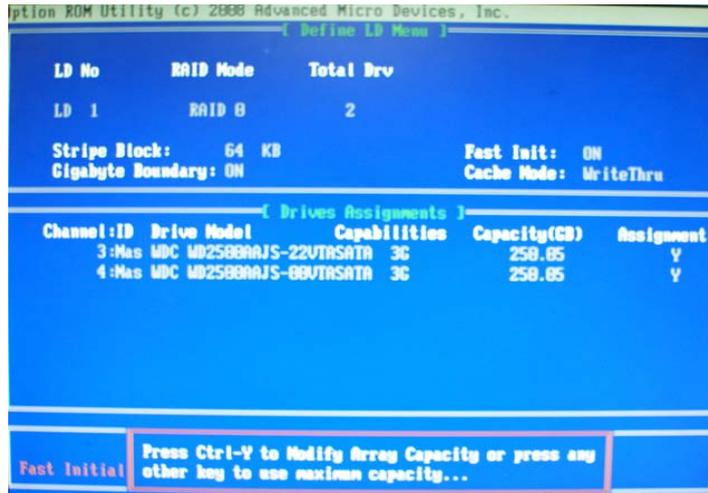
[figure6]

Press [3], delete the RAID mode, as figure 7.press [Delete] will delete the array. As figure 7 .
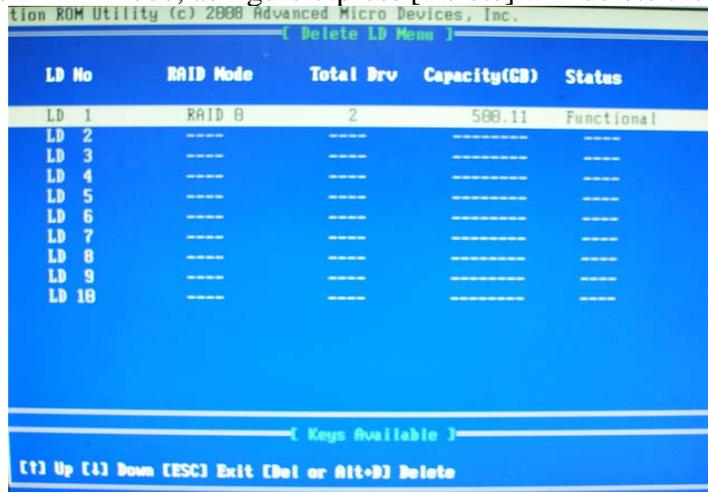
[figure7]

Press [4], showing the information of controller, as figure 8.

[figure8]

Making RAID driver diskette before Install WindowsXP/2000/Vista

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\AMD\RAIDDisk to floppy diskette

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

Installation of Windows XP/ 2000/Vista

For installation of Windows XP，windows 2000 or Vista, please insert Windows XP Windows 2000 or Vista 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.

4-12   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 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)

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).
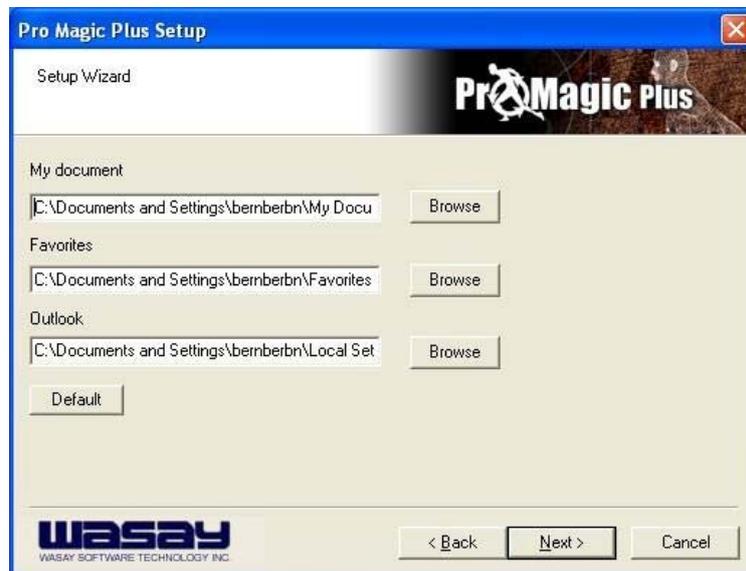
graph 4

