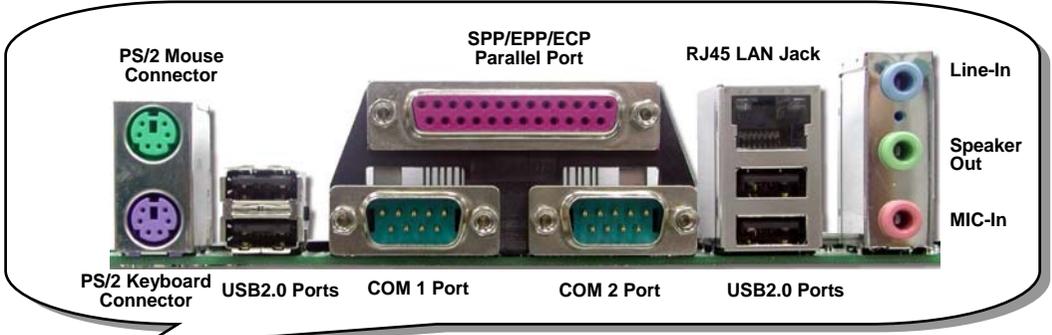


# AK89 Max

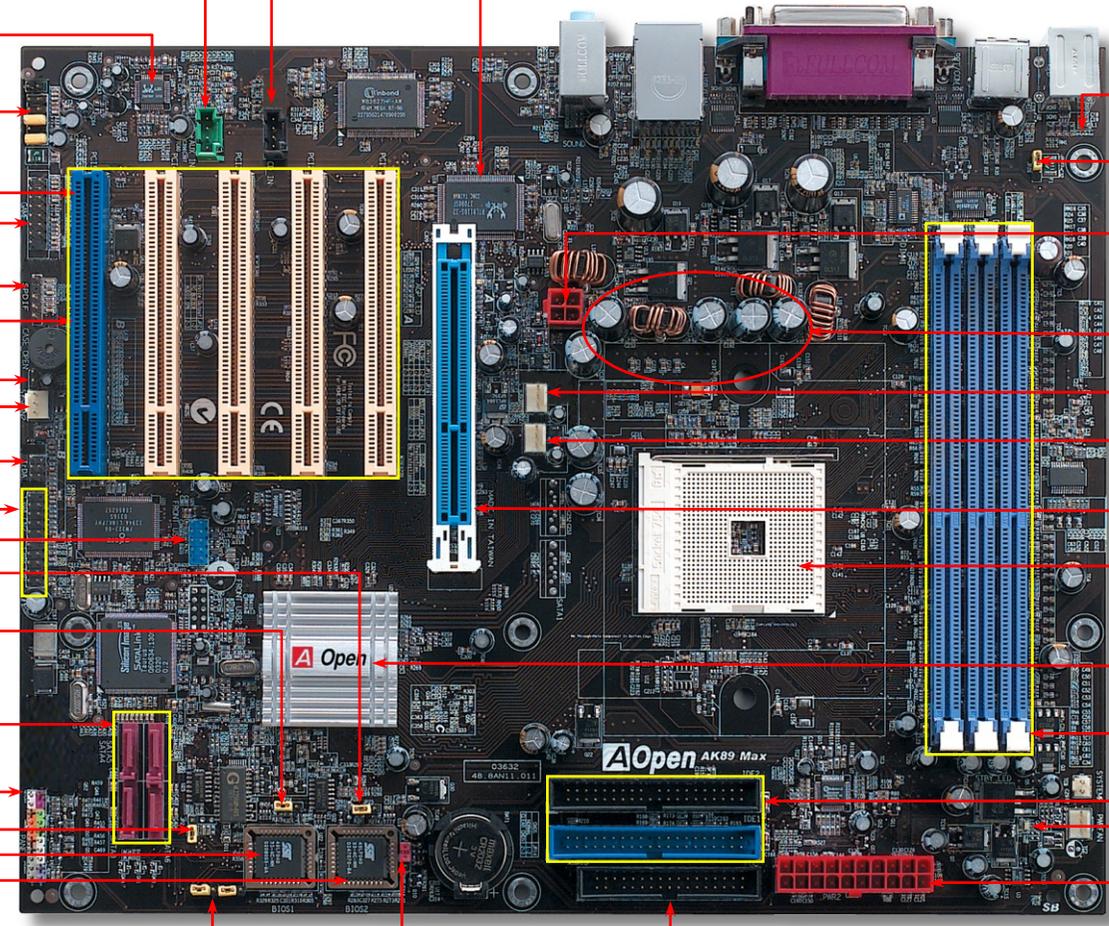
## AK89-L

## AK89-N

# Easy Installation Guide



- Realtek RTL8110S LAN Chip (for AK89 Max and AK89-L)
- Realtek RTL8100C LAN Chip (for AK89-N)
- CD-IN Connector
- AUX-IN Connector
- Onboard AC97 CODEC
- Front Audio Connector
- Self-Powered PCI Slot (for AK89 Max only)
- Game Port Connector
- S/PDIF Connector
- 32-bit PCI Expansion Slot x5
- Case Open Connector
- SYSFAN2 Connector
- IrDA Connector
- IEEE 1394 Connector x2 (for AK89 Max only)
- USB 2.0 Connector
- JP25 BIOS2 Protection Jumper (for AK89 Max only)
- JP24 BIOS Select Jumper (for AK89 Max only)
- Serial ATA Connector x4 (with RAID function) (for AK89 Max only)
- Front Panel Connector
- JP2 Dr. Voice II Speaker/buzzer Output Jumper (for AK89 Max only)
- Phoenix Award Flash ROM BIOS (BIOS1) (4Mbit for AK89 Max only, 2Mbit for AK89-L / AK89-N)
- Phoenix Award 4Mbit Flash ROM BIOS (BIOS2, for AK89 Max only)
- JP15 & JP16 Dr. Voice II Language Selection Jumper (for AK89 Max only)
- JP14 BIOS Data Clear Jumper



- Resettable Fuse
- JP28 Keyboard/Mouse Wakeup Jumper
- 4-pin 12V. ATX Power Connector
- 3300  $\mu$ F Low ESR Capacitors
- CPUFAN Connector
- SYSFAN1 Connector
- AGP 8X Expansion Slot
- 754-pin CPU Socket with Voltage and Frequency Auto-Detection that supports AMD™ Athlon™ 64 CPU
- NVIDIA nForce3 chipset
- 184-pin DIMMx3 supports DDR400 max. to 2GB and DDR333/266 max. to 3GB
- IDE Connector x2 (ATA/66/100/133 supported)
- STBY LED
- ATX Power Connector
- FDD Connector

# Before You Start



Everything you need to boot this motherboard is included in this Easy Installation Guide. For more information, a complete **Online User's Manual** can be found in the **Bonus Pack CD**. Thanks for the help of saving our earth.

## Accessory Checklist

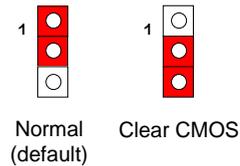
