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## 1.1 A Thank-you Note Before You Get Start

First of all, we would like to express our gratitude for purchasing AOpen products. Once again, this motherboard is designed uniquely to meet all your personal needs with our great industry-designing ability and our everlasting perseverance to the quality of all our products.

This manual will introduce you how this motherboard is installed. Please keep it well for your future reference. If you lost your printed manual, you may also go to our website at <http://www.aopen.com> to download the updated file.

Now, we would like to invite you to personally experience this user-friendly manual and all of the powerful functions this AOpen product offers.

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## 1.2 Features of This Manual

To help you grab the useful information of this motherboard and aware of certain conditions that you might need to know, you will see the icons below frequently:



Note

This contains knowledge you should know in process of assembling, or some helpful tips.



Warning / Caution

Please be careful when you see this mark. It highlights mistakes that occur often during assembling, or something you need to pay attention to.



Tip

This tip tells you some useful information that will make your installation smoothly.

## 1.3 Safety Information



Please wear a wrist strap and attach it to a metal part of the system unit before handling a component. Alternatively, you can also touch an object that is of ground connection or with metal surface.



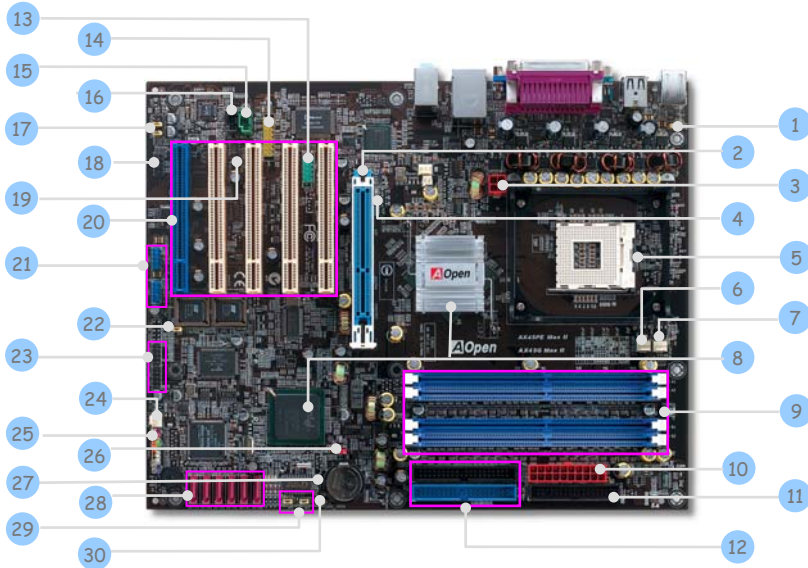
Always unplug the power before you make any jumper setting.



Before you install or remove any components on the motherboard, please make sure to disconnect the power first in case of damaging motherboard or other components.

# Chapter 2 Introduction to This Motherboard

## 2.1 How does your motherboard look like?



1. JP28 PS2 KB/Mouse Wakeup Jumper	16. CD-IN Connector
2. AGP 8X Expansion Slot	17. Front Audio Connector
3. 4-pin 12V ATX Power Connector	18. EX_SOUND Connector
4. AGP Protection LED	19. IrDA Connector
5. 478-pin CPU socket supporting Intel P4 CPU	20. 32-bit PCI Expression Slots X 5
6. SYSFAN1 Connector	21. USB2.0 Connectors X 2
7. CPUFAN Connector	22. JP24 BIOS Rescue Jumper
8. Intel 865G/865PE Chipsets	23. IEEE1394 Connectors X 2
9. 184-pin DIMMs X 4	24. SYSFAN2 Connector
10. ATX Power Connector	25. Front Panel Connector
11. FDD Connector	26. JP14 CMOS Data Clear Jumper
12. IDE Connectors x 2	27. Case Open Connector
13. COM2 Connector	28. Serial ATA Ports X 6
14. Game Port Connector	29. JP15, 16 Dr. Voice II Language Selection
15. SSR_OUT Connector	30. JP2 Speaker Output Jumper

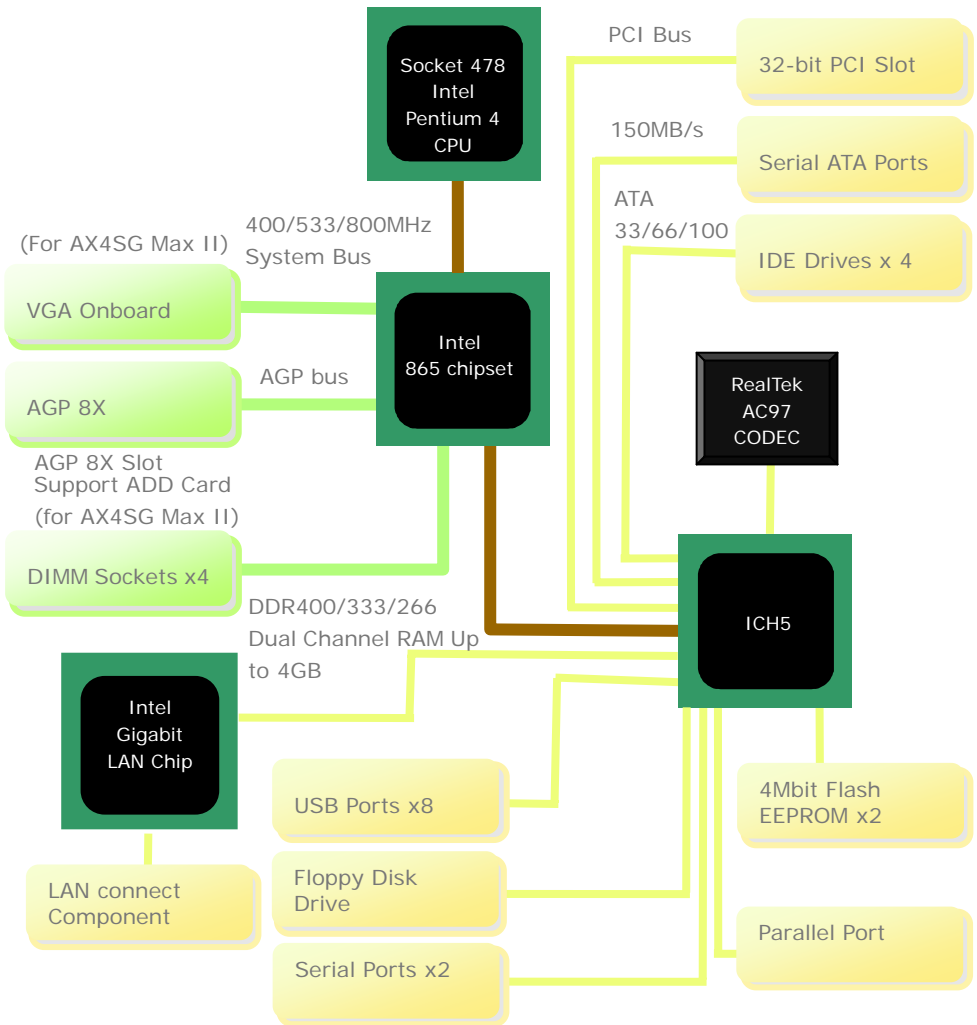
## 2.2 Specification

Here is the main function of your motherboard.

