

***USER'S MANUAL***  
***Of***  
***AMD 760G & AMD SB710***  
***Based***  
***M/B For Socket AM2/AM2+/AM3 Series***  
***Quad Core***  
***Processor***

***NO. G03-PA76GM5-F***

***Rev: 1.0***

**Release date: April, 2010**

**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.



## Environmental Safety Instruction

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- 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.

### **Environmental Protection Announcement**

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



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# Chapter 1

## Introduction of AMD 760G Motherboards

### 1-1 Features of motherboard

The AMD 760G chipset motherboard series are based on the latest AMD 760G Chipset and the SB710 chipset which supports the following AM3 CPU under 95W: Phenom II x 4; Phenom II x 3; Phenom II x2; Athlon II x4; Athlon II x3; Athlon II x2; Sempron. Model PA76GM5-LF supports Socket AM2 CPU under 65W and Socket AM2+ CPU under 95 W as well. With an integrated low-latency high-bandwidth DIMM memory controller and a highly-scalable Hyper Transport technology-based system bus up to HT 3.0. AMD 760G Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution.

The AMD760G Series motherboard PA76GM5-LF comes with an integrated DDRII memory controller for dual channel DDRII 400/DDRII 533/DDRII 667/ DDRII 800/DDRII 1066 memory module with capacity expansible up to 8GB while the motherboard PA76GM5D3-LF integrated with a DDRIII memory controller for dual channel DDRIII 800/DDRIII 1066/ DDRIII 1333 memory module with capacity expansible up to 8GB. These motherboards are embedded with SB710 chipset of providing ULTRA ATA 133 connectors and Serial ATA2 with RAID 0, 1, 10, JBOD functions which support up to two IDE and six Serial ATA2 devices to accelerate hard disk drives and guarantee the data security without failure in advanced computing performance.

The AMD760G motherboards provide PCI-E 10/100 LAN chip which supports 10/100Mbps data transfer rate. And the embedded ALC662 6-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 AMD760G Series motherboards offer one PCI-Express 2.0x16 by16-lane graphics slot of 8Gbyte/sec data transfer rate at each relative direction which gets 7 times of bandwidth more than AGP 8X and up to 16Gbyte/sec peak concurrent bandwidth at full speed to guarantee the ultimate GPU computing performance. The AMD760G motherboards also carry two 32-bit PCI slots guarantee the rich connectivity for the I/O peripheral devices.

Embedded USB controllers as well as capability of expanding to 8 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 Smart Fan /CPU VID/OC-CON** 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

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fails in system reliabilities. This motherboard provides the guaranteed performance and meets the demands of the next generation computing. But if you insist to gain more system performance with variety possibilities of the components you choose, please be careful and make sure to read the detailed descriptions of these value added product features, please get them in the coming section.

## **1-1.1 Special Features of Motherboard**

### **CPU Thermal Throttling Technology---** (The CPU Overheat Protection Technology)

To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter partially idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 40°C to 90°C). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working.

### **CPU Smart Fan---** The Noise Management System

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

### **CPU VID---** (Shift to Higher Performance)

The CPU voltage can be adjusted 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.

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## 1-2 Specification

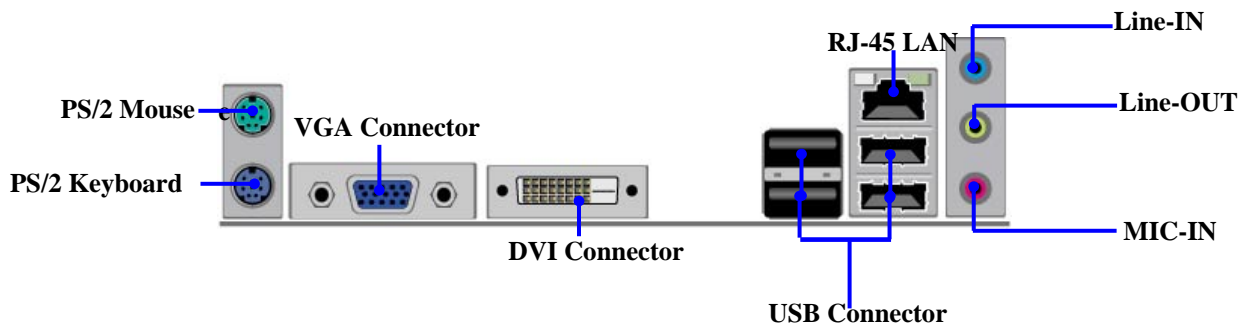
Spec	Description
<b>Design</b>	<ul style="list-style-type: none"><li>● Micro u-ATX form factor; size:24.5cm*20.0cm</li></ul>
<b>Chipset</b>	<ul style="list-style-type: none"><li>● AMD 760G North Bridge Chipset</li><li>● AMD SB710 South Bridge Chipset</li></ul>
<b>CPU Socket</b>	<ul style="list-style-type: none"><li>● Support Socket AM2 CPU under 65W and Socket AM2+ CPU under 95W (optional for Model PA76GM5-LF only)</li><li>● Support Socket AM3 CPU under 95W: Phenom II x 4; Phenom II x 3; Phenom II x2; Athlon II x4; Athlon II x3; Athlon II x2; Sempron</li><li>● Support HT 3.0</li></ul>
<b>Memory Socket</b>	<ul style="list-style-type: none"><li>● 240-pin DDRII Module slot x 2</li><li>● Support 2pcs DDRII 400/DDRII 533/DDRII 667/DDRII 800/DDRII 1066 modules expandable to 8GB (optional for PA76GM5-LF Model)</li><li>● 240-pin DDRIII Module slot x 2</li><li>● Support 2pcs DDRIII 800/DDRIII 1066/DDRIII 1333 modules expandable to 8GB(optional for PA76GM5D3-LF Model)</li><li>● Dual channel supported</li></ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"><li>● 1pcs PCI-Express 2.0 x16 by 16 lane</li><li>● 2 pcs 32-bit PCI slots</li></ul>
<b>Integrate IDE and Serial ATA2 RAID</b>	<ul style="list-style-type: none"><li>● One IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s for two IDE Devices and for six Serial ATA2 ports providing 300 MB/sec data transfer rate with RAID 0, 1, 10, JBOD functions</li></ul>
<b>Gigabit LAN</b>	<ul style="list-style-type: none"><li>● Integrated PCI-E 10/100 LAN chip</li><li>● Support Fast Ethernet LAN function of providing 10Mb/100Mbs data transfer rate</li></ul>
<b>6 CH-Audio</b>	<ul style="list-style-type: none"><li>● Realtek ALC662 HD Audio 6-channel Audio Codec integrated</li><li>● Audio driver and utility included</li></ul>
<b>BIOS</b>	<ul style="list-style-type: none"><li>● AMI 8MB DIP Flash ROM BIOS</li></ul>
<b>Multi I/O</b>	<ul style="list-style-type: none"><li>● PS/2 keyboard and PS/2 mouse connectors</li><li>● DVI Connector x1</li><li>● VGA Connector x1</li><li>● USB 2.0 port x4 and header x2</li><li>● RJ-45 LAN Connector x1</li><li>● Audio connector x1(Line-in, Line-out, MIC)</li><li>● Hard disk driver connector x1/ SATA connector x 6</li><li>● Serial Port header x1</li><li>● CDIN header x1</li><li>● Audio header x1</li></ul>