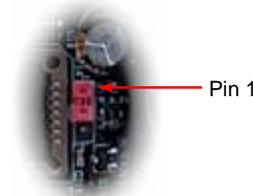
- ✓ This Easy Installation Guide x 1
- ✓ Enhanced Full Pictured Manual x 1
- ✓ EzRestore Guide x 1
- ✓ 80-Wire IDE Cable x 1
- ✓ Floppy Drive Cable x 1
- ✓ Bonus Pack CD x 1
- ✓ I/O Shield x 1
- ✓ Norton Anti-Virus CD x 1
- ✓ Serial ATA Cable x 1 (for AK89 Max only)
- ✓ Serial ATA Power Cable x 1 (for AK89 Max only)
- ✓ 40-wire IDE Cable x 1 (for AK89 Max only)
- ✓ Silicon Image Serial ATA Driver Diskette x 1 (for AK89 Max only)
- ✓ IEEE 1394 Cable x 1 (for AK89 Max only)
- ✓ USB2.0 + Game Port Cable x 1 (for AK89 Max only)
- ✓ S/PDIF Cable x 1 (for AK89 Max only)



## 1. JP14 Clear CMOS

You can clear CMOS to restore system default setting. To clear the CMOS, follow the procedure below.

1. Turn off the system and unplug the AC power.
2. Remove ATX power cable from connector PWR2.
3. Locate JP14 and short pins 2-3 for a few seconds.
4. Return JP14 to its normal setting by shorting pin 1 & pin 2.
5. Connect ATX power cable back to connector PWR2.

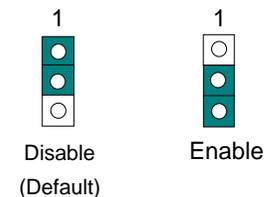
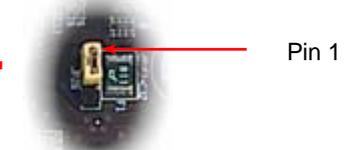


**Tip: When should I Clear CMOS?**

1. Boot fails because of overclocking...
2. Forget password...
3. Troubleshooting...

## 2. JP28 Keyboard/Mouse Wake-up Enable/Disable Jumper

This motherboard provides keyboard / mouse wake-up function. You can use JP28 to enable or disable this function, which could resume your system from suspend mode with keyboard or mouse installed. The factory default setting is set to "Disable" (1-2), and you may enable this function by setting the jumper to 2-3.

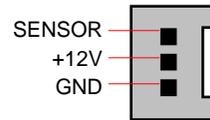
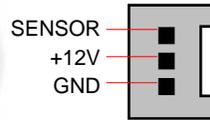


### 3. Installing CPU & Housing Fan

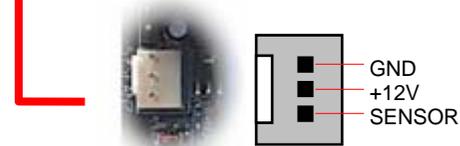
Plug in the CPU fan cable to the 3-pin **CPUFAN** connector. If you have chassis fan, you can also plug it on **SYSFAN1** or **SYSFAN2** connector.



