

USER'S MANUAL
Of
Nvidia MCP78V
Based
M/B For Socket AM2+ Quad Core
AMD Processor

NO.G03-XBLUEN78V -F

Rev: 1.0

Release date: Aug. 2008

Trademark:

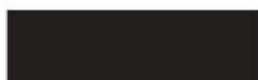
* Specifications and information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

TABLE OF CONTENT

CHAPTER 1 INTRODUCTION OF MCP78V MOTHERBOARDS	
1-1	FEATURES OF MOTHERBOARD 1
1-1.1	SPECIAL FEATURES OF MOTHERBOARD..... 2
1-2	SPECIFICATION 3
1-3	ITEM CHECKLIST 3
1-4	LAYOUT DIAGRAM..... 4
CHAPTER 2 HARDWARE INSTALLATION	
2-1	INSTALL Athlon64 Socket AM2+ CPU 5
2-2	INSTALL MEMORY 6
2-3	EXPANSION CARDS..... 7
CHAPTER 3 CONNCTORS, HEADERS & JUMPERS SETTING	
3-1	CONNECTORS..... 8
3-2	HEADERS..... 11
3-3	JUMPER SETTING..... 14
CHAPTER 4 USEFUL HELP	
4-1	HOW TO UPDATE BIOS 16
4-2	TROUBLE SHOOTING..... 16
4-3	G.P.I FUNCTION STEPS..... 17

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.



Chapter 1

Introduction of MCP78V Motherboards

1-1 Features of motherboard

The MCP78V chipset motherboard series are based on the latest MCP78V Chipset which supports Socket AM2+ dual core and quad core AMD Phenom™ processors and 64-bit AMD Socket AM2+/AM2 multi-tasking Socket AM2 Athlon64 X2 processors and Sempron Processors. With an integrated low-latency high-bandwidth DDRII memory controller and a highly-scalable Hyper Transport technology-based system bus up to HT3.0, MCP78V Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution with the advantages of 64-bit AMD Socket AM2+/AM2 AMD Phenom™ processors, Athlon64 X2 processors and the fully compatibility of the next generation operation system.

The MCP78V Series motherboards support new generation Socket AM2+ processors with an integrated DDRII memory controller for Dual channel DDRII667 /DDRII800/DDRII1066 Module up to 4GB. Moreover, the motherboard provides also extra 1 Ultra ATA interface for one IDE devices of 133 MB / s data transfer rate and six serial ATA interface of 3 Gb / s data transfer rate.

The MCP78V motherboards provide 10/100/1000 LAN function with RealTek8211C LAN PHY Gigabit LAN which supports 10/100/1000Mbps data transfer rate. And the embedded Azalia 8-channel Audio CODEC ALC883 is fully compatible with Sound Blaster Pro standards that offer you with the home cinema quality and satisfying software compatibility.

The MCP78V Series motherboards deliver outstanding value and performance for gamers. This high bandwidth architecture in the MCP78V chipset is with the flexibility for single or dual card or three cards configurations. The MCP78V chipset provide 1 x16@16 lane PCI Express 2.0 slot to support simultaneous operation of graphics card for astonishing performance with brilliant and intense 3D graphics. This PCI-Express2.0 x16@16 deliver up to 8Gbyte/sec data transfer rate at each relative direction. One PCI Express 2.0 x1 I/O slot offers 1Gbyte/sec concurrently, over 7 times more bandwidth than PCI at 133Mbyte/sec, tackling the most demanding multimedia tasks nowadays .The MCP78V motherboards also carry two32-bit PCI slots to guarantee the rich connectivity for the I/O peripheral devices.

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

Embedded USB controllers as well as capability of expanding to 6 of USB2.0 functional ports delivering 480Mb/s bandwidth of rich connectivity, these motherboards meet the future USB demands which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Some special features--- *CPU Thermal Throttling/ CPU Vcore X-shift / CPU Smart Fan / OC-CON/WI-FI/G.P.I Function* 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 °C to 90°C). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working. (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 7 steps for the precisely over-clocking of extra demanding computing performance.

OC-CON --- (High-polymer Solid Electrolysis Aluminum Capacitors)

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

G.P.I Function—(Green power indicator function)

The full name of G.P.I technology is Green Power Indicator technology, obviously technology utilized to low power consumption. G.P.I is a technology with remarkable power saving function:

1-2 Specification

Spec	Description
Design	<ul style="list-style-type: none">● ATX form factor 4 layers PCB size: 20.0 cm*24.5cm
Chipset	<ul style="list-style-type: none">● MCP78V single Chipset
CPU Socket AM2+	<ul style="list-style-type: none">● Support 64bit AMD Socket AM2+ CPU package utilizes Flip-Chip Pin Grid Array package processor● Support for AMD Socket AM2+ AMD Phenom™, AMD Phenom™ FX ,Athlon64 Dual-Core Athlon 64x2 processor, Athlon 64 & Sempron Processors with HTT Frequency 1GHz processors.● Support HT 3.0.
Memory Socket	<ul style="list-style-type: none">● 240-pin DDRII Module socket x 2● Support 4pcs DDRII667/DDRII800/DDRII1066 Modules Expandable to 4 GB● Dual channel supported
Expansion Slot	<ul style="list-style-type: none">● 1 pcs PCI-Express 2.0x16 @16 lane● 1pcs PCI-Express2.0 x1 slot● 32-bit PCI slot x 2pcs
Integrate IDE and Serial ATA2 RAID	<ul style="list-style-type: none">● 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 ATA2 ports providing 300 MB/sec data transfer rate with RAID 0, 1, 5 , 10 ,JBOD functions
Gigabit LAN	<ul style="list-style-type: none">● Integrated RealTek8211C LAN PHY Gigabit LAN chip.● Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000 Mb/s data transfer rate
8 CH-Audio	<ul style="list-style-type: none">● Realtek ALC883 Azalia 8-channel Audio Codec integrated● Audio driver and utility included
BIOS	<ul style="list-style-type: none">● Award 8MB SPI Flash ROM BIOS
Multi I/O	<ul style="list-style-type: none">● VGA Connector● HDMI Connector● PS/2 keyboard and PS/2 mouse connectors● USB2.0 port x 4 and headers x 2● RJ45 LAN Connector x1● Audio connector x1 (Line-in, Line-out, MIC/ 8CH Audio)● Floppy disk driver connector x1● Hard disk driver connector x 1● Serial port header x1● SPDIF header x1