## 1-3 Item Checklist

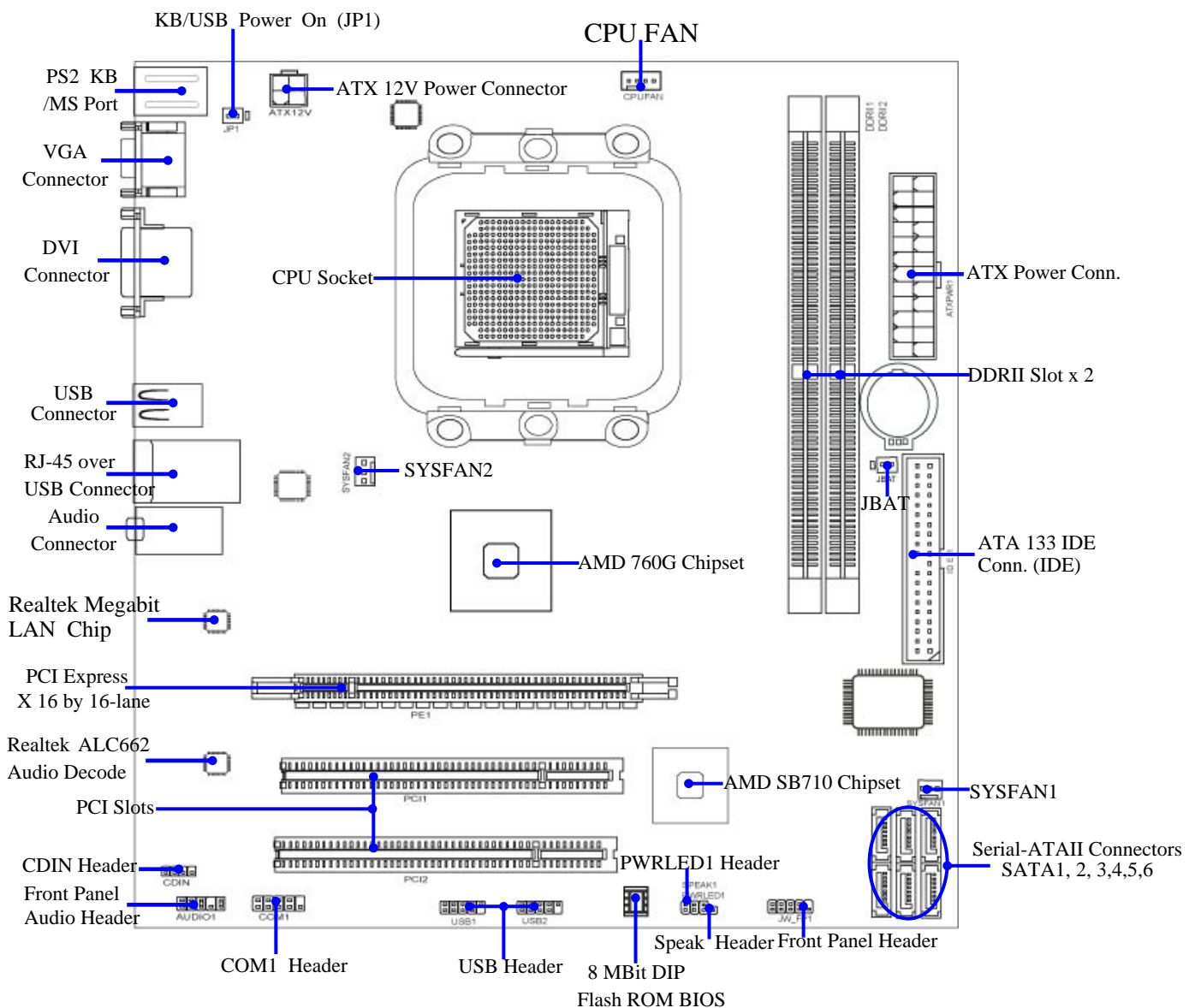
- ☒ AMD760G Platform Processor Chipset based motherboard
- ☒ CD for motherboard utilities
- ☒ User's Manual
- ☒ SATA Cable
- ☒ HDD Cable