CPUFAN Connector



SYSFAN1 Connector



SYSFAN2 Connector

**Note:** Some CPU fans do not have sensor pin, so that cannot support fan monitoring.

### 5. Setting CPU Voltage & Frequency

#### Setting CPU Core Voltage

This motherboard supports CPU VID function. The CPU core voltage will be automatically detected and the range is from 0.8V to 1.55V. It is not necessary to set CPU Core Voltage

#### Setting CPU Frequency

This motherboard is CPU jumper-less design, you can set CPU frequency through the BIOS setup, and no jumpers or switches are needed.

#### BIOS Setup > Frequency / Voltage Control > CPU Speed Setup

**Core Frequency = CPU Clock \* CPU Ratio**

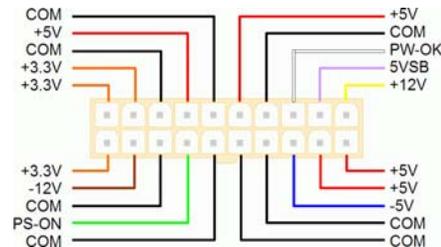
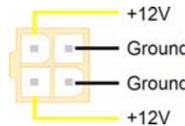
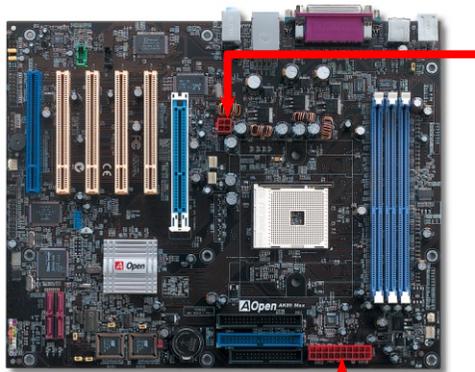
CPU Ratio	From 4x to 25x step 1x
CPU Clock (By manual Adjustment)	200~255 by 1MHz stepping adjustment technology

CPU	CPU Frequency	Core	CPU Clock	Ratio
Athlon 64 3000+	1.8GHz		200MHz	9x
Athlon 64 3200+	2.0GHz		200MHz	10x
Athlon 64 3400+	2.2GHz		200MHz	11x

**Note:** With CPU speed changing rapidly, there might be fastest CPU on the market by the time you received this installation guide. This table is kindly for your references only.

### 4. Connecting ATX Power Connector

This motherboard comes with a 20-pin and 4-pin ATX power connector. Make sure you plug in the right direction.



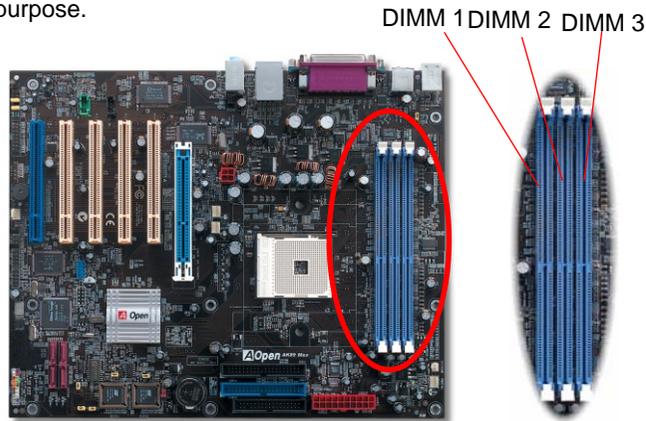
**Warning:** NVidia nForce3 chipset supports 200MHz system clock and 66MHz AGP clock, higher clock setting may cause serious system damage.

**Warning:** Supposed you have had adjusted CPU ratio on your current CPU, and you plan to replace a new CPU. Please use <Home> key or Clear CMOS to restore the default setting when changing a new CPU, because the system will still implement the previous CPU setting on the new one.

**Tip:** If your system hangs or fails to boot because of overclocking, simply use <Home> key to restore the default setting or you can wait the AOpen "Watch Dog ABS" reset the system in five seconds and system will auto-detect hardware again.

## 6. Installing Memory Modules

This motherboard has three 184-pin DDR DIMM sockets that allow you to install DDR266/333 memory up to 3 GB and DDR400 memory up to 2GB. Non-ECC DDR RAM is supported. Otherwise, it will cause serious damage on memory sockets or RAM module. Please follow the table below to install RAM modules. Newly implemented function, the Voltage of memory on this motherboard is adjustable from 2.5V to 2.85V for over clocking purpose.