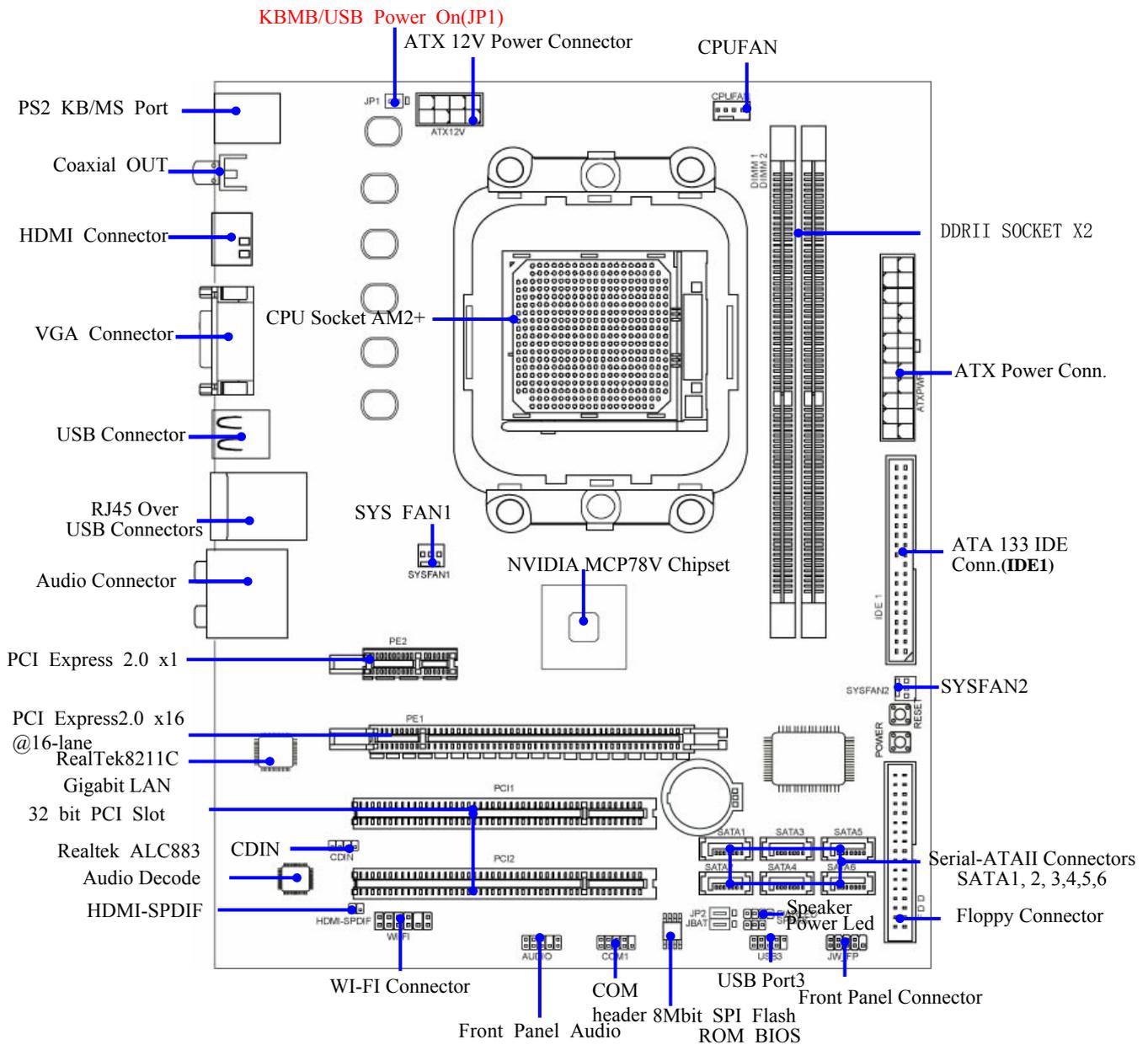
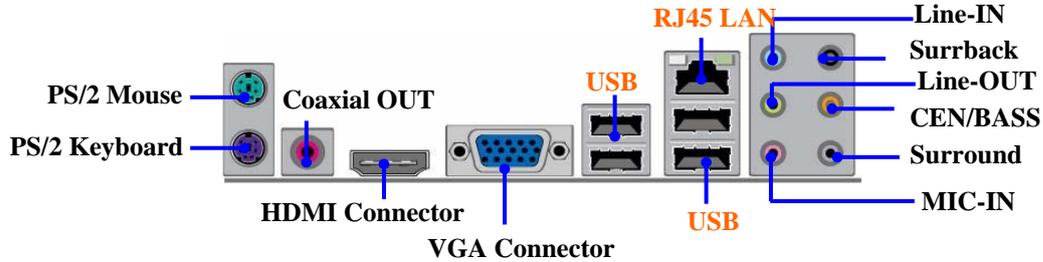
1-3 Item Checklist

- MCP 78V Platform Processor Chipset based motherboard
- SATA Cable
- IDE Cable
- User's Manual

- ☑ CD for motherboard utilities
- ☑ I/O Back Panel Shield

1-4 Layout Diagram

Rear I / O for Nvidia MCP78V series motherboard



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.