## 1-4 Layout Diagram

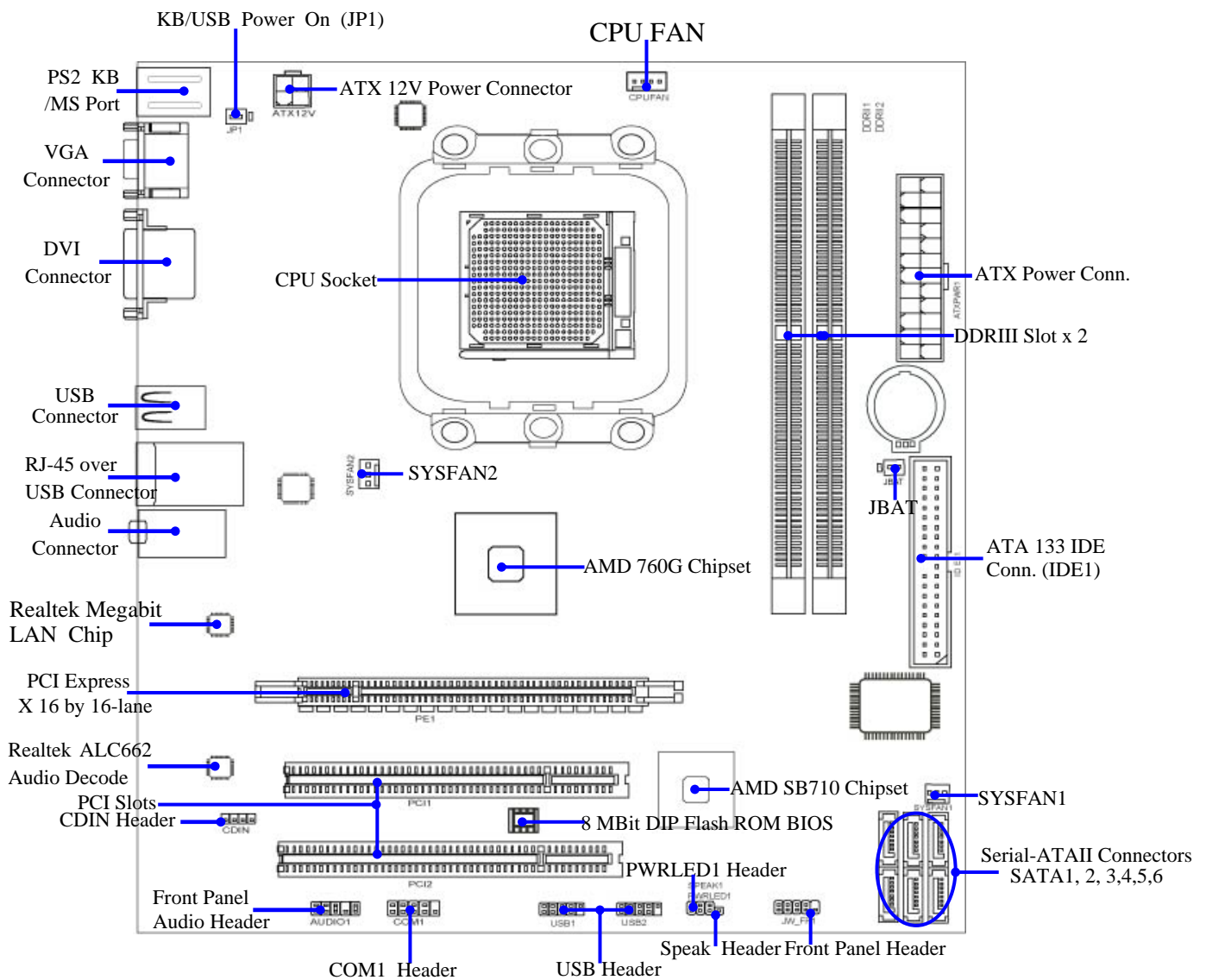
### Rear I/O for AMD 760G



### Diagram is for PA76GM5-LF



## Diagram is for PA76GM5D3-LF



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## 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.

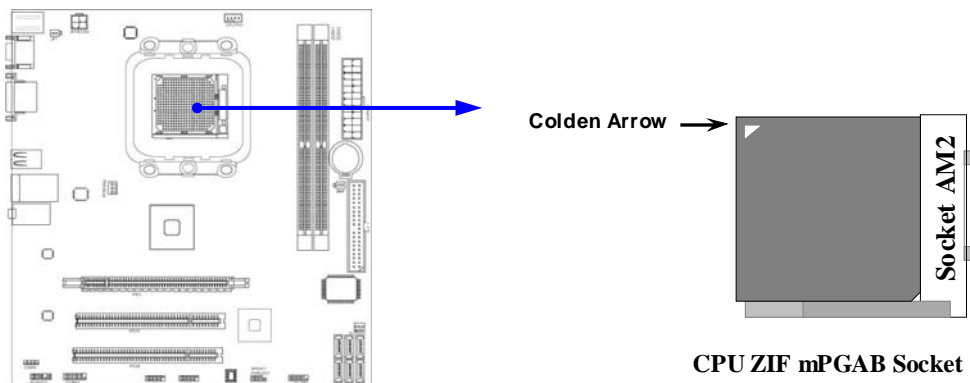
### 2-1 CPU Installation

The motherboard provides a socket AM2 surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supports AMD AM2/AM2+/AM3 processors.

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 heat sink 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

Model **PA76GM5-LF** provides two 240-pin DDRII DUAL INLINE MEMORY MODULES (DIMM) socket for DDRII memory expansion to maximum memory volume of 8GB DDRII SDRAM.