📁**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 2000/XP/Vista
◇ 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 I

Subject 1: Regarding the Application of 3-Phase or 3+1 Phase Power Supply Mold

 As a result of the increasing power consumption demand from many AMD CPUs in current market, we suggest not to use a CPU that demands more than 65W power consumption at work for an AMD CPU compliant board that comes with power supply design as 3 phase or 3+1 phase mold and MOSFET design as working in High SideX1 and Low SideX1 mold so as to avoid MOSFET getting burned or other phenomena like a halted system or system instability. So please take notice of the CPU you are using and make sure that it is one that demand not more than 65 W to ensure long-term working order.

Note：

1. The relation between CPU Power Consumption Amount and Power Phase: depending on difference in voltage rating, one-phase of power can provide 25~30W to the motherboard.

2. 3- Phase Power Supply Mold: motherboard with 3 inductances for CPU power supply, and each inductance carries with it 2 MOSFET (6 MOSFETs in total) (Figure1)

   3+1–Phase Power Supply Mold: motherboard with 4 inductances for CPU power supply, and each inductance carries with it 2 MOSFET (8 MOSFETs in total) (Figure2)
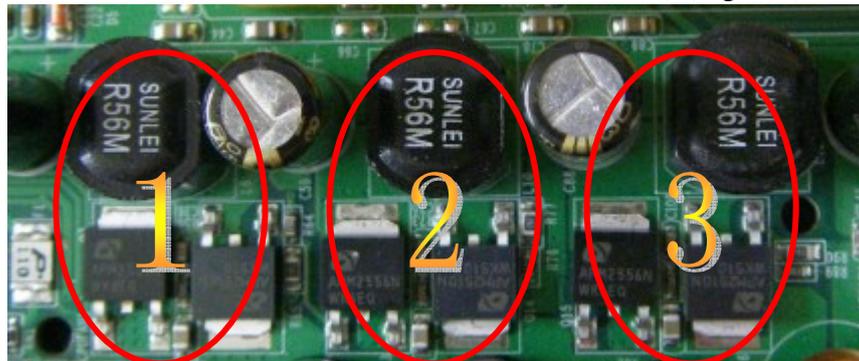

Figure 1
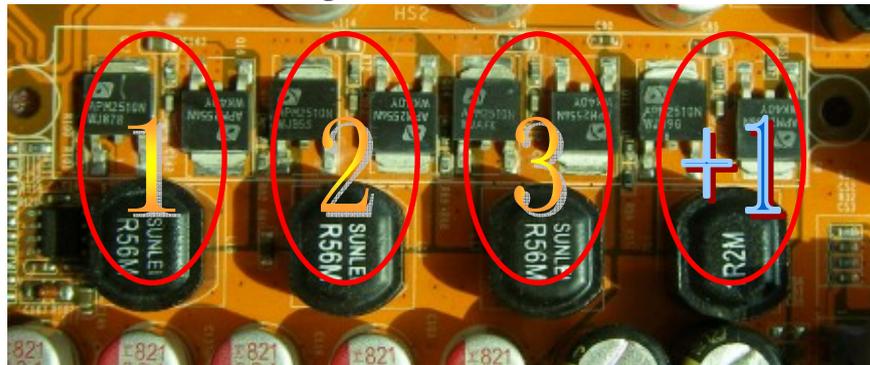
Figure 2

Solution：

We recommend users choose motherboards with power design of 4-phase, 4+1 phase or more for CPUs that demand 89W or 95W power consumption.

We recommend users choose motherboards with power design of 5-phase, 5+1 phase or more

for CPUs that demand 125W or 140W power consumption.