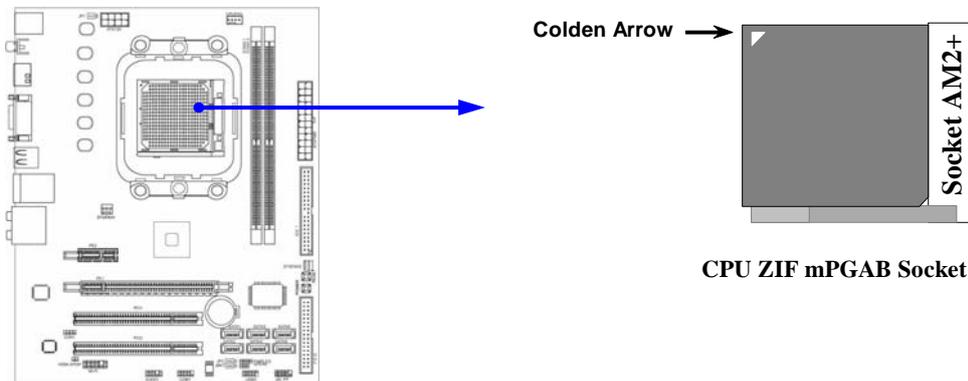
2-1 Install Athlon64 Socket AM2+ CPU

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

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

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

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



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

2-2 Install Memory

This motherboard provides two 240-pin DDR2 DUAL INLINE MEMORY MODULES (DIMM) socket for DDR2 memory expansion available from minimum memory volume of 128MB to maximum memory volume of 4 GB DDR SDRAM.

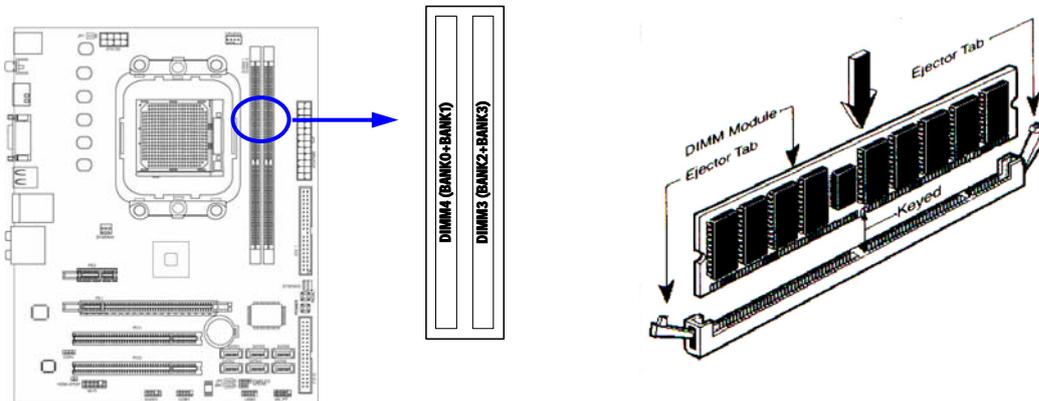
Valid Memory Configurations

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR2 667/DDR2 800/DDR2 1066*	X1	128MB~2 GB
Bank 2, 3 (DIMM2)	DDR2 667/DDR2 800/DDR2 1066*	X1	128MB~2 GB
Total	System Memory (Max 4 GB)	2	128MB~4 GB

Dual channel Limited!

1. Dual channel function only operate when 2 DIMM Modules plug in both DIMM1 & DIMM2.
2. DIMM1 & DIMM2 must be the same type, same size, same frequency for dual channel function.

Install DDR SDRAM modules to your motherboard is not difficult, you can refer to figure below to see how to install a 240-Pin DDR2 667/DDR2 800/DDR2 1066 SDRAM module.

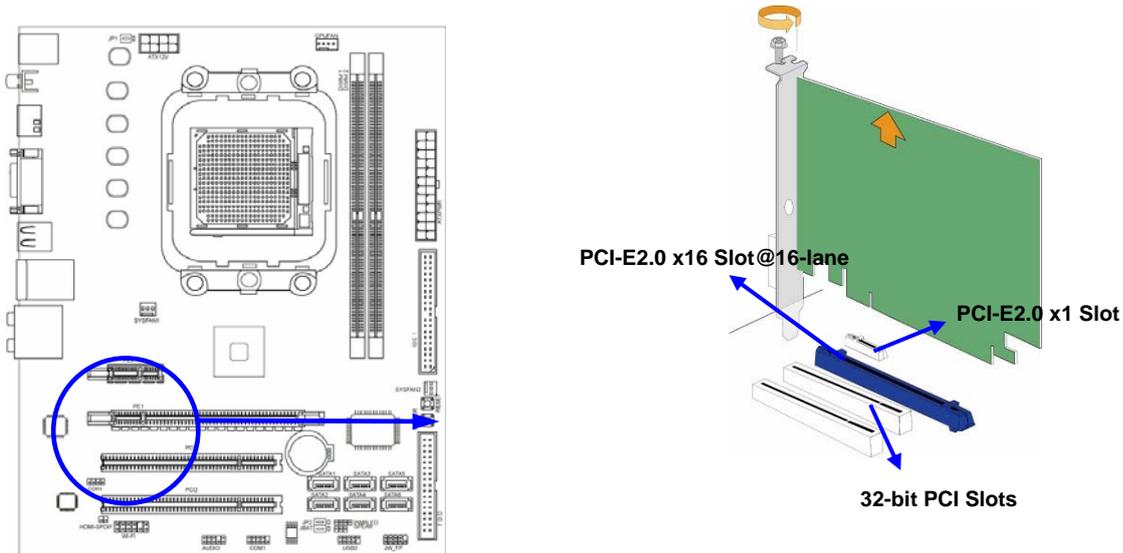


NOTE!