Models	AX4SG Max II	AX4SPE Max II
CPU	Intel Pentium 4 CPU Socket 478 400/533/800MHz	Intel Pentium 4 CPU Socket 478 400/533/800MHz
Chipset	Intel 865G/ICH5	Intel 865PE/ICH5
Main Memory	Dual Channel Mode DDR 266/333/400MHz DDR DIMM x 4 DIMM Type : 64/128/256/512MB & 1GB Max Memory : 4GB	Dual Channel Mode DDR 266/333/400MHz DDR DIMM x 4 DIMM Type : 64/128/256/512MB & 1GB Max Memory : 4GB
Graphics	Integrated VGA Engine in chipset 8X AGP slot, support ADD card	8X AGP slot
IDE	Integrated ATA100 and Serial ATA Controller Silicon Image Serial ATA Control Chip [Support RAID 0,1,0+1] Max Disk: 144,000,000GB [by 48 bits LBA Spec.]	Integrated ATA100 and Serial ATA Controller Silicon Image Serial ATA Control Chip [Support RAID 0,1,0+1] Max Disk: 144,000,000GB [by 48 bits LBA Spec.]
LAN	Intel Gigabit LAN Controller, support 10/100/1000Mbps	Intel Gigabit LAN Controller, support 10/100/1000Mbps
Sound	Realtek AC'97 CODEC onboard, support 7.1 Channel	Realtek AC'97 CODEC onboard, support 7.1 Channel
USB	Integrated in chipset, USB 2.0 x 8	Integrated in chipset, USB 2.0 x 8
IEEE1394	Integrated Agere 1394 Control Chip	Integrated Agere 1394 Control Chip
Slots	AGP x 1 PCI x 4, Self-Powered PCI x 1	AGP x 1 PCI x 4, Self-Powered PCI x 1
Back Panel I/O	PS/2 Keyboard x 1, PS/2 Mouse x 1 USB Port x 4, LAN Port x 1, VGA Port x 1 COM Port x 1, Printer Port x 1 Speaker_Out x 1, Line_In x 1, MIC_In x 1	PS/2 Keyboard x 1, PS/2 Mouse x 1 USB Port x 4, LAN Port x 1 COM Port x 2, Printer Port x 1 Speaker_Out x 1, Line_In x 1, MIC_In x 1
On Board Connector	Front Panel x 1 Front Audio x 1 CPU FAN x 1, System FAN x 1, Chassis FAN x 1 Power FAN x 1, Power Temperature Connector x 1 Case Open Connector x 1 SSR_OUT Connector x 1, CD_IN x 1 IrDA x 1, EX_Sound connector x 1 COM2 x 1, Game Connector x 1 IEEE 1394 x 2, USB Port x 4	Front Panel x 1 Front Audio x 1 CPU FAN x 1, System FAN x 1, Chassis FAN x 1 Power FAN x 1, Power Temperature Connector x 1 Case Open Connector x 1 SSR_OUT Connector x 1, CD_IN x 1 IrDA x 1, EX_Sound connector x 1 Game Connector x 1 IEEE 1394 x 2, USB Port x 4
BIOS	Award PnP 4Mb Flash ROM BIOS x 2	Award PnP 4Mb Flash ROM BIOS x 2
Board Size	305 mm x 244 mm	305 mm x 244 mm



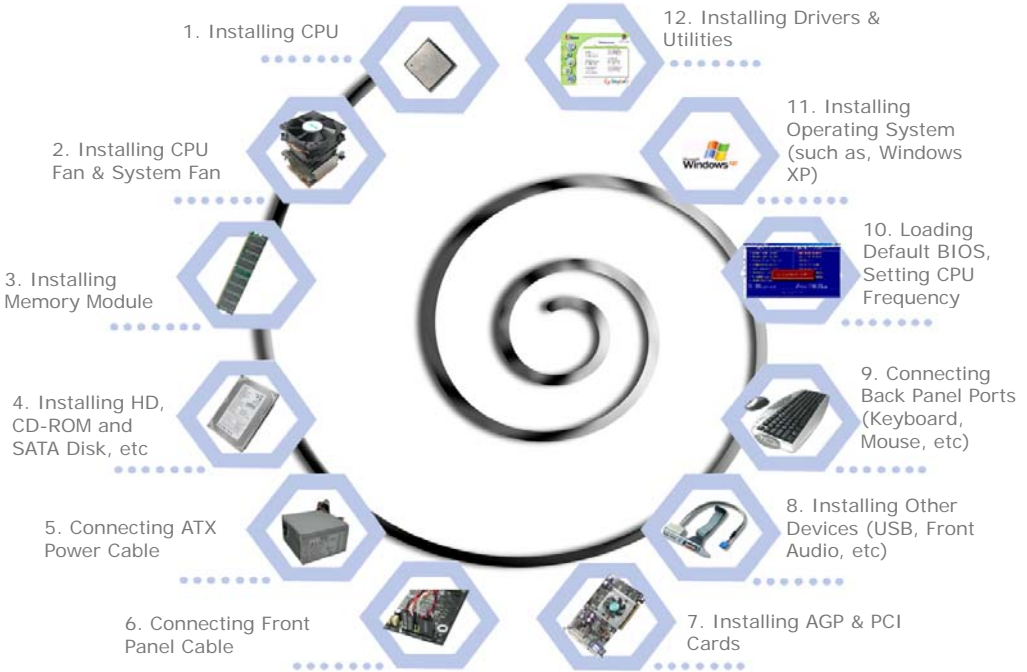
## 2.3 Block Diagram





# Chapter 3 Hardware Installation

## 3.1 Quick Installation Procedure



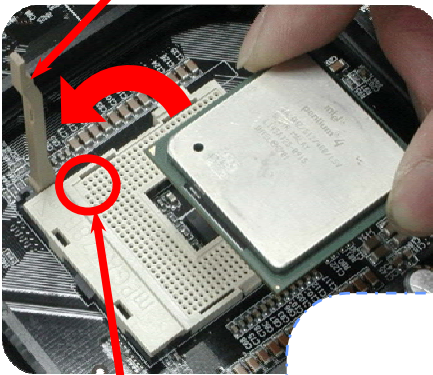
## 3.2 Installation You Have to Know

### Installing CPU

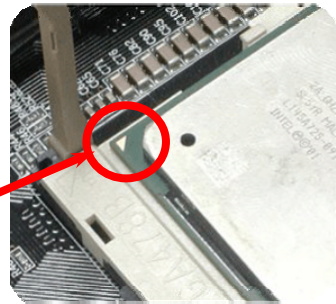
This socket supports FC-PGA2 package CPU, which is the latest CPU package developed by Intel. Other forms of CPU package are impossible to be fitted in.

1. Pull up the CPU socket lever and up to 90-degree angle.
2. Locate Pin 1 in the socket and look for a (golden) cut edge on the CPU upper interface. Match Pin 1 and cut edge. Then insert the CPU into the socket.
3. Press down the CPU socket lever to finish CPU installation.