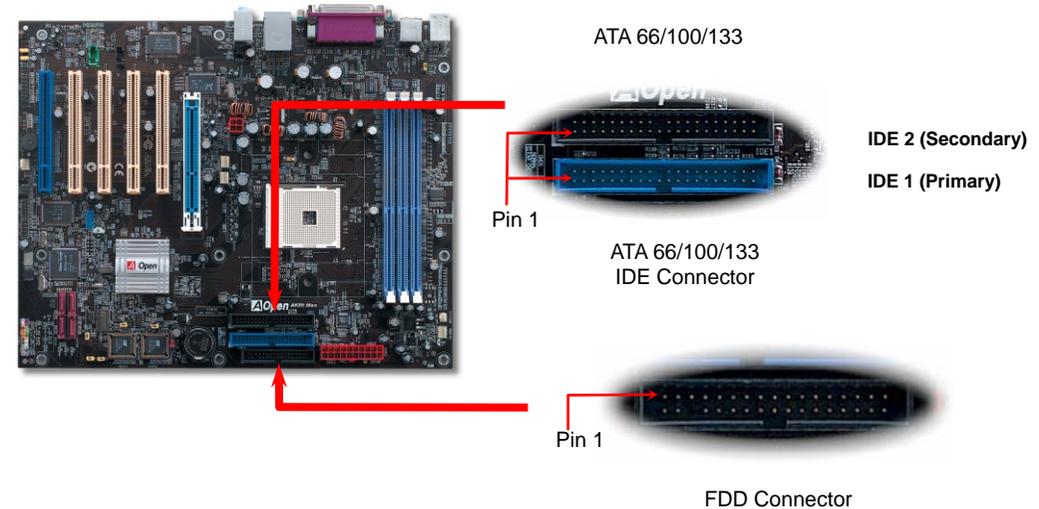
**Tip:** "X8" means that each chip on the module bank is 8 bits, and "X16" means each chip is 16 bits. We know that each memory bank is 64 bits. Therefore, if a memory module has 8 chips on each bank it is "X8", and if there are 4 chips on each bank, it is "X16".

Number of DIMMs	DIMM 1	DIMM 2	DIMM 3	Max Speed
1	X8 or X16 single bank	empty	empty	DDR400
1	empty	X8 or X16 single bank	empty	DDR400
1	empty	empty	X8 or X16 single bank	DDR400
1	X8 double bank	empty	empty	DDR400
1	empty	X8 double bank	empty	DDR400
1	empty	empty	X8 double bank	DDR400
2	X8 or X16 single bank	X8 or X16 single bank	empty	DDR400
2	X8 or X16 single bank	X8 double bank	empty	DDR400
2	X8 or X16 single bank	empty	X8 or X16 single bank	DDR400
2	X8 or X16 single bank	empty	X8 double bank	DDR400
2	X8 double bank	X8 or X16 single bank	empty	DDR400
2	X8 double bank	X8 double bank	empty	DDR400
2	X8 double bank	empty	X8 or X16 single bank	DDR400
2	empty	X8 or X16 single bank	X8 or X16 single bank	DDR333
2	empty	X8 or X16 single bank	X8 double bank	DDR266
2	empty	X8 double bank	X8 or X16 single bank	DDR266
2	empty	X8 double bank	X8 double bank	DDR266
2	X8 double bank	empty	X8 double bank	DDR400
3	X8 or X16 single bank	X8 or X16 single bank	X8 or X16 single bank	DDR333
3	X8 or X16 single bank	X8 or X16 single bank	X8 double bank	DDR266
3	X8 or X16 single bank	X8 double bank	X8 or X16 single bank	DDR266
3	X8 or X16 single bank	X8 double bank	X8 double bank	DDR266
3	X8 double bank	X8 or X16 single bank	X8 or X16 single bank	DDR333
3	X8 double bank	X8 or X16 single bank	X8 double bank	DDR266
3	X8 double bank	X8 double bank	X8 or X16 single bank	DDR266
3	X8 double bank	X8 double bank	X8 double bank	DDR266

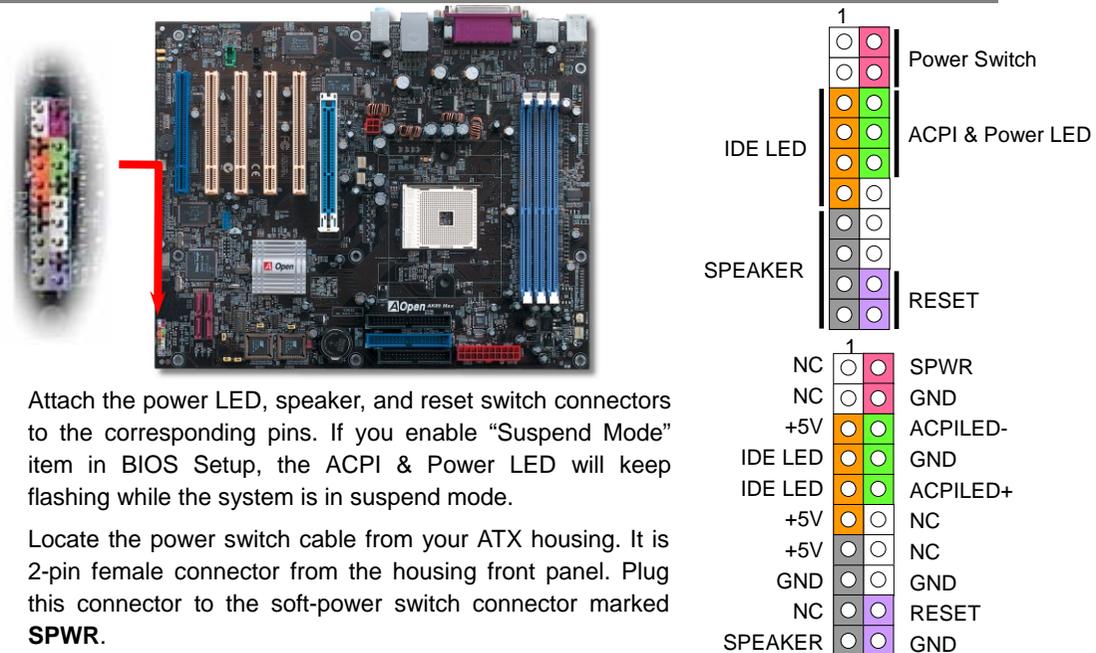
**Note:** Due to the limitation of memory controller in the Athlon 64 CPU, we do not recommend you to install three DDR333/266 modules.