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

2-3 Expansion Cards

One PCI-Express2.0 x16@16 lane graphic slot offer 8Gbyte/sec data transfer rate at each relative direction and up to 16Gbyte/sec concurrent bandwidth at full speed. Fully compliant to the *PCI Express Base Specification revision2.0*, support PCI Express VGA card, and other PCI Express device. One x1 PCI Express Slot offer 1Gbyte/sec concurrently over 7 times more bandwidth than PCI at 133Mbyte/sec, tackling the most demanding multimedia tasks nowadays. Two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals.



Chapter 3

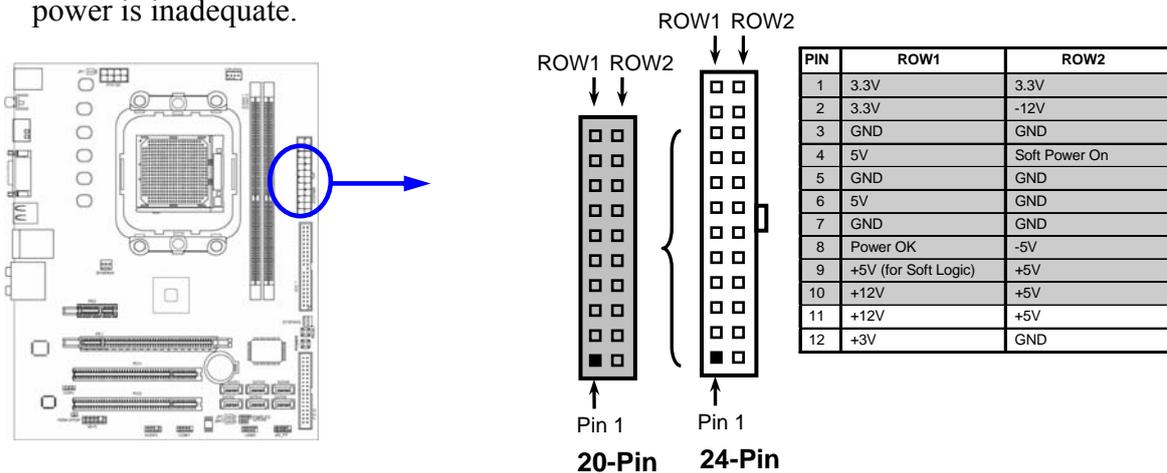
Connectors, Headers & Jumper Setting

3-1 Connectors

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

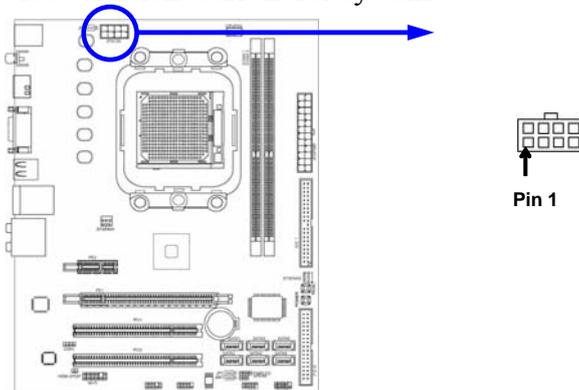
ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX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

- ** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- ** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.



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

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



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

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

(4) USB Port connector: USB1, UL4 for USB

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

(5) LAN Port connector: UL4 for RJ45 LAN

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

(6) Audio Line-In, Lin-Out, MIC, Surrback, CEN/BASS, Surround Connector: AUDIO1

These Connectors are 6 Phone-Jack for LINE-OUT, LINE-IN, Surrback, CEN/BASS, Surround and MIC audio connections.

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

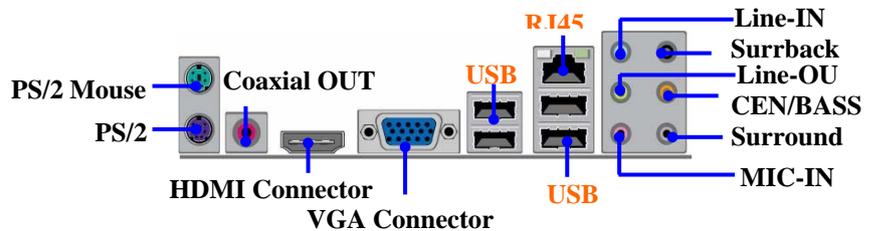
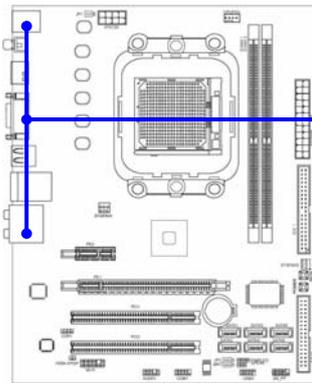
Line-out : (GREEN) Audio output to speaker