### Valid Memory Configuration for PA76GM5-LF

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1(DDRII 1)	DDRII 400/DDRII 533/DDRII 667/DDRII 800/DDRII 1066	X1	4GB
Bank 2, 3(DDRII 2)	DDRII 400/DDRII 533/DDRII 667/DDRII 800/DDRII 1066	X1	4GB
Total	Memory (Max.4GB)	2	8GB

Model **PA76GM5D3-LF** provides two 240-pin DDRIII DUAL INLINE MEMORY MODULES (DIMM) socket for DDRIII memory expansion to maximum memory volume of 8GB DDRIII SDRAM.

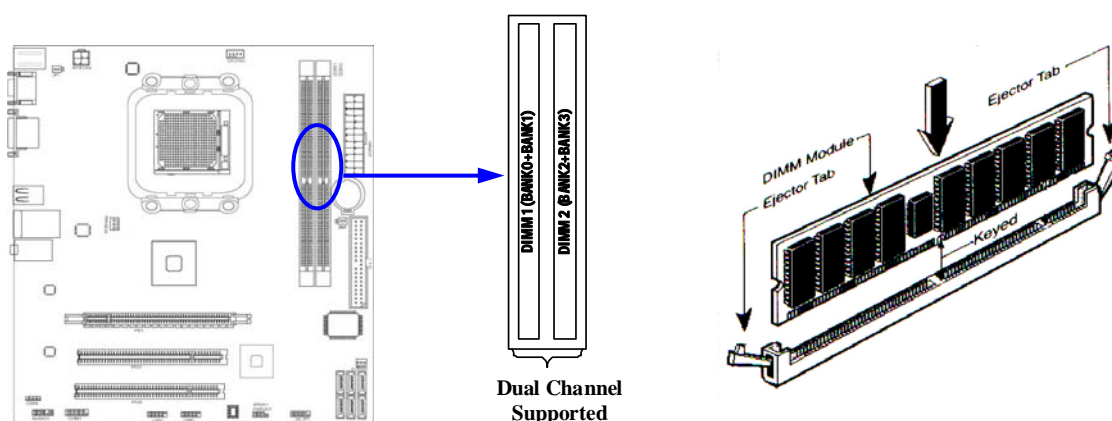
### Valid Memory Configuration for PA76GM5D3-LF

Bank	240-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DDRIII 1)	DDRIII 800/DDRIII 1066/DDRIII 1333	X1	4GB
Bank 2, 3 (DDRIII 2)	DDRIII 800/DDRIII 1066/DDRIII 1333	X1	4GB
Total	Memory (Max.4GB)	2	8GB

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

1. Dual channel function only supports when 2 DDRII Modules plug in both DDRII 1 & DDRII 2 for Model PA76GM5-LF or 2 DDRIII Modules plug in both DDRIII1 & DDRIII2 for Model PA76GM5D3-LF.
2. Memory modules must be of the same type, same size, and same frequency for dual channel function.

Install DDRII modules of PA76GM5-LF or DDRIII modules of PA76GM5D3-LF to your motherboard are not difficult, you can refer to figure below.



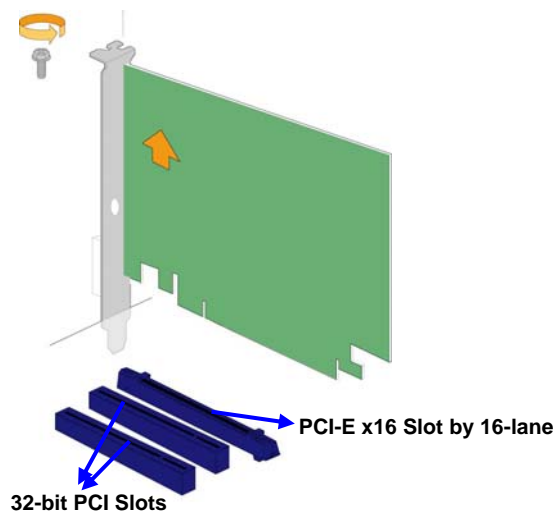
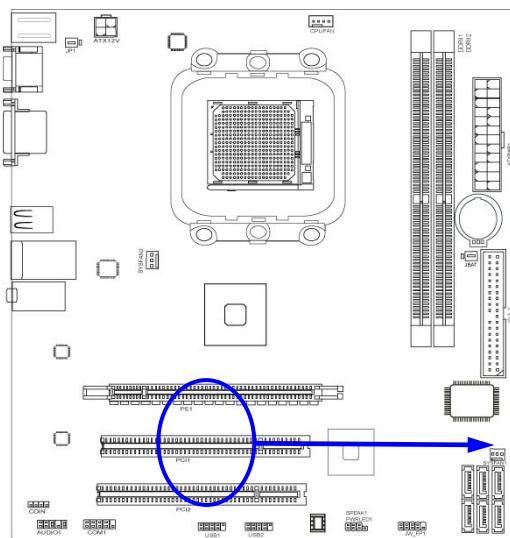
#### **NOTE!**

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.

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## 2-3 Expansion Slots

The AMD760G Series motherboards offer one PCI-Express 2.0x16 by16-lane graphics slot of 8Gbyte/sec data transfer rate at each relative direction which gets 7 times of bandwidth more than AGP 8X and up to 16Gbyte/sec peak concurrent bandwidth at full speed to guarantee the ultimate GPU computing performance. The AMD760G motherboards also carry two 32-bit PCI slots guarantee the rich connectivity for the I/O peripheral devices.