## 7. Connecting IDE, Floppy Cables

Connect 34-pin floppy cable and 40-pin IDE cable to floppy connector FDD connector. Be careful of the pin1 orientation. Wrong orientation may cause system damage.



## 8. Connecting Front Panel Cable



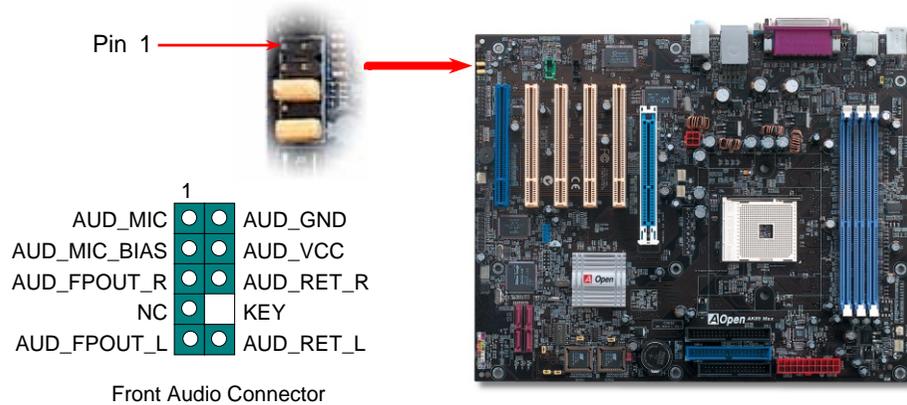
Attach the power LED, speaker, and reset switch connectors to the corresponding pins. If you enable "Suspend Mode" item in BIOS Setup, the ACPI & Power LED will keep flashing while the system is in suspend mode.

Locate the power switch cable from your ATX housing. It is 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked **SPWR**.

- 1
- Power Switch
- ACPI & Power LED
- SPEAKER
- RESET
- 1
- NC
- NC
- +5V
- IDE LED
- IDE LED
- +5V
- +5V
- GND
- NC
- SPEAKER
- SPWR
- GND
- ACPILED-
- GND
- ACPILED+
- NC
- NC
- GND
- RESET
- GND

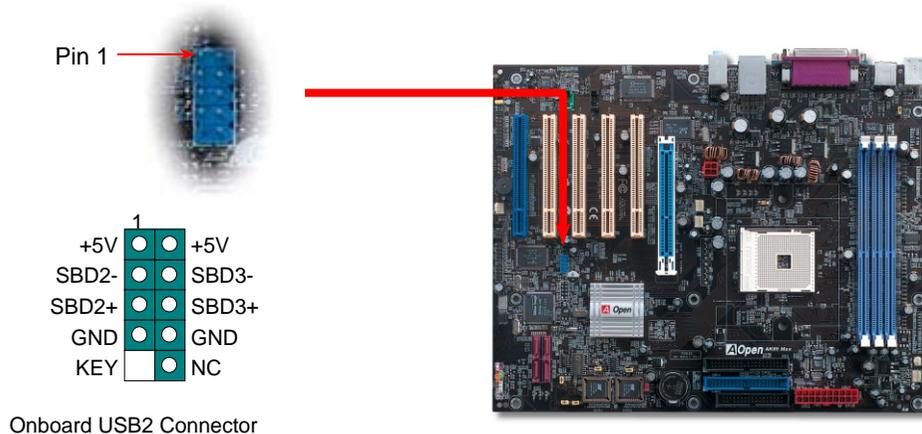
## 9. Front Audio Connector

If the housing has been designed with an audio port on the front panel, you'll be able to connect onboard audio to front panel through this connector. By the way, please remove 5-6 and 9-10 jumper caps from the Front Audio Connector before connecting the cable. Please do not remove these 5-6 and 9-10 yellow jumper caps if there's no audio port on the front panel.