MIC : (PINK) Microphone Connector

Surrback : (ORANGE) Audio output to speaker-Rear speaker out

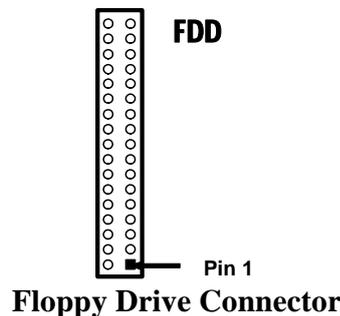
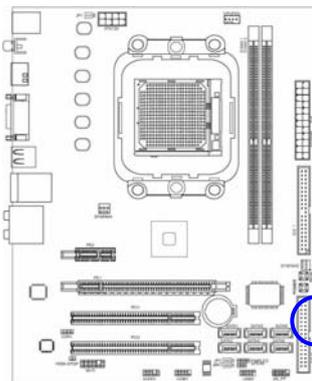
CEN/BASS : (BLACKNESS) Audio output to speaker-Center/Subwoofer speaker out

Surround : (GRAY) Audio output to speaker-Side speaker out



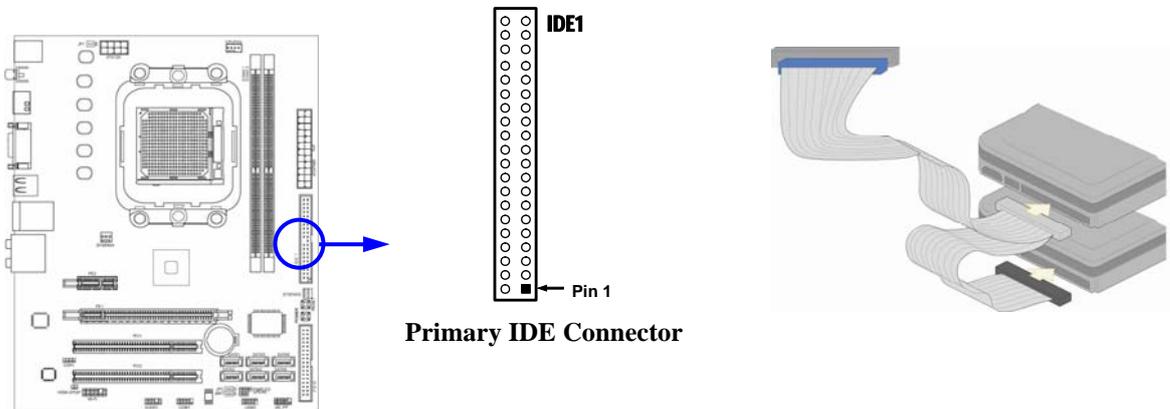
(7) Floppy drive Connector (34-pin block): FDD

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



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

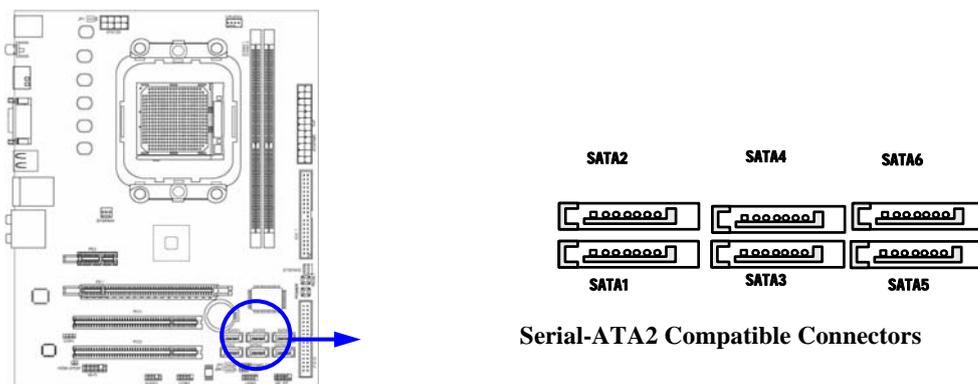
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer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



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

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

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



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

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

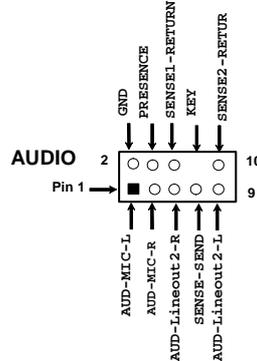
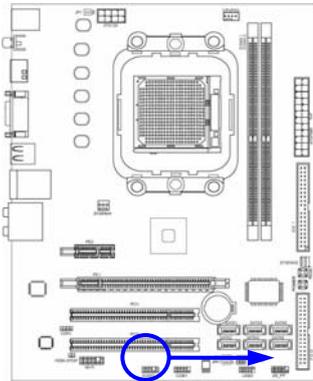
(11) SPDIF connector :

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

3-2 Headers

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

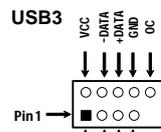
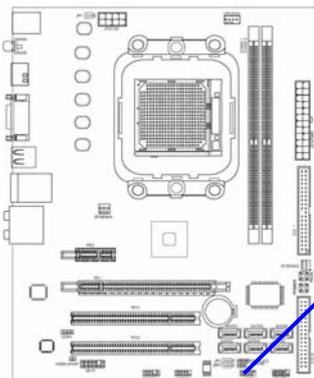
These headers connect to Front Panel Line-out, MIC connector with cable.