CPU socket lever



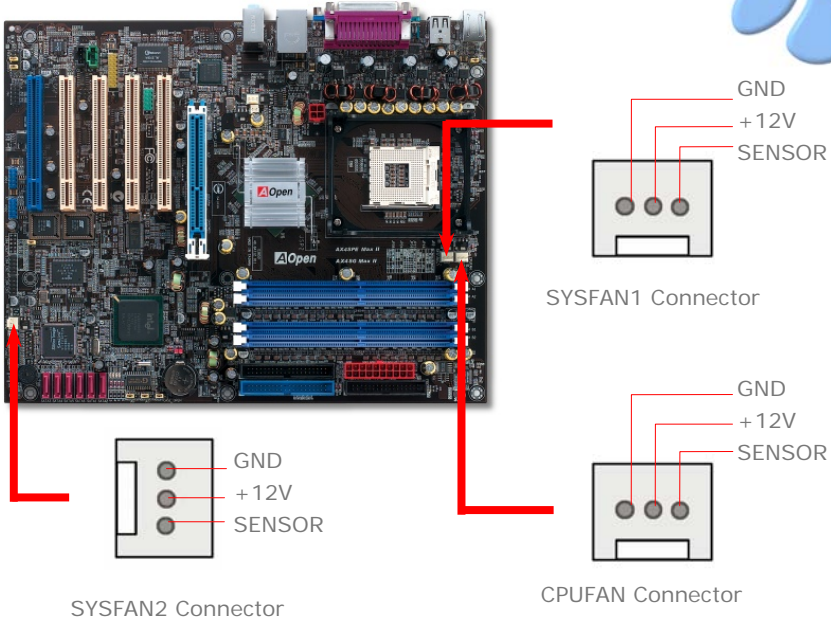
Socket Pin 1



Golden Cut Edge

## Installing CPU and System Fans

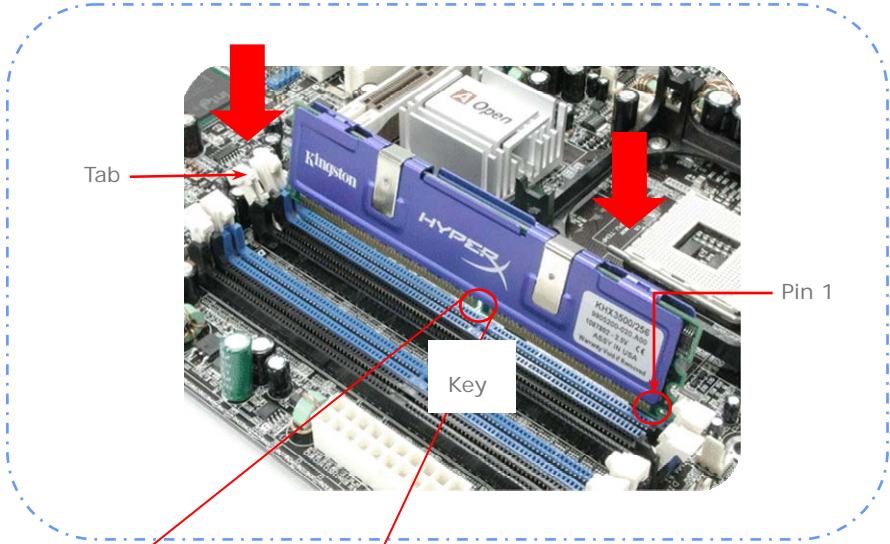
Plug the CPU fan cable to the 3-pin CPUFAN connector. If you have chassis fan, you can also plug it in SYSFAN1 or SYSFAN2 connector.



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

## Installing Memory Modules

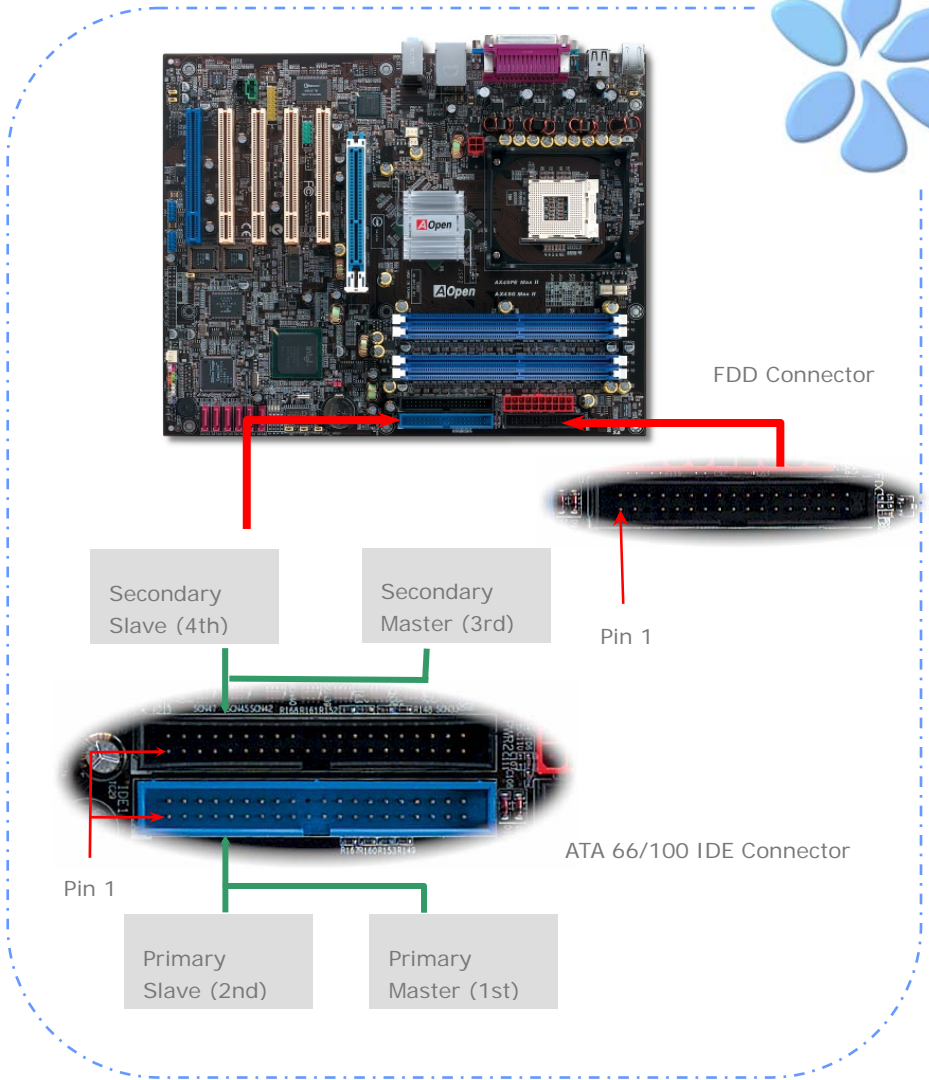
DIMM slots are designed in Navy Blue and Electronic Blue which are very easy to recognize. Insert the module straight down to the DIMM slot with both hands and press down firmly until the DIMM module is securely in place.



**Note:** The tabs of the DIMM slot will clip to hold the DIMM in place when the DIMM touches the slot's bottom.

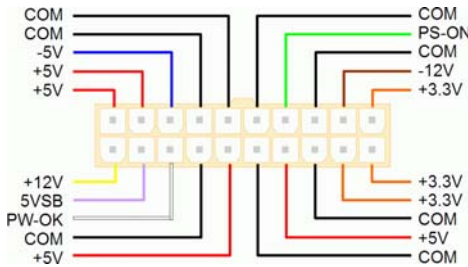
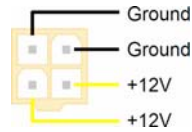
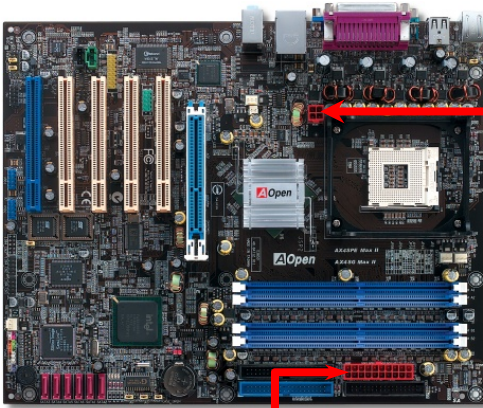
## Connecting IDE and Floppy Cables

Connect the 34-pin floppy cable and 40-pin, 80-wire IDE cable to floppy connector and IDE connector. Be careful of the pin1 orientation. Wrong orientation may cause system damage.