Subject 2: Suggestion on choosing electric fan

Both the amount of electric current to MOSFET and the heat produced from the motherboard go up as AMD's CPU power consumption increases. In this case we recommend users select a CPU fan with air outlet towards MOSFET so that CPU fan can carry away heat produced by MOSFET, for better heat dissipation effects. At the same time we suggest using well-ventilated cases to maintain temperature as 38℃ approximately inside.(38℃ is recommended by CPU manufactures)

Cool air flowing
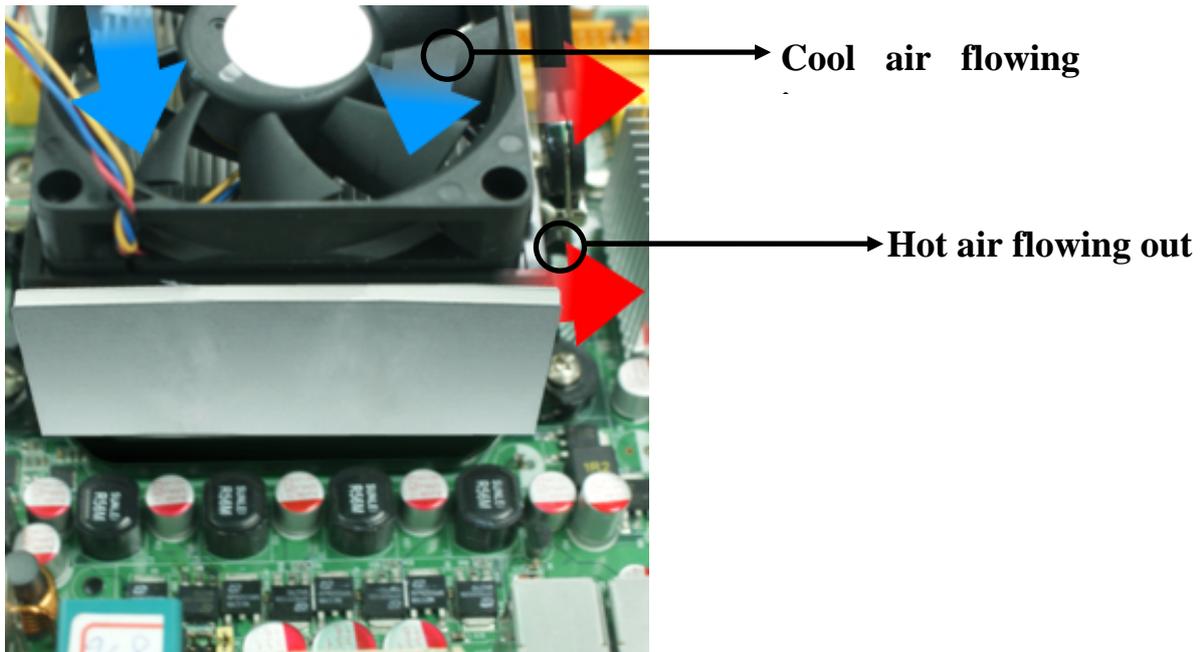
Hot air flowing out

Figure 1---- CPU Fan can not blow off the heat produced by MOSFET. We suggest not to using fans of this kind
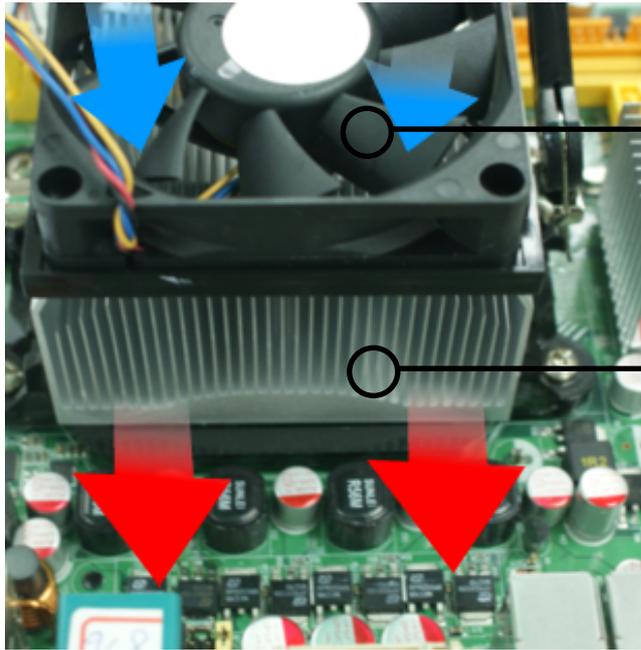
Cool air flowing