Line-Out, MIC Headers

(2) USB Port Headers (9-pin): USB3

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

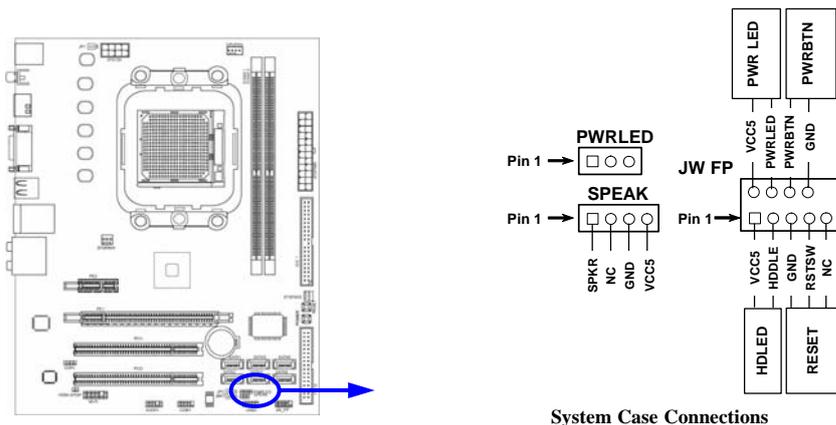
This connector connects to the hard disk activity indicator light on the case.

(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 life of the system's power supply. See the figure below.

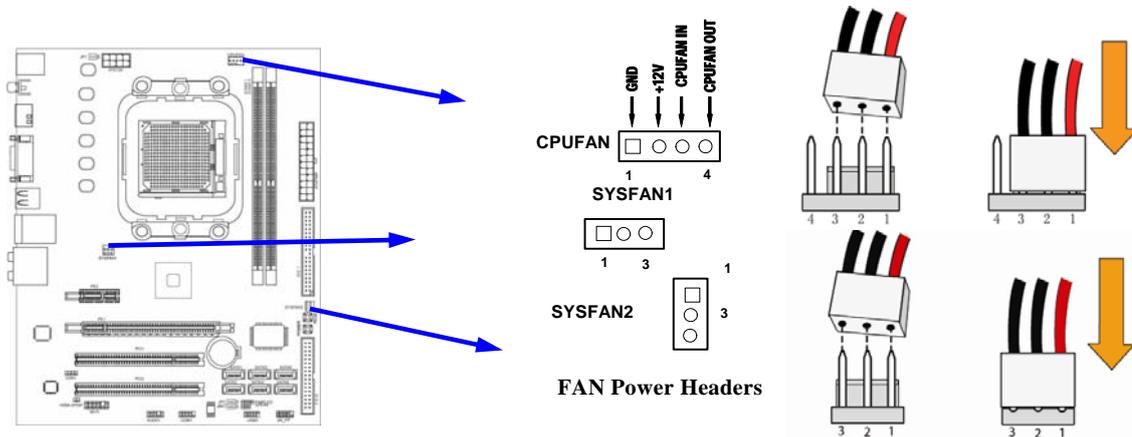
(7) Power switch: PWR BTN

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



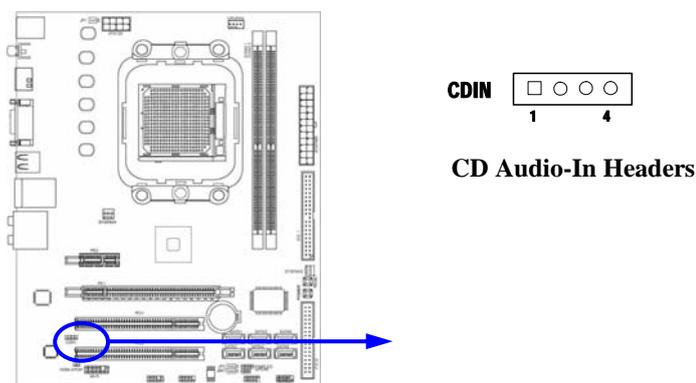
(8) FAN Power Headers: SYSFAN1, SYSFAN2 (3-pin), CPUFAN (4-pin)

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.



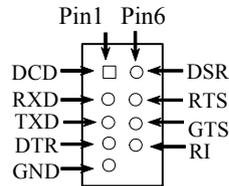
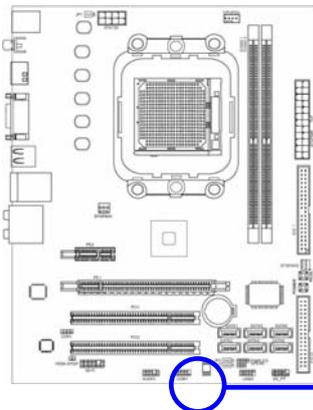
(9) CD Audio-In Headers (4-pin): CDIN

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



(10) Serial COM Port header: COM1

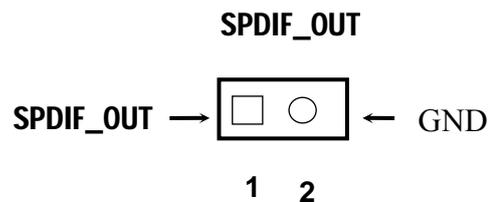
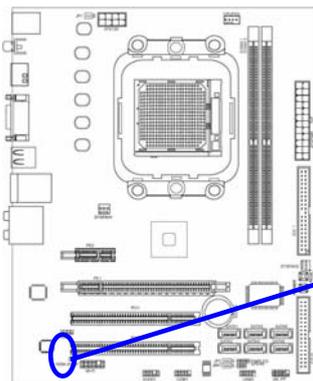
COM2 is a 9-pin RS232 D-Subminiature serial port connector.