# Chapter 3

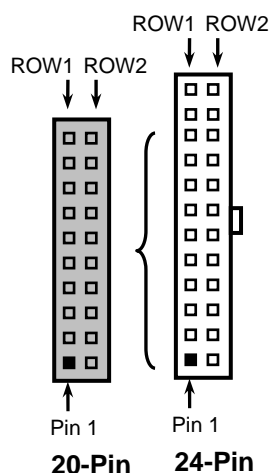
## Connectors, Headers & Jumper Setting

### 3-1 Connectors

#### (1) Power Connector (24-pin block): ATXPWR1

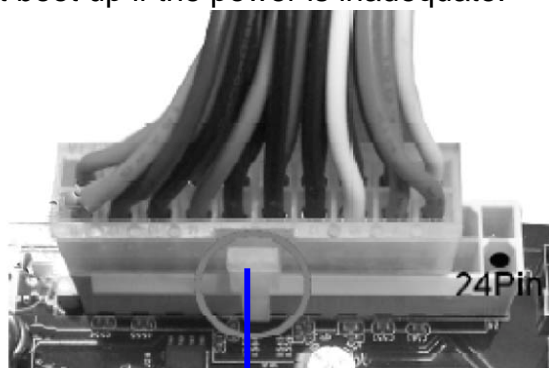
ATX Power Supply connector:

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.

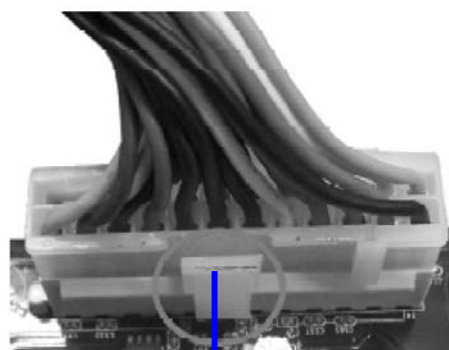


PIN	ROW1	ROW2
1	3.3V	3.3V
2	3.3V	-12V
3	GND	GND
4	5V	Soft Power On
5	GND	GND
6	5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V (for Soft Logic)	+5V
10	+12V	+5V
11	+12V	+5V
12	+3V	GND

- \*\* 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.



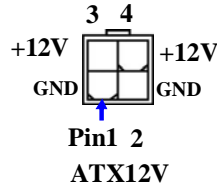
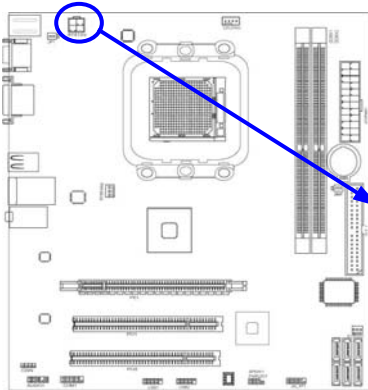
20-pin power plug



24-pin power plug

#### (2) ATX 12V Power Connector (4-pin block): ATX12V

This is a new defined 4-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports Socket AM2/AM2+/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.



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

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

**(4) USB Port connector: CN5/ UL1 for USB**

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

**(5) LAN Port connector: UL1 for RJ-45 LAN**

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

**(6) Audio Line-In, Line-Out, MIC Connector: CN3**

These Connectors are 3 Phone-Jack for LINE-OUT, LINE-IN, MIC audio connections.

**Line-in: (BLUE)**

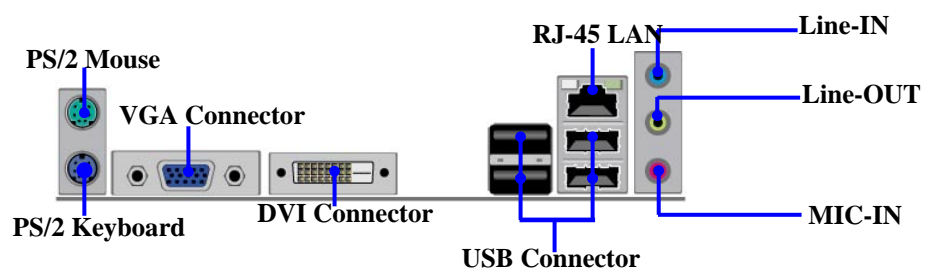
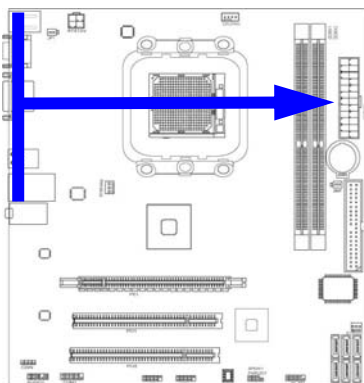
Audio input to sound chip