## Connecting ATX Power Cables

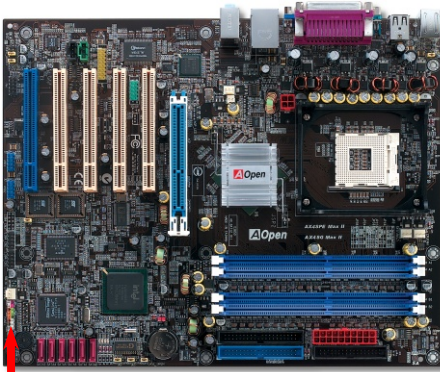
This motherboard comes with a 20-pin and 4-pin ATX power connector as shown below. Make sure you plug them in the right direction. We strongly recommend you to insert the 4-pin connector before connecting the 20-pin connector.



## 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, which is a 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked SPWR.



	1	
NC		Power Switch
NC		GND
+5V		Power LED-
HDD LED		GND
HDD LED		NC
+5V		NC
+5V		GND
GND		GND
NC		RESET
SPEAKER		GND

Front Panel Connector

## 3.3 Other Installation for Your Reference

### Setting CPU Voltage and Frequency

#### Setting CPU Core Voltage

This motherboard supports Voltage ID (VID) function to detect CPU voltage automatically during power-on. However, if users are willing to do overclocking, we also provide a range from 1.10V to 1.85V in the BIOS. Sometimes increasing the original core voltage a little bit will make CPU overclock more properly.

#### Setting CPU Frequency

This motherboard is of CPU jumper-less design; you can set CPU frequency by 1MHz stepping CPU Overclocking in the BIOS. ***CPU Core Frequency = CPU FSB clock x CPU Ratio***. However, all CPU now sold in market belong to "Fixed Multiplier". That means users can not adjust the CPU Ratio but change CPU FSB clock to achieve overclocking only.

***BIOS Setup > Frequency / Voltage Control > CPU Speed Setup  
(Users will do the overclocking at their own risks!!)***

Northwood CPU	CPU Core Freq.	FSB Clock	System Bus	Ratio
Pentium 4 1.8G	1800MHz	100MHz	400MHz	18x
Pentium 4 2.0G	2000MHz	100MHz	400MHz	20x
Pentium 4 2.2G	2200MHz	100MHz	400MHz	22x
Pentium 4 2.2G	2200MHz	133MHz	533MHz	16x
Pentium 4 2.26G	2260MHz	133MHz	533MHz	17x
Pentium 4 2.4G	2400MHz	100MHz	400MHz	24x
Pentium 4 2.4G	2400MHz	133MHz	533MHz	18x
Pentium 4 2.53G	2530MHz	133MHz	533MHz	19x
Pentium 4 2.6G	2600MHz	200MHz	800MHz	13x
Pentium 4 2.66G	2660MHz	133MHz	533MHz	20x
Pentium 4 2.8G	2800MHz	133MHz	533MHz	21x
Pentium 4 2.8G	2800MHz	200MHz	800MHz	14x
Pentium 4 3.06G	3066MHz	133MHz	533MHz	23x
Pentium 4 3.20G	3200MHz	200MHz	800MHz	16x

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.

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

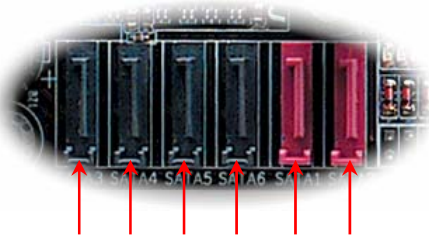
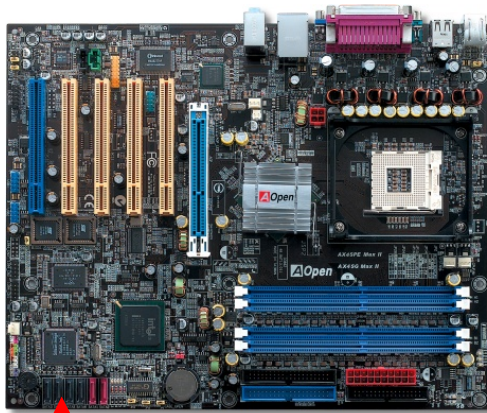
**Warning:** Intel 865G/PE chipset support maximum 800MHz (200MHz\*4) system bus and 66MHz AGP clock; higher clock setting may cause serious system damage.

<b>CPU Ratio</b>	8x, 10x... 24x, 25x, 26x, 27x, 28x
<b>CPU FSB (Adjustment manually)</b>	FSB = 100MHz-400MHz by 1MHz Stepping CPU Overclocking



## Connecting Serial ATA

To connect a serial ATA disk, you have to have a 7-pin serial ATA cable. Connect two ends of the serial ATA cable to the serial ATA header on the motherboard and the disk. Like every other traditional disk, you also have to connect a power cable. Please be noted that it is a jumper free implement; you don't need to set jumpers to define a master or slave disk. When serial ATA hard disks are installed on serial ATA ports, the one connected on Port 0(SATA 1) will be set as the first boot device automatically. **Please note that it doesn't support Hot-Plug in function.**



SATA SATA SATASATASATASATA  
Port3 Port4 Port5Port6Port1Port2

## Adjusting your Hard Disk Setting

Except its original 2 sets of parallel IDE, this motherboard supports the latest serial ATA hard disk. If you are unable to find your newly installed serial ATA hard disks on your operating system after having them installed, the problem may lie in the BIOS setting. You can simply adjust BIOS settings to have them work properly.

After installing your hard disks properly, you can directly go to BIOS setting screen for adjustment. Simply pressing **"Integrated Peripherals → OnChip IDE Device → On-Chip Serial ATA"** to choose your preferable mode. If you have no intention of changing its original setting, the default would be Auto.

The image shows three overlapping screenshots of the Phoenix - AwardBIOS CMOS Setup Utility. The top screenshot shows the main menu with 'Integrated Peripherals' highlighted. The middle screenshot shows the 'Integrated Peripherals' sub-menu with 'OnChip IDE Device' highlighted. The bottom screenshot shows the 'OnChip IDE Device' sub-menu with 'On-Chip Serial ATA' highlighted and its settings.

**Phoenix - AwardBIOS CMOS Setup Utility**

- ▶ Standard CMOS Features
- ▶ Advanced BIOS Features
- ▶ Advanced Chipset Features
- ▶ **Integrated Peripherals**
- ▶ Power
- ▶ PnP/PS
- ▶ S11en
- ▶ Frequ

Load Setup Defaults  
Load Turbo Defaults  
Set Password  
Save & Exit Setup

Phoenix - AwardBIOS CMOS Setup Utility  
Integrated Peripherals

Press Enter  
Press Enter  
Press Enter

Item Help  
Menu Level ▶

Esc : Qu  
F10 : Sa

↑↓←→:Move  
F2:It

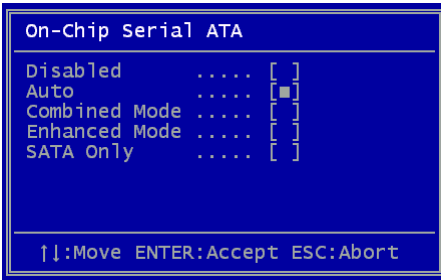
**Phoenix - AwardBIOS CMOS Setup Utility**  
OnChip IDE Device

Item	Value	Item Help
IDE HDD Block Mode	Enabled	
On-Chip Primary	PCI IDE	Enabled
IDE Primary Master	PIO	Auto
IDE Primary Slave	PIO	Auto
IDE Primary Master	UDMA	Auto
IDE Primary Slave	UDMA	Auto
On-Chip Secondary	PCI IDE	Enabled
IDE Secondary Master	PIO	Auto
IDE Secondary Slave	PIO	Auto
IDE Secondary Master	UDMA	Auto
IDE Secondary Slave	UDMA	Auto
*** On-Chip Serial ATA Setting ***		
x SATA Mode	IDE	
On-Chip Serial ATA	<b>Auto</b>	
x Serial ATA Port0 Mode	SATA0 master	
Serial ATA Port1 Mode	SATA1 master	

Item Help  
Menu Level ▶▶

[Disabled]: Disabled SATA Controller.  
[Auto]: Auto arrange by BIOS.  
[Combined Mode]: PATA and SATA are combined. Max. of 2 IDE drives in each channel.  
[Enhanced Mode]: Enable both SATA and PATA. Max. of 6 IDE drives are supported.  
[SATA Only]: SATA is operating in legacy mode.