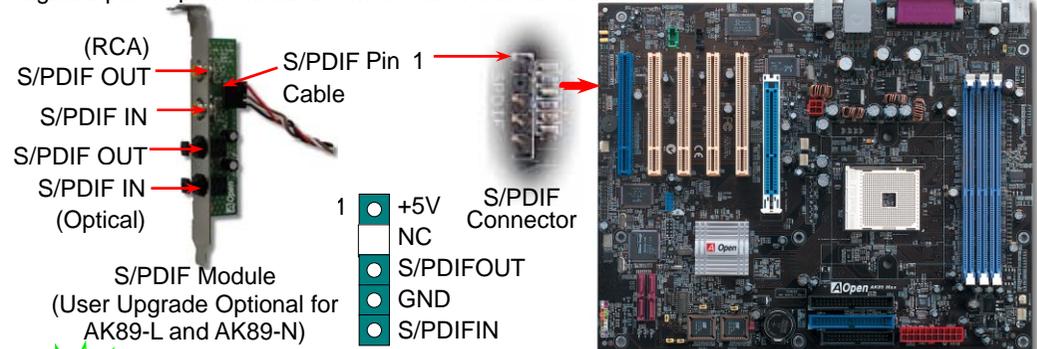
## 10. Support Six USB 2.0 Connectors

This motherboard provides six USB connectors to connect USB devices, such as mouse, keyboard, modem, printer, etc. There are four connectors on the PC99 back panel. You can use proper cables to connect the onboard USB connector to the USB modules or front panel of chassis. Compared to traditional USB 1.0/1.1 with the speed of 12Mbps, USB 2.0 has a fancy speed up to 480Mbps, which is 40 times faster than the traditional one.



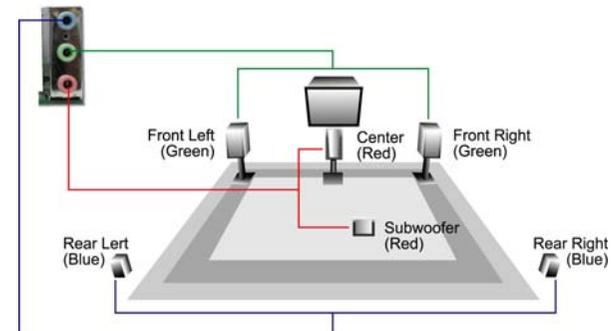
## 11. S/PDIF Connector

S/PDIF (Sony/Philips Digital Interface) is a newest audio transfer file format, which provides impressive audio quality through optical fiber and allows you to enjoy digital audio instead of analog audio. Through a specific audio cable, you can connect the S/PDIF connector to other end of the S/PDIF audio module, which bears S/PDIF digital output. Normally there are two S/PDIF outputs as shown, one for RCA connector, the most common one used for consumer audio products, and the other for optical connector with better audio quality. Same as outputs, you can also connect RCA or optical audio products to input connectors on the module and have the voice or music come out from your computer. However, you must have a S/PDIF supported speaker/amplifier/decoder with S/PDIF digital input/output to connect to the S/PDIF digital input/output to make the most out of this function.



## 12. Super 5.1 Channel Audio Effect

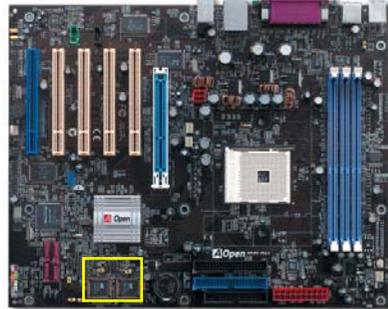
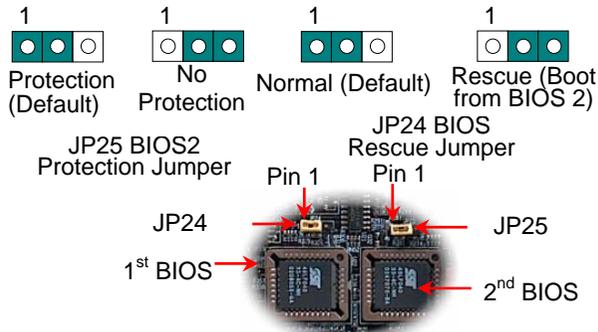
This motherboard comes with an ALC655 CODEC, which supports high quality of 5.1 Channel audio effects, bringing you a brand new audio experience. On the strength of the innovative design of ALC655, you're able to use standard line-jacks for surround audio output without connecting any external module. To apply this function, you have to install the audio driver in the Bonus Pack CD as well as an audio application supporting 5.1 Channel. Picture bellow represents the standard location of all speakers in 5.1 Channels sound track. Please connect the plug of your front speakers to the green "Speaker out" port, rear speakers' plug to the blue "Line in" port and both of the center and subwoofer speakers to the red "MIC in" port.