**Line-out: (GREEN)**

Audio output to speaker

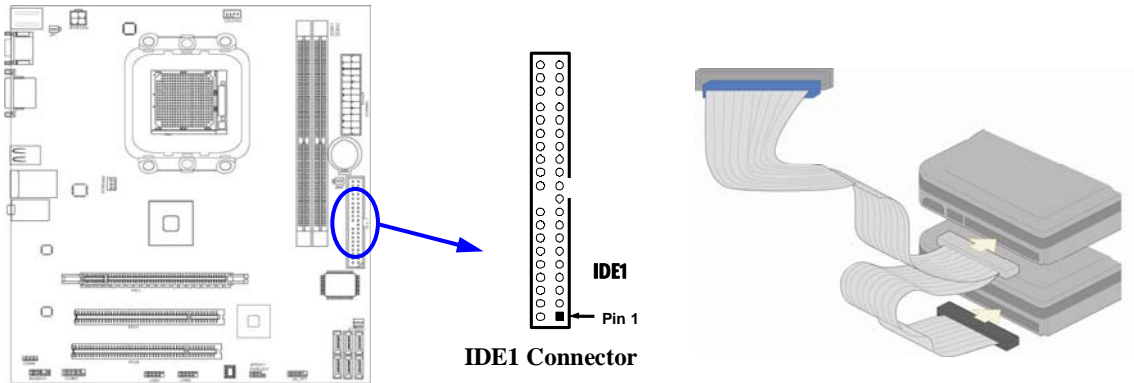
**MIC: (PINK)**

Microphone Connector



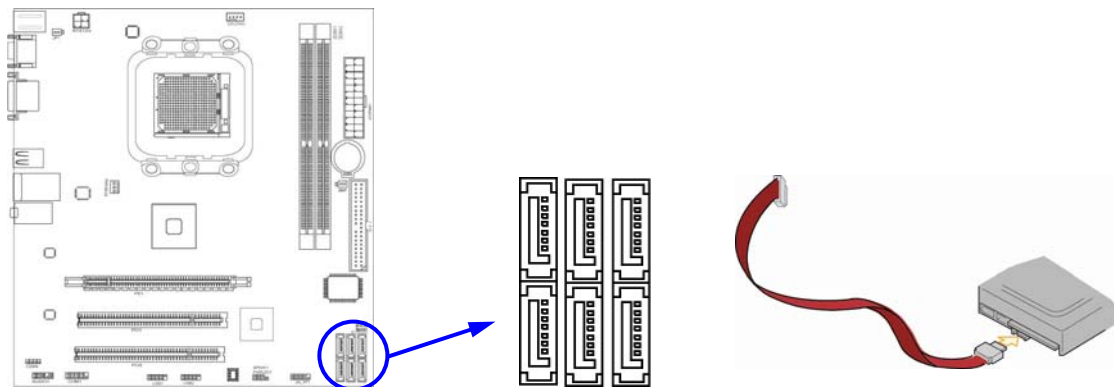
**(7) Primary IDE Connector (40-pin block): IDE1**

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.

**(8) 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.



**(9) 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.

**(10) Digital Visual Interface: DVI**

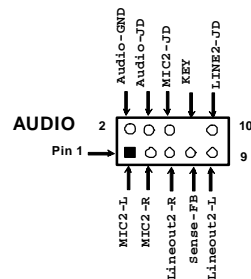
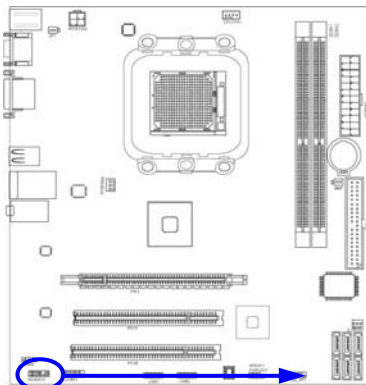
This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

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## 3-2 Headers

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

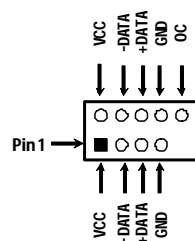
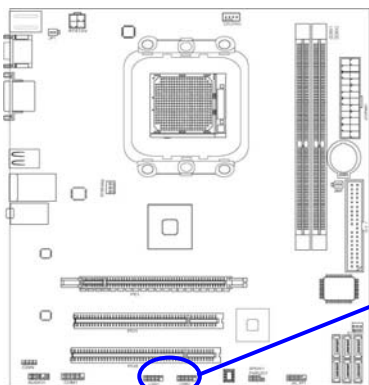
These headers connect to Front Panel Line-out, MIC connector with cable.



Line-Out, MIC Headers

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

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: SPEAK1

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

### (4) Power LED: PWR LED/PWRLED1

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

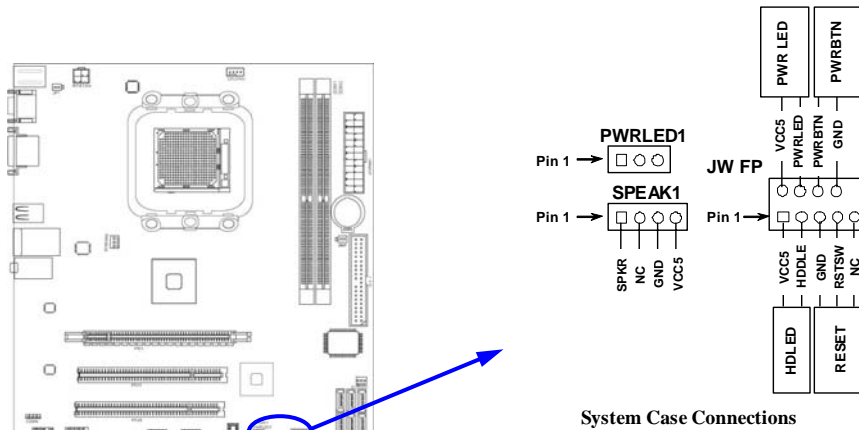
This connector connects to the hard disk activity indicator light on the case.