↑↓←→:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults



If you desire to change the default setting, press Enter for selection list:

**Disabled:** You can choose this item if there are only traditional IDE hard disks had been installed on your system. Disabling this item will also cancel the detection of serial ATA hard disks during POST, which will theoretically speed up your boot-up time a little bit; however,

please remember to re-adjust the setting here if you want to use serial ATA hard disk later.

**Auto:** This is factory default setting on this motherboard. Basically, if your system functions properly, there is necessary to change it. The system will automatically recognize the first hard disk on IDE1 as first boot device.

**Note:** *Please be informed that when you are using Windows98/ME with the capacity of all six hard disks being installed, the Auto mode will not function properly. It is because Windows98/Me is not able to energize Enhanced Mode to detect all hard disks.*

**Combined Mode:** If you have traditional IDE hard disks and serial ATA hard disks installed at the same time, then you can choose this mode. Under this mode, you can randomly choose either IDE hard disks or serial ATA had disk as your first boot device. But please note, serial ATA will exist with IDE in a mapping way, which means it will occupy one of the IDE Channel and leave you one IDE Channel only.

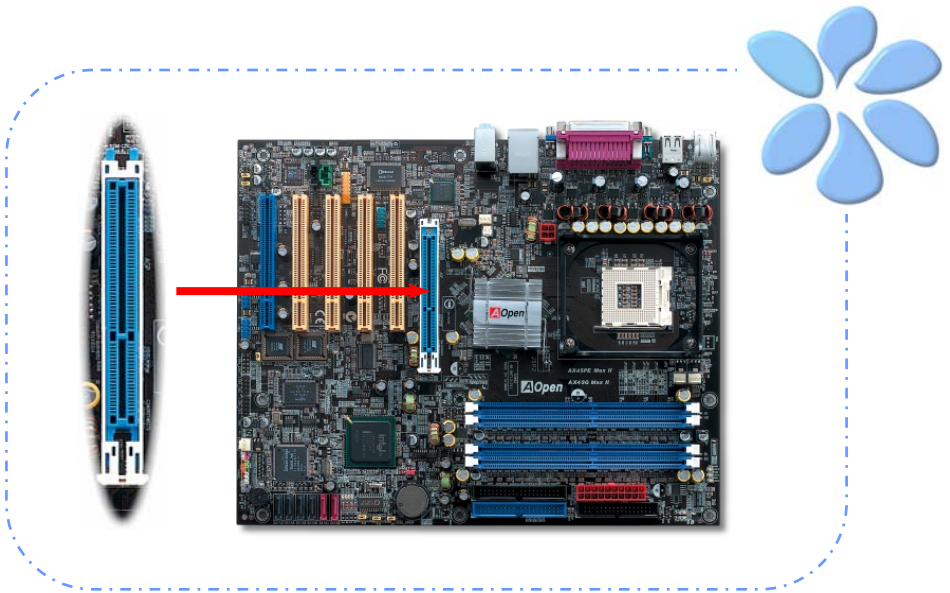
**Enhanced Mode:** If you are using the latest operating system (say, Windows XP, Windows.NET Server), it is highly recommended that you select Enhanced Mode. Under this mode the system will detect all six devices (traditional IDE x 4, Serial ATA x 2) completely and function perfectly. But please note that traditional IDE is set to first boot device under this mode.

**Note:** *According to practical lab tests of us, there are no obvious problems or mistakes happened when we set this mode under Windows2000 operating system; however, it is not recommended by Intel.*

**SATA Only:** You may select this mode if you install serial ATA hard disks only. This mode also allows you to select booting sequence from Port0 (SerialATA1) or Port1 (SerialATA2).

## Connecting AGP 8X Expansion Slot

AX4SG Max II / AX4SPE Max II provide an AGP 8X slot, a sky blue slot having the latest AGP specification on motherboard. The AGP 8X is a bus interface targeted for high-performance 3D graphic. Traditionally AGP used both rising and falling edge of the 66MHz clock for 4X AGP, and the data transfer rate could achieve  $66\text{MHz} \times 4\text{bytes} \times 4 = 1056\text{MB/s}$ . Now AGP is moving to AGP 8X mode, which is upgraded to  $66\text{MHz} \times 4\text{bytes} \times 8 = 2.1\text{GB/s}$ . You can also adjust AGP voltage in BIOS with range from 1.5V to 1.875V. For AX4SG Max II, the AGP slot can automatically recognize an AGP or a Multiplexed Intel DVO Output depending on which cards being inserted, such as AGP, or ADD (AGP Digital Display) cards. With an ADD card implemented to this slot, Multiplexed Intel DVO output will provide high-speed digital connection for digital displays or TV-OUT functionality.



**Warning:** It is strongly recommended not adjust AGP/PCI voltage/clock when you connect SATA device. It is because when the voltage/clock for AGP/PCI is adjusted, the SATA clock cannot remain at 100MHz, and the system will therefore be unstable.

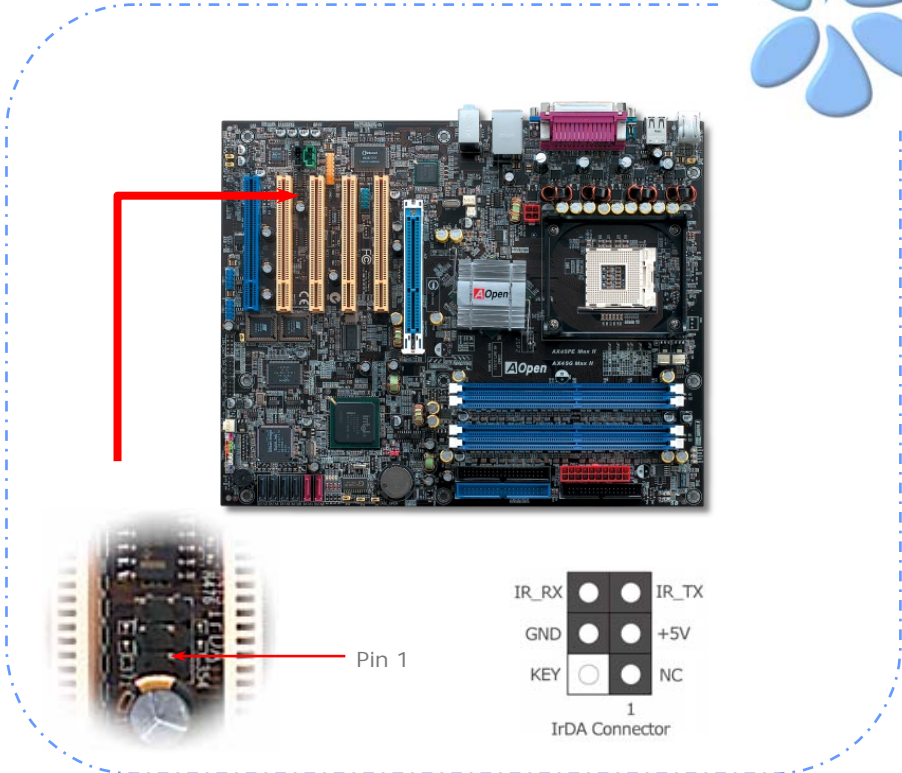


**Warning:** It is strongly recommended not install a 3.3V AGP card, which is not supported by Intel 865G / 865PE chipsets on this motherboard.