Serial COM Port 9-pin Block

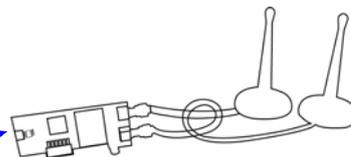
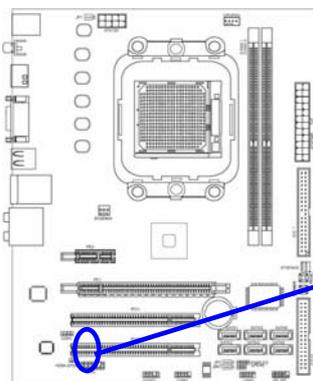
(11) HDMI-SPDIF header: SPDIF

This connector is used for installing a digital coaxial optical daughter board or graphic card support HDMI. Pin 4-6 is for audio input.

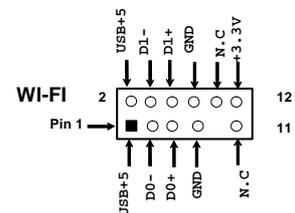


(12) WI-FI Header:

This header supports WI-FI Function. Connect the wireless local area network adapter to this header. It allows you to create a wireless environment and enjoy the convenience of wireless network connectivity.



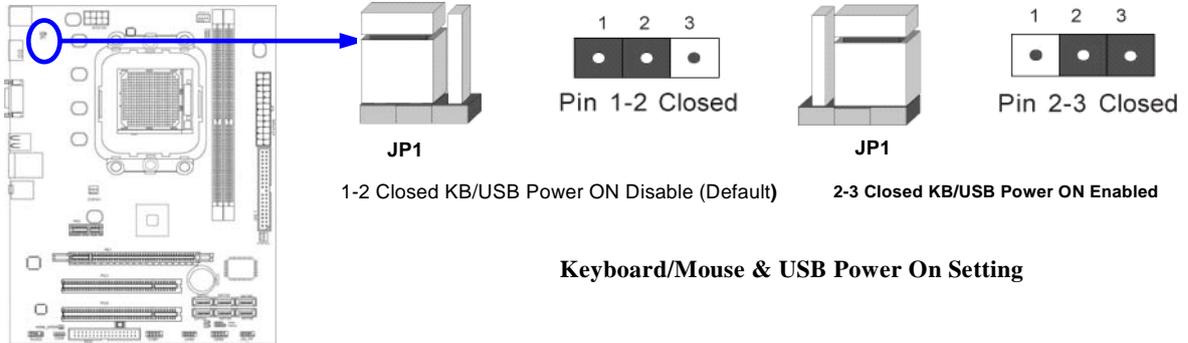
ADAPTER



WI-FI Headers

3-3 Jumper Setting

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



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

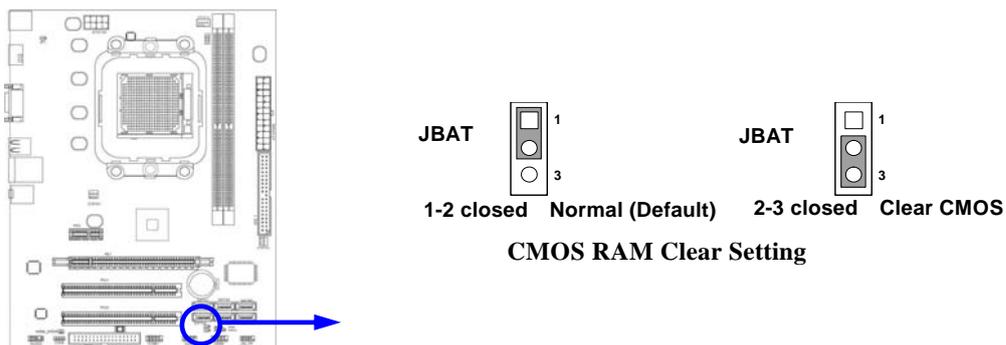
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JPAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

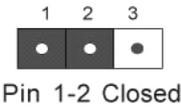
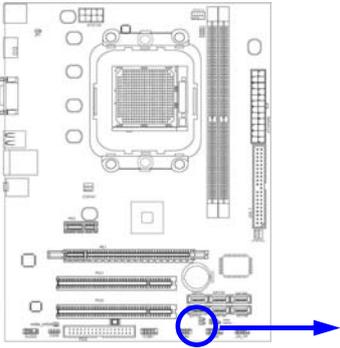
1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

Note: When should clear CMOS

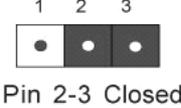
1. **Troubleshooting**
2. **Forget password**
3. **After over clocking system boot fail**



(3) USB function Enabled/Disabled: JP2



JP2
1-2 Closed USB Power ON Disable (Default)



JP2
2-3 Closed USB Power ON Enabled

USB Power On Setting

Chapter 4

Useful Help

4-1 How to Upgrade BIOS

Before updating the BIOS, users have to check if the “Miscellaneous Control” of BIOS SETUP has the “Flash Part Write Protect” selection. If there is one, users have to “Disable” the “Flash Part Write Protect” selection of the “Miscellaneous Control” in BIOS SETUP. Otherwise the system will not allow you to upgrade BIOS by Award Flash Utility. If there is no such selection, users can follow the 4 steps directly to update BIOS.

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

STEP 2. Copy utility program to your boot disc. You may copy from DRIVER CD X:\FLASH\AWDFLASH.EXE or download from our web site.

STEP 3. Download and make a copy of the latest BIOS for MCP78V SERIES motherboard series from the web site to your boot disc.