Hot air flowing out

Figure 2---- CPU Fan can blow off the heat produced by MOSFET. We suggest using fans of this kind

APPENDIX II

Post BIOS Beep Code

Number of Beeps	Description
1	Memory refresh timer error.
2	Parity error in base memory (first 64KB block)
3	Base memory read/write test error
4	Motherboard timer not operational
5	Processor error
6	8042 Gate A20 test error (cannot switch to protected mode)
7	General exception error (processor exception interrupt error)
8	Display memory error (system video adapter)
9	AMIBIOS ROM checksum error
10	CMOS shutdown register read/write error
11	Cache memory test failed

Debug Port Post Code

Bootblock Initialization Code Checkpoints

The Bootblock initialization code sets up the chipset, memory and other components before system memory is available. The following table describes the type of checkpoints that may occur during the bootblock initialization portion of the BIOS[1]:

Checkpoint	Description
Before D0	If boot block debugger is enabled, CPU cache-as-RAM functionality is enabled at this point. Stack will be enabled from this point.
D0	Early Boot Strap Processor (BSP) initialization like microcode update, frequency and other CPU critical initialization. Early chipset initialization is done.
D1	Early super I/O initialization is done including RTC and keyboard controller. Serial port is enabled at this point if needed for debugging. NMI is disabled. Perform keyboard controller BAT test. Save power-on CPUID value in scratch CMOS. Go to flat mode with 4GB limit and GA20 enabled.
D2	Verify the boot block checksum. System will hang here if checksum is bad.
D3	Disable CACHE before memory detection. Execute full memory sizing module. If memory sizing module not executed, start memory refresh and do memory sizing in Boot block code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	given to it. BIOS now executes out of RAM. Copies compressed boot block

	code to memory in right segments. Copies BIOS from ROM to RAM for faster access. Performs main BIOS checksum and updates recovery status accordingly.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. If BIOS recovery is necessary, control flows to checkpoint E0. See *Bootblock Recovery Code Checkpoints* section of document for more information.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel). See *POST Code Checkpoints* section of document for more information.
DC	System is waking from ACPI S3 state
E1-E8 EC-EE	OEM memory detection/configuration error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

Bootblock Recovery Code Checkpoints

The Bootblock recovery code gets control when the BIOS determines that a BIOS recovery needs to occur because the user has forced the update or the BIOS checksum is corrupt. The following table describes the type of checkpoints that may occur during the Bootblock recovery portion of the BIOS:

Checkpoint	Description
E0	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	Set up floppy controller and data. Attempt to read from floppy.
EA	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	Disable ATAPI hardware. Jump back to checkpoint E9.
EF	Read error occurred on media. Jump back to checkpoint EB.
F0	Search for pre-defined recovery file name in root directory.
F1	Recovery file not found.
F2	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.