## Connecting IrDA

The IrDA connector can be configured to support wireless infrared module, with this module and application software such as Laplink or Windows Direct Cable Connection, user can transfer files to or from laptops, notebooks, PDA devices and printers. This connector supports both HPSIR (115.2Kbps, 2 meters) and ASK-IR (56Kbps).

Install an infrared module onto the IrDA connector and enable the infrared function from BIOS Setup, UART Mode, you can use this function. Please make sure you connect correct orientation when plugging IrDA module.



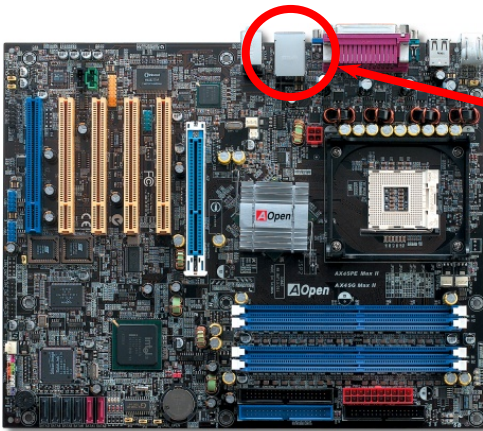
## 10/100/1000Mbps LAN Supported

On the strength of Gigabit LAN controller on board, this motherboard provides 10/100/1000Mbps Ethernet for office and home use. The Ethernet RJ45 connector is located on the top of USB connectors. The right hand side LED indicates link mode; it lights in orange when linking to network. The left hand side LED indicates the transfer mode and will light in green when data is transferring at 100Mbps (never lights while at 10Mbps), but will light in orange when transferring in Gigabit's mode. To enable or disable this function, you may simply adjust it through BIOS. To enable LAN wakeup function, you have to set the "Wake on PCI Card" enable in the BIOS "Power Management Setup" section.



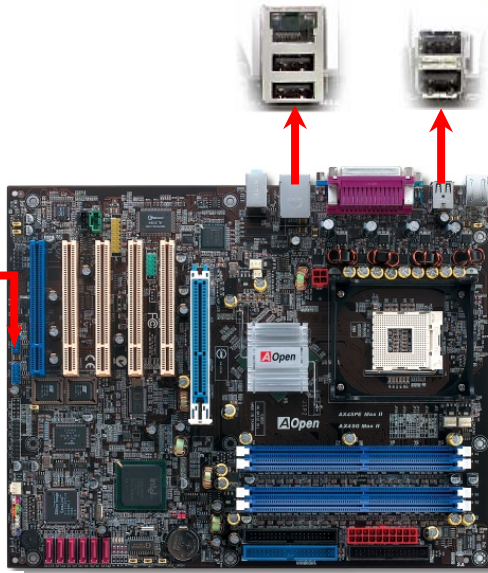
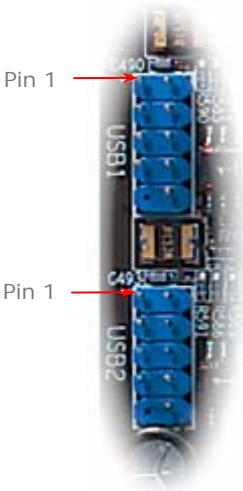
Speed LED (Left)  
Green 100Mbps

ACT LED (Right)  
Orange



## Connecting USB2.0

This motherboard provides eight USB 2.0 ports to connect USB devices such as mouse, keyboard, modem, printer, etc. There are four ports on the back panel. You can use proper cables to connect Front USB connector to USB modules or chassis front panel.

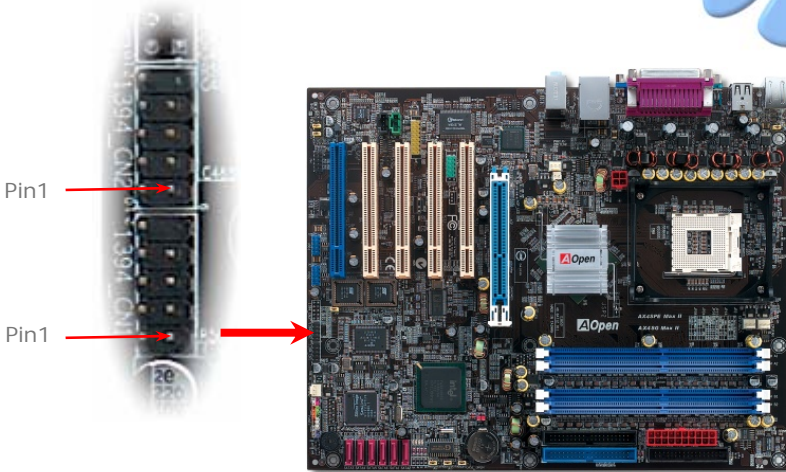


1			
+5V	●	●	+5V
SBD6-	●	●	SBD7-
SBD6+	●	●	SBD7+
GND	●	●	GND
KEY	○	●	NC

USB 2.0 Connector

## Connecting 1394

With IEEE1394 Chip on board (AGERE 1394), having its data transfer rate up to 400Mb/s, this interface can connect to devices that require high data transferring performance such as digital camera, scanner or others IEEE 1394 devices. Please use appropriate cables to connect IEEE1394 devices.



	10	9	
SHIED GND	●	○	
+12V(Fused)	●	●	+12V(Fused)
TPB-	●	●	TPB+
GND	●	●	GND
TPA-	●	●	TPA+
	2	1	
IEEE 1394 Connector			