### (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.

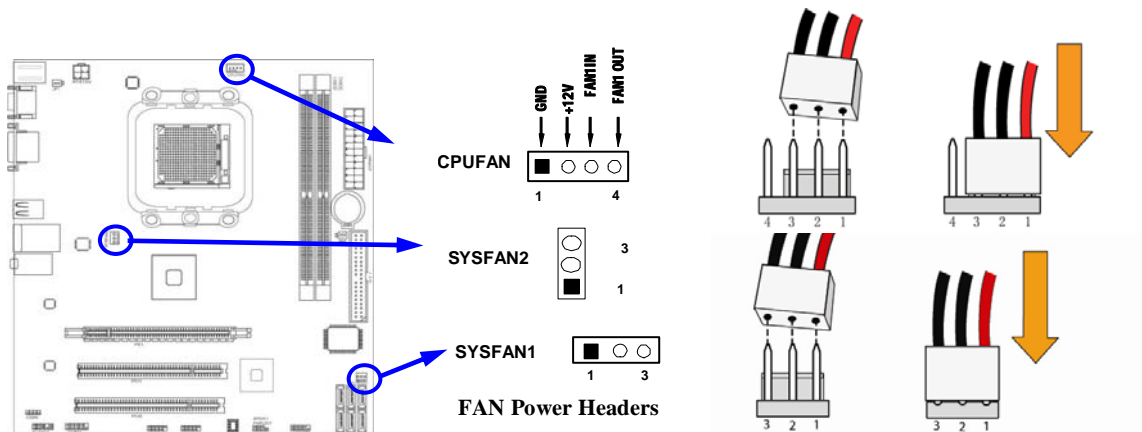
### (7) Power switch: PWR BTN

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



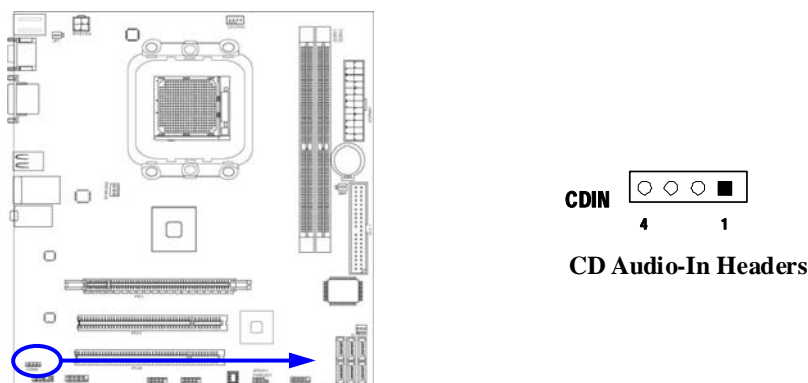
### (8) FAN Power Headers: SYSFAN1 (3-pin), SYSFAN2 (3-pin), CPUFAN (4-pin)

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): CDIN1

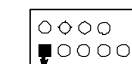
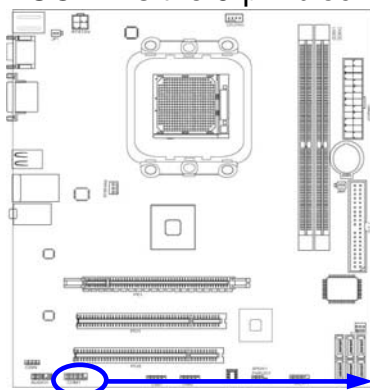
CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



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**(10) Serial COM Port header: COM1**  
COM1 is the 9-pin block pin-header.

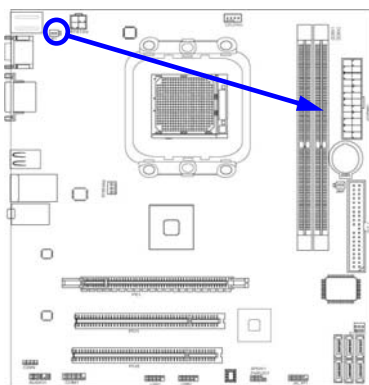


Pin1

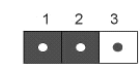
Serial COM Port 9-pin Block

### 3-3 Jumper Setting

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



JP1

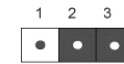


Pin 1-2 Closed

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



JP1



Pin 2-3 Closed

2-3 Closed KB/USB Power ON Enabled

Keyboard/Mouse & USB Power On Setting

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

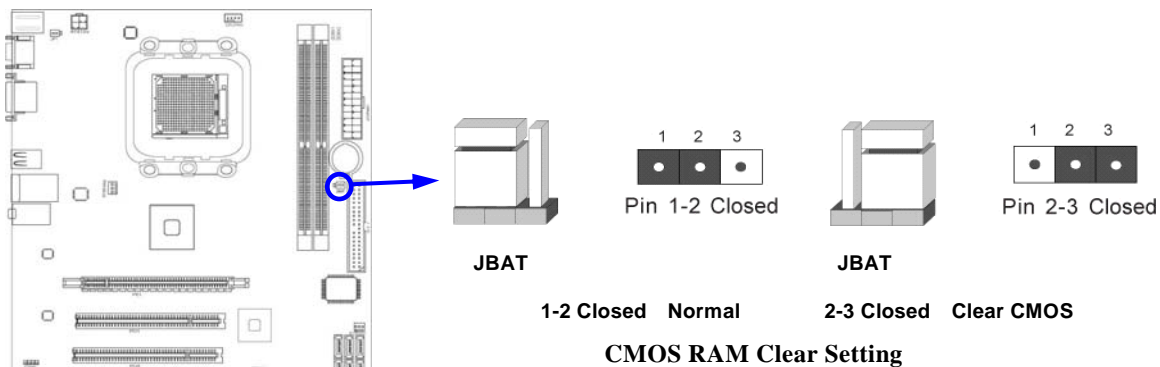
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

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*



## Chapter 4 Useful Help

### 4-1 How to Update BIOS

- Step1. Prepare a boot disc. (You may make one by click START click RUN type SYS A: click OK)
- Step2. 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.
- Step3. Insert the disk into A: start your computer and then type in "A:\xxxxxx.BAT" (xxxxxxx being the file name of the latest BIOS)
- Step4. Type Enter to update and flash the BIOS. The system will restart automatically when BIOS is upgraded.

### 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 date and applications files. 2. Reformat the hard drive. Reinstall applications and date 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.

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## 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).