## 13. Die Hard BIOS II (for AK89 Max only)

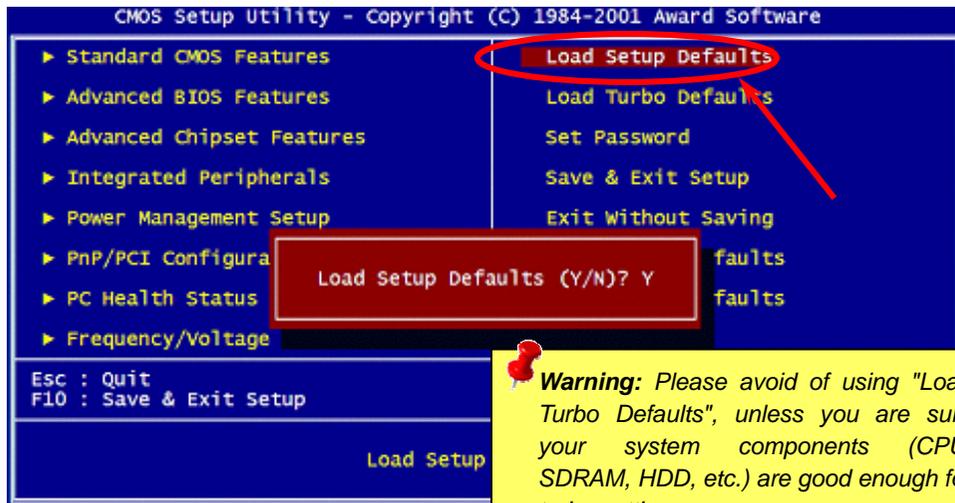
Many viruses which destroy bios code and data area have been increasingly found these days. This motherboard implements a very effective hardware protection method without any software or BIOS coding involved, therefore it is 100% virus free. Once your BIOS is crashed, it is easy to save it back. First step is to set JP24 to Pin2-3 to boot up the system with BIOS 2. After that, please set the JP24 back to Pin1-2, go to AOpen website (<http://download.aopen.com.tw/downloads>) to get your BIOS version suited for your motherboard, download and installed it. In addition to read-only ROM, DieHard BIOS II allows you to turn your second ROM into a Read-and-write ROM with larger space provided. You may download fancy skins from our website to apply it on JukeBox, or VividBIOS by adjusting JP25 to Pin2-3 (No Protection).



## 14. Power-on and Load BIOS Setup

Del

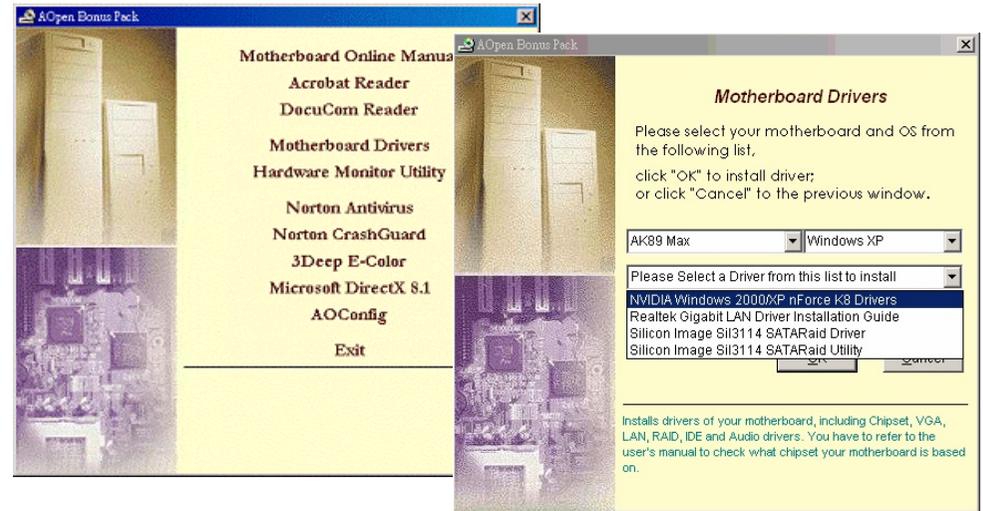
After you finish the setting of jumpers and connect correct cables. Power on and enter the BIOS Setup, press <Del> during POST (Power On Self Test). Choose "Load Setup Defaults" for recommended optimal performance.



**Warning:** Please avoid of using "Load Turbo Defaults", unless you are sure your system components (CPU, SDRAM, HDD, etc.) are good enough for turbo setting.

## 15. AOpen Bonus Pack CD

You can use the autorun menu of Bonus CD disc. Choose the utility and driver and select model name.



## 16. BIOS Upgrade under Windows Environment

You may accomplish BIOS upgrade procedure with EzWinFlash by the following steps, and it's STRONGLY RECOMMENDED to close all the applications before you start the upgrading.