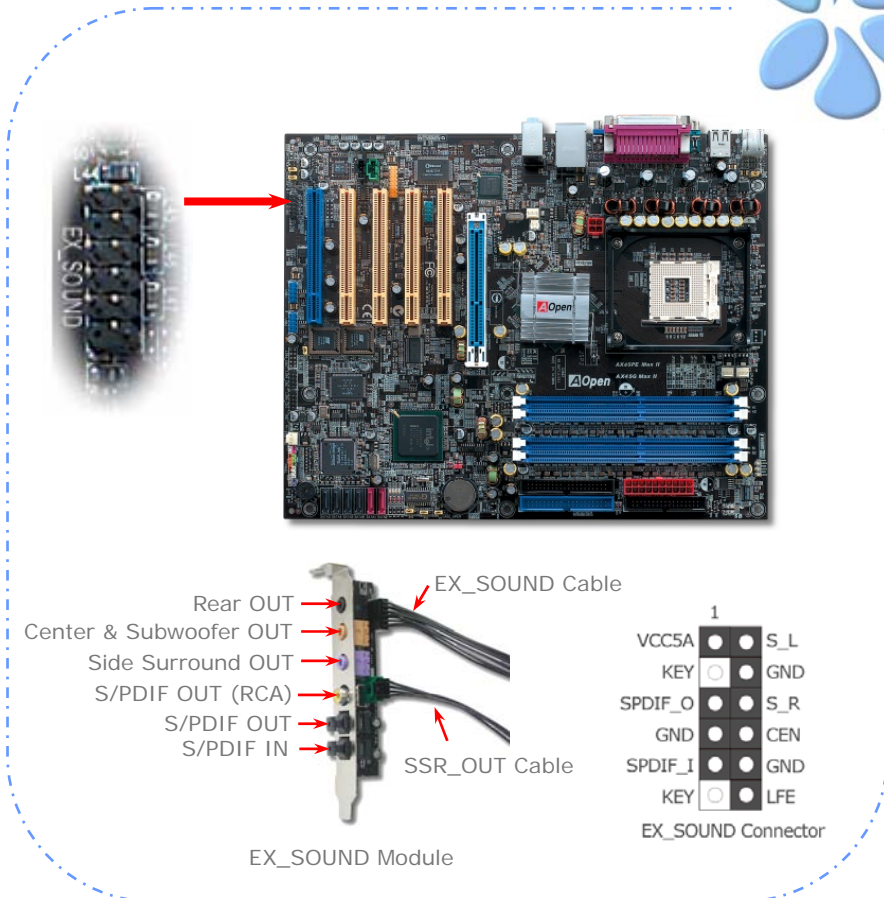


**Warning:** Please note that Hot-Plug is not allowed on IEEE 1394 headers; doing so will burn the controller IC and damage the motherboard.



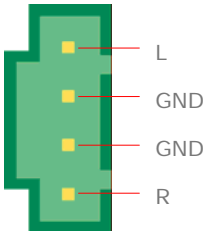
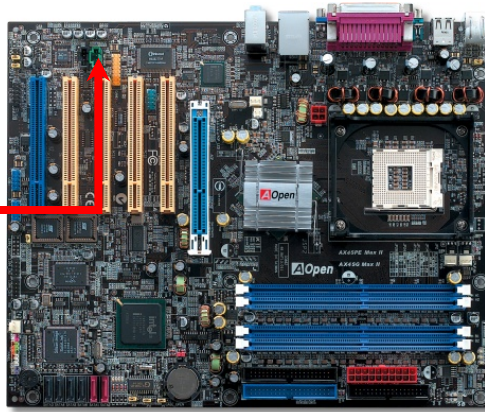
## Connecting EX\_Sound

EX\_SOUND Connector supports the latest 7.1 Channel and S/PDIF function. S/PDIF (Sony/Philips Digital Interface) is a new audio transfer file format, which provides impressive audio quality through optical fiber and allows you to enjoy digital audio instead of analog audio. Through two specific audio cables, you can connect the EX\_SOUND connector to our special EX\_SOUND audio module, which bears six ports for S/PDIF and 7.1 Channel. The output and input ports are shown as following.



## Connecting SSR\_OUT (Surrounding Out) Connector

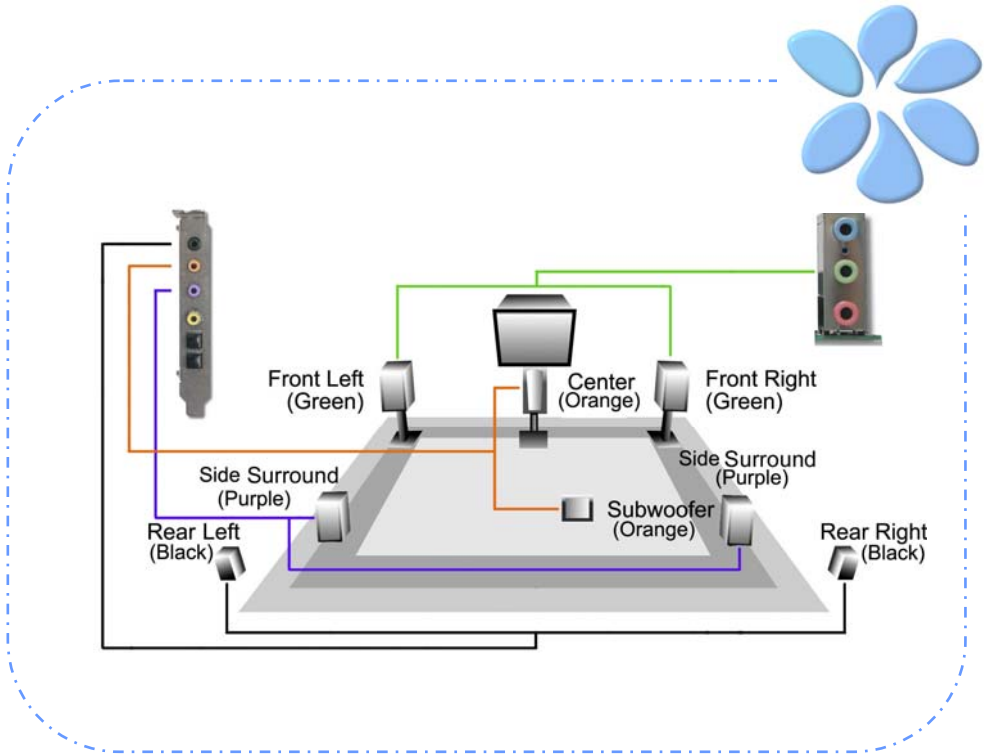
This connector is designed to support 7.1 channels function. Please connect SSR\_OUT cable to the Green connector on the EX\_SOUND module and this SSR\_OUT connector onboard.



SSR\_OUT Connector

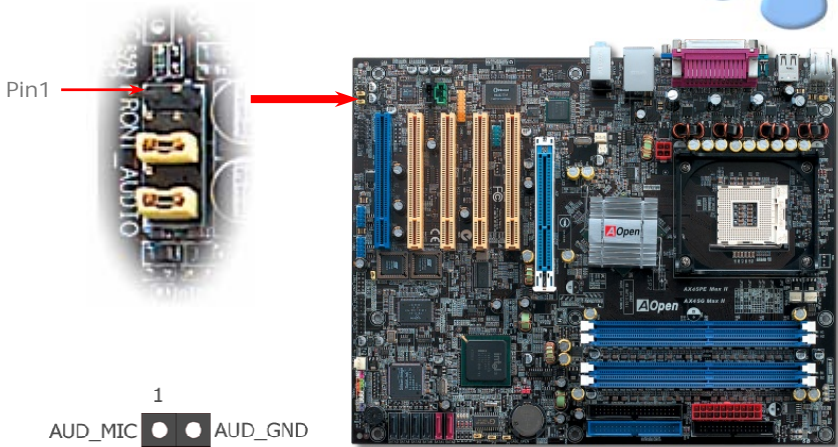
## Super 7.1 Channel Audio Effect

This motherboard comes with an ALC850 CODEC, which supports the latest 7.1 Channel with high quality of audio effects, bringing you a brand new audio experience. To enjoy this function, you have to connect one EX\_SOUND Cable and one SSR\_OUT cable to our specially designed EX\_SOUND module, all of which can be found in accessory. Picture bellow represents the standard location of all speakers in 7.1 Channel sound tracks. Please connect the plug of your front speakers to the green "Speaker out" port on the back panel of motherboard, rear speakers to black port, side surround speakers to purple port and both of the center and subwoofer speakers to orange port. Those ports are provided by EX\_SOUND module.



## Connecting Front Audio

If the housing is 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 the jumper cap from the Front Audio Connector before you connect the cable. Do not remove this yellow jumper cap if your housing doesn't have an audio port on the front panel.