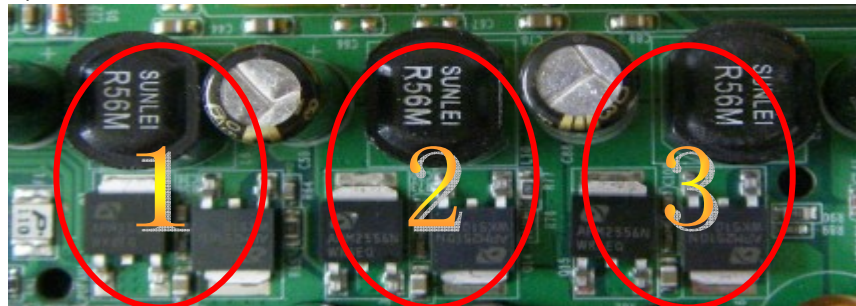


Figure 1

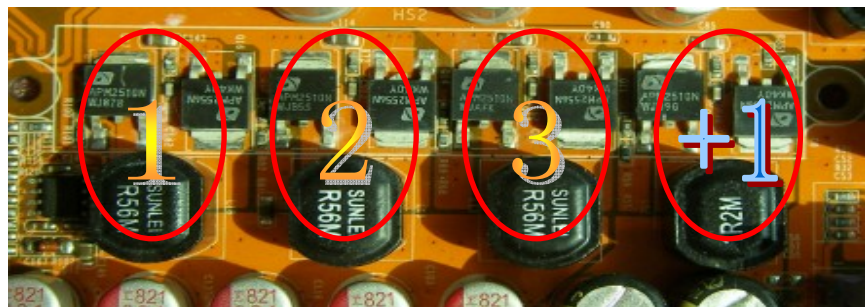


Figure 2

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### 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.

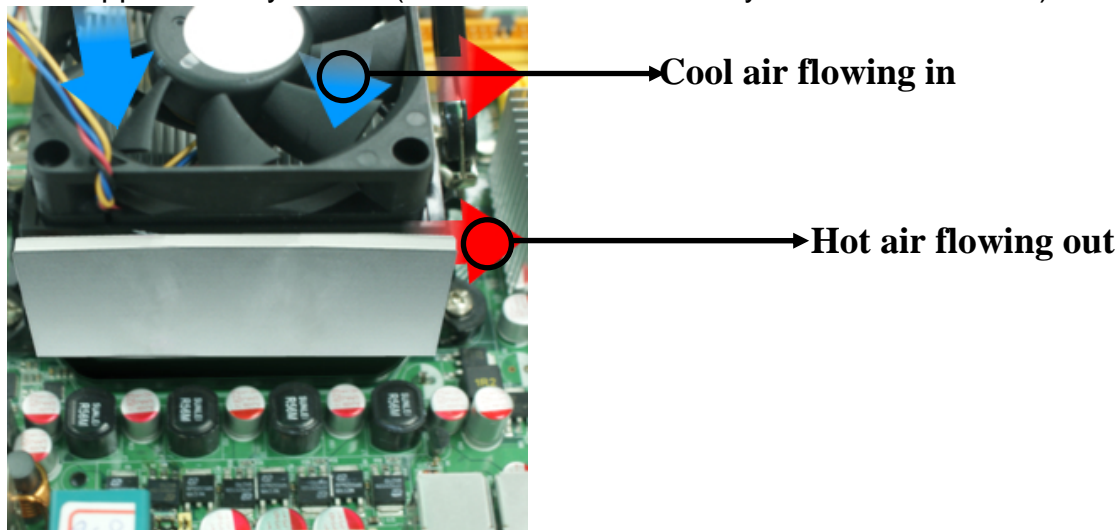
We recommend users choose motherboards with power design of 5-phase, 5+1 phase or more for CPUs that demand 125W or 140W power consumption.

### Subject 2: Suggestion on choosing electric fan

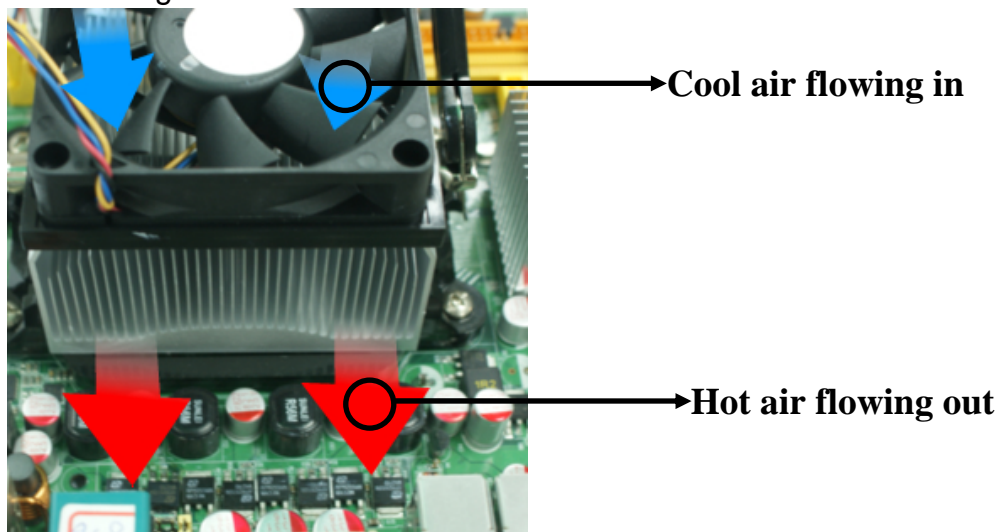


Both the amount of electric current to MOSFET and the heat produced from the motherboard go up as AMD's CPU power consumption increases. In this case we recommend users select a CPU fan with air outlet towards MOSFET so that CPU fan can carry away heat produced by MOSFET, for better heat dissipation effects.

At the same time we suggest using well-ventilated cases to maintain temperature as 38°C approximately inside. (38°C is recommended by CPU manufactures)



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



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