STEP 4. Insert your boot disc into A:
 Start the computer, type “Awdflash A:\xxxxxx.BIN /SN/PY/CD/CH/WB/CC/R”
 xxxxxx.BIN is the file name of latest BIOS
 SN means don’t save existing BIOS data
 PY means renew existing BIOS data
 CD means clear DMI data after programming
 CH means update HOLE
 WB means always programming BootBlock
 CC means clear existing CMOS data
 R means restart computer

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

4-2 Trouble Shooting

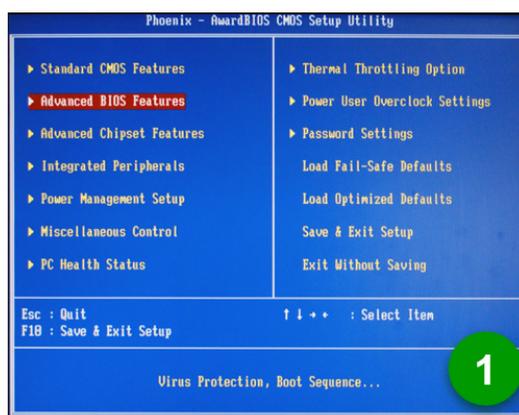
Problem	Solution
No power to the system to the all power light don’t illuminate, fan inside power supply doesn’t turn on.	1. Make sure power cable is security plugged in. 2. Replace cable. 3. Contact technical support.
System inoperative. Keyboard lights are on , power indicator lights are lit, and hard drive is spinning.	Using ever pressure on both ends of the DIMM , press down firmly until the module snaps into places.
System doesn’t boot from hard disk drive, can be booted from optical drive.	1. Check cable running from disk to disk controller board. .Make sure both ends are securely plugged in, check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important .All hard disks are capable of breaking down at any time.

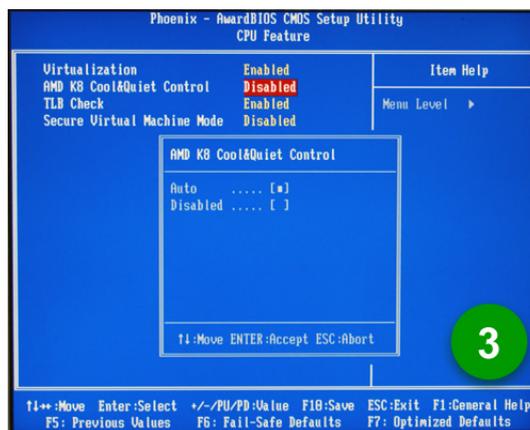
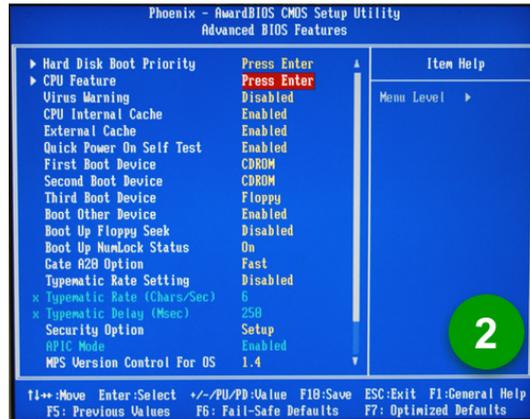
System only boots from optical drive .Hard disk can be read and applications can be used but booting from hard disk is impossible.	1. Back up data and applications files. 2. Reformat the hard drive. Reinstall applications and data using backup disks.
Screen message says “Invalid Configuration” or “CMOS Failure”	Review system ‘s equipment .Make sure correct information on is in setup.
Can not boot system after installing second hard drive.	1. Set master /slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacture for compatibility with other drives.

4-3 G.P.I Function Steps

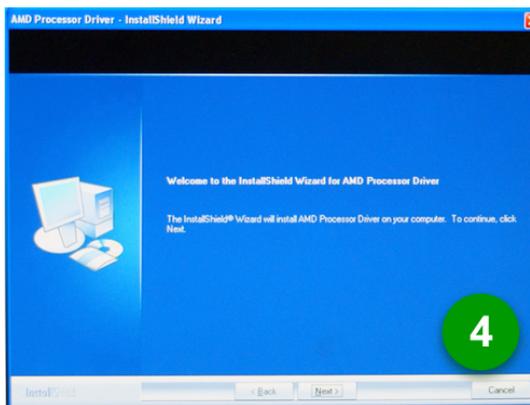
Operating Steps: The Default setting in BIOS has already enabled this function. If you wish to change the settings, please enter BIOS and take the following steps:

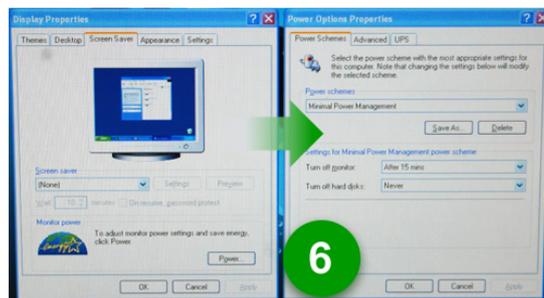
Select: Advanced BIOS Features→CPU Feature→AMD K8 Cool&Quiet Control: AUTO/Disable(This function control the POWER SAVING MODE: Auto/Disabled)





Compatible with OS: Windows XP/ 64 series. Users must install CPU driver program(AMD Processor Driver) and select the "Minimal" item in Power Setting.





With OS Windows Vista series, there is no need for to take more steps. If needed, please enter Power Settings to make corresponding changes