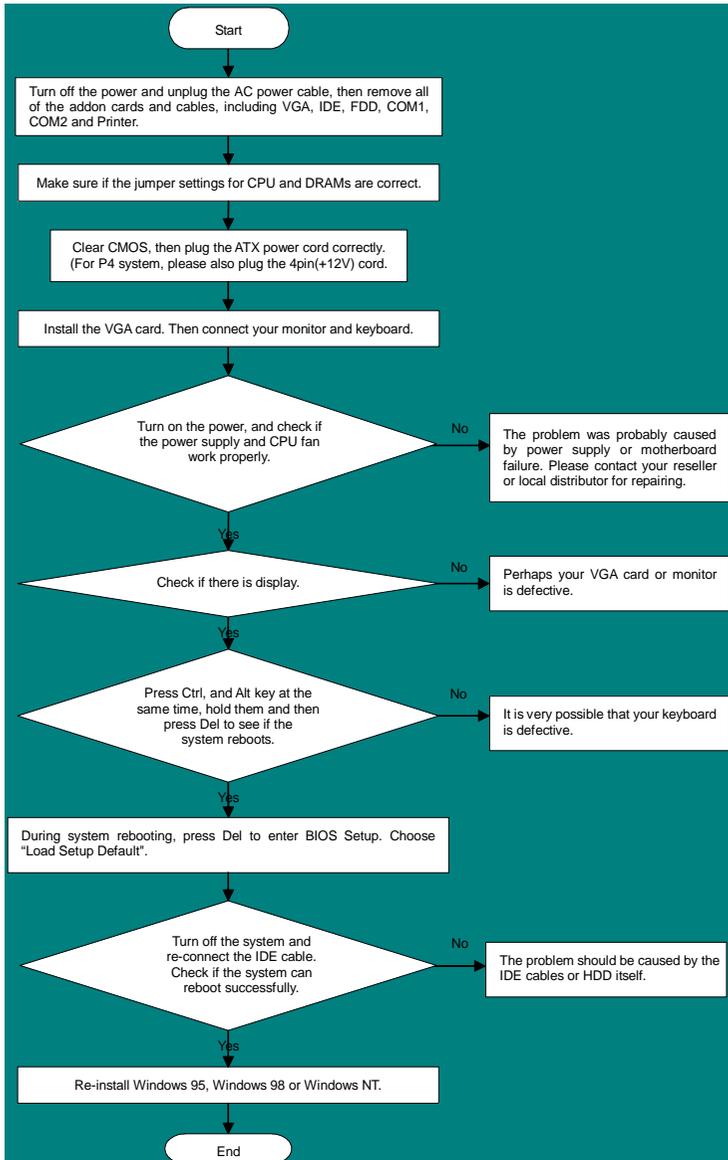
- Download the new version of BIOS package zip file from AOpen official web site. (ex: <http://english.aopen.com.tw/>)
- Unzip the download BIOS package (ex: WAK89MAX102.ZIP) with WinZip (<http://www.winzip.com>) in Windows environment.
- Save the unzipped files into a folder, for example, WAK86L102.EXE & WAK89MAX102.BIN.
- Double click on the WAK89MAX102.EXE, EzWinFlash will detect the model name and BIOS version of your motherboard. If you had got the wrong BIOS, you will not be allowed to proceed with the flash steps.
- You may select preferred language in the main menu, then click [Start Flash] to start the BIOS upgrade procedure.
- EzWinFlash will complete all the process automatically, and a dialogue box will pop up to ask you to restart Windows. You may click [YES] to reboot Windows.
- Press <Del> at POST to enter BIOS setup, choose "Load Setup Defaults", then "Save & Exit Setup". Done!

**Warning:** The upgrade of new BIOS will permanently replace your original BIOS content after flashing. The original BIOS setting and Win2000/WinXP PnP information will be refreshed and you probably need to re-configure your system.



# Troubleshooting

If you encounter any trouble to boot you system, follow the procedures accordingly to resolve the problem.



## Part Number and Serial Number

The Part Number and Serial number are printed on bar code label. You can find this bar code label on the outside packing or on component side of PCB. For example:



P/N: 91.88110.201 is part number, S/N: 91949378KN73 is serial number.

## Model name and BIOS version

Model name and BIOS version can be found on upper left corner of first boot screen (POST screen). For example:



AK89 Max is model name of motherboard; R1.02 is BIOS version



# Technical Support

Dear Customer,

Thanks for choosing AOpen products. To provide the best and fastest service to our customer is our first priority. However, we receive numerous emails and phone-calls worldwide everyday, it is very hard for us to serve everyone on time. We recommend you follow the procedures below and seek help before contact us. With your help, we can then continue to provide the best quality service to more customers.

Thanks very much for your understanding!

AOpen Technical Supporting Team

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China 艾爾鵬國際貿易(上海)有限公司 Tel: 86-21-6225-8622 Fax: 86-21-6225-7926	America AOpen America Inc. Tel: 1-408-232-1200 Fax: 1-408-232-1280
Germany AOpen Computer GmbH. Tel: 49-2131-1243-710 Fax: 49-2131-1243-999	Japan AOpen Japan Inc. Tel: 81-048-290-1800 Fax: 81-048-290-1820

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German <http://www.aopencom.de/tech/default.htm>

Simplified Chinese <http://www.aopen.com.cn/tech/default.htm>