F3	Start reading the recovery file cluster by cluster.
F5	Disable L1 cache.
FA	Check the validity of the recovery file configuration to the current configuration of the flash part.
FB	Make flash write enabled through chipset and OEM specific method. Detect proper flash part. Verify that the found flash part size equals the recovery file size.
F4	The recovery file size does not equal the found flash part size.
FC	Erase the flash part.
FD	Program the flash part.
FF	The flash has been updated successfully. Make flash write disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS preboot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
07	Fixes CPU POST interface calling pointer.
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache – Init Local APIC

C1	Set up boot strap processor Information
C2	Set up boot strap processor for POST
C5	Enumerate and set up application processors
C6	Re-enable cache for boot strap processor
C7	Early CPU Init Exit
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
20	Relocate System Management Interrupt vector for all CPU in the system.
24	Uncompress and initialize any platform specific BIOS modules. GPNV is initialized at this checkpoint.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information. USB controllers are initialized at this point.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA,

	EBDA…etc.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory. Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested. Check boot password if installed.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Initialization of system management interrupt by invoking all handlers. *Please note this checkpoint comes right after checkpoint 20h*
A1	Clean-up work needed before booting to OS
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module. Display boot option popup menu.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector
AB	Prepare BBS for Int 19 boot. Init MP tables.
AC	End of POST initialization of chipset registers. De-initializes the ADM module.
B1	Save system context for ACPI. Prepare CPU for OS boot including final MTRR values.
00	Passes control to OS Loader (typically INT19h).

OEM POST Error Checkpoints

Checkpoints from the range 61h to 70h are reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

DIM Code Checkpoints

The Device Initialization Manager (DIM) gets control at various times during BIOS POST to initialize different system busses. The following table describes the main checkpoints where the DIM module is accessed[4]:

Checkpoint	Description
2A	Initialize different buses and perform the following functions: Reset, Detect, and Disable (function 0); Static Device Initialization (function 1); Boot Output Device Initialization (function 2). Function 0 disables all device nodes, PCI devices, and PnP ISA cards. It also assigns PCI bus numbers. Function 1 initializes all static devices that include manual configured onboard peripherals, memory and I/O decode windows in PCIPCI bridges, and noncompliant PCI devices. Static resources are also reserved. Function 2 searches for and initializes any PnP, PCI, or AGP video devices.
38	Initialize different buses and perform the following functions: Boot Input Device Initialization (function 3); IPL Device Initialization (function 4); General Device Initialization (function 5). Function 3 searches for and configures PCI input devices and detects if system has standard keyboard controller. Function 4 searches for and configures all PnP and PCI boot devices. Function 5 configures all onboard peripherals that are set to an automatic configuration and configures all remaining PnP and PCI devices.

While control is in the different functions, additional checkpoints are output to port 80h as a word value to identify the routines under execution. The low byte value indicates the main POST Code Checkpoint. The high byte is divided into two nibbles and contains two fields. The details of the high byte of these checkpoints are as follows:

HIGH BYTE XY

The upper nibble 'X' indicates the function number that is being executed. 'X' can be from 0 to 7.

0 = func#0, disable all devices on the BUS concerned.

1 = func#1, static devices initialization on the BUS concerned.

2 = func#2, output device initialization on the BUS concerned.

3 = func#3, input device initialization on the BUS concerned.

4 = func#4, IPL device initialization on the BUS concerned.

5 = func#5, general device initialization on the BUS concerned.

6 = func#6, error reporting for the BUS concerned.

7 = func#7, add-on ROM initialization for all BUSes.

8 = func#8, BBS ROM initialization for all BUSes.

The lower nibble 'Y' indicates the BUS on which the different routines are being executed. 'Y' can be from 0 to 5.

0 = Generic DIM (Device Initialization Manager).

1 = On-board System devices.

2 = ISA devices.

3 = EISA devices.

4 = ISA PnP devices.

5 = PCI devices.

ACPI Runtime Checkpoints

ACPI checkpoints are displayed when an ACPI capable operating system either enters or leaves a sleep state. The following table describes the type of checkpoints that may occur during ACPI sleep or wake events:

Checkpoint	Description
AC	First ASL check point. Indicates the system is running in ACPI mode.
AA	System is running in APIC mode.
01,02,03,04,05	Entering sleep state S1, S2, S3, S4, or S5.
10,20,30,40,50	Waking from sleep state S1, S2, S3, S4, or S5.

* The above list is for reference use only.