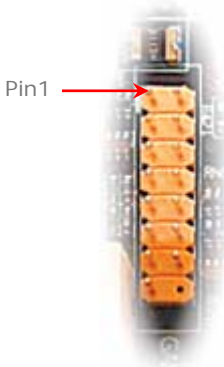


	1		
AUD_MIC	●	●	AUD_GND
AUD_MIC_BIAS	●	●	AUD_VCC
AUD_FPOUT_R	●	●	AUD_RET_R
NC	●	○	KEY
AUD_FPOUT_L	●	●	AUD_RET_L

Front Audio Connector

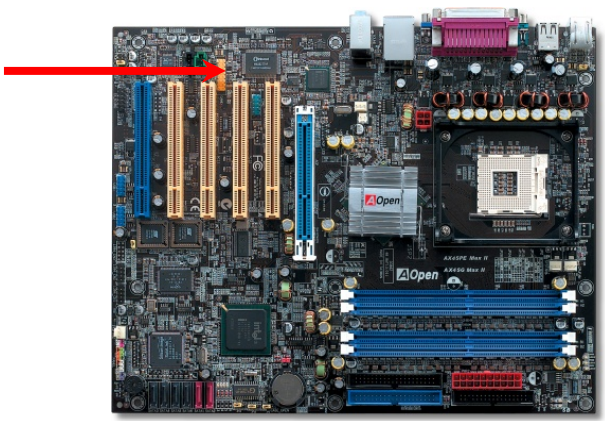
## Connecting Game Port

This motherboard comes with a game port (Joystick-Midi) for you to connect any midi devices or joysticks. To use this function you have to have a joystick module and connect it with a game port cable to this port on the motherboard.



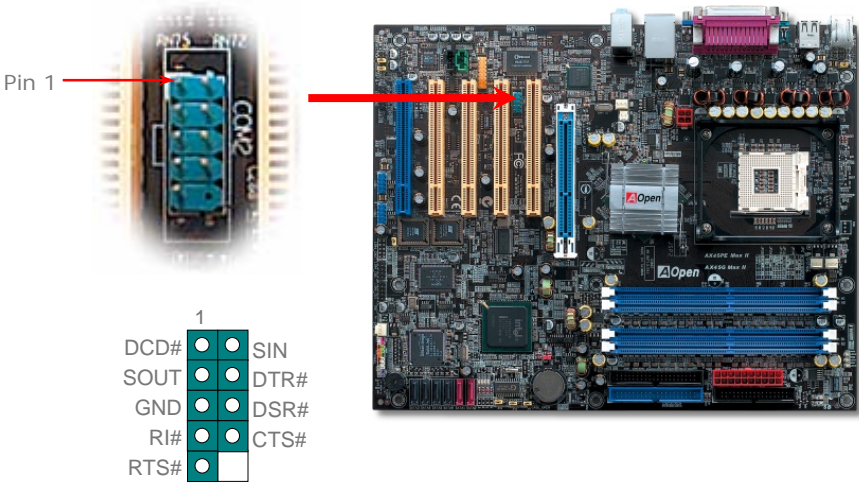
	1	2
+5V	●	+5V
JAB1	●	JBB1
JACX	●	JBCX
GND	●	MIDI_TXD
GND	●	JBCY
JACY	●	JBB2
JAB2	●	MIDI_RXD
+5V	●	○ KEY
	15	16

Game Port Connector  
(User Upgrade Optional)



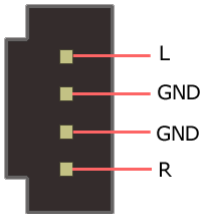
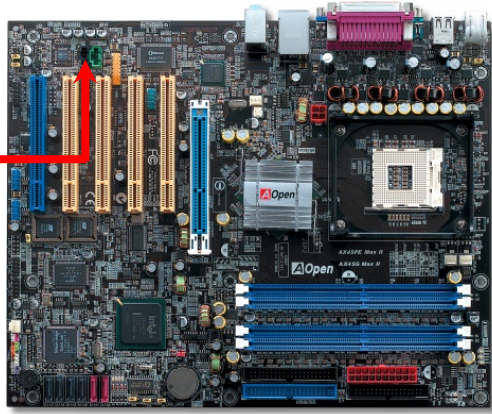
## Connecting COM2 (for AX4SG Max II only)

This motherboard provides two serial ports. One of them is on back panel connector, and the other is on the upper left of board between PCI slots. With proper cable, you can connect it to the back panel of chassis.



## Connecting CD\_IN

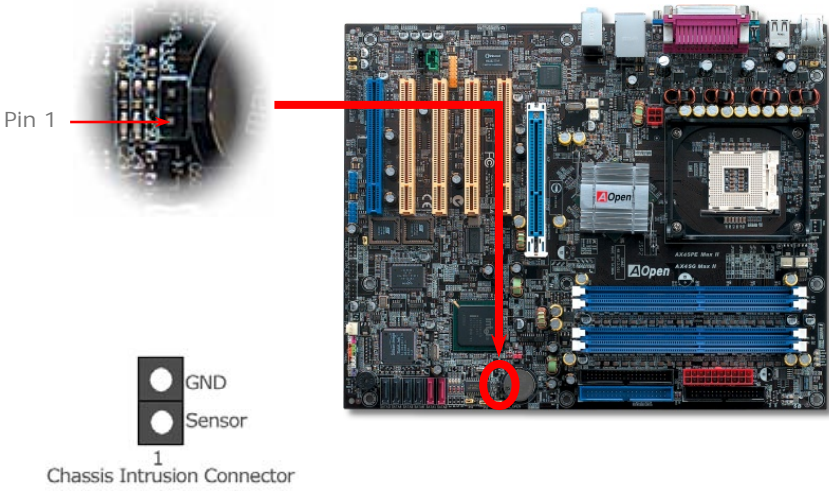
This connector is designed to connect CD Audio cable from CDROM or DVD drive to onboard sound.



CD-IN Connector

## Connecting Case Open

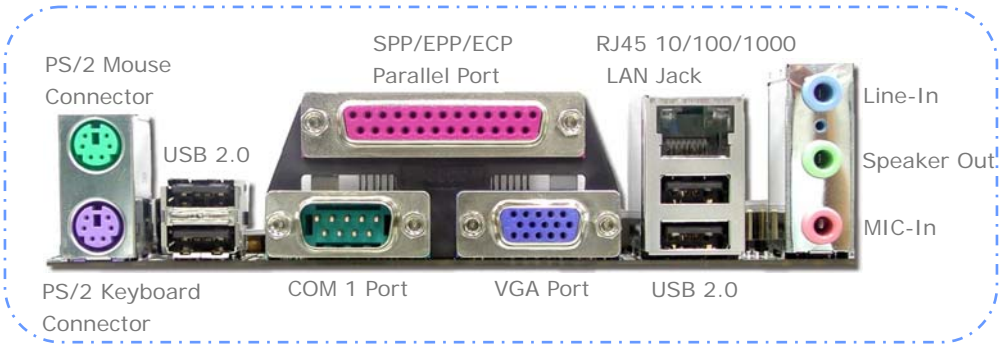
The "CASE OPEN" header provides chassis intrusion-monitoring function. To make this function work, you have to enable it in the system BIOS, connect this header to a sensor somewhere on the chassis. So, whenever the sensor is triggered by lights or by the opening of the chassis, the system will beep to inform you. Please be informed that this useful function only applies to advanced chassis; you may purchase an extra sensor, attach it on your chassis and make a good use of this function.





## Colored Coded Back Panel (for AX4SG Max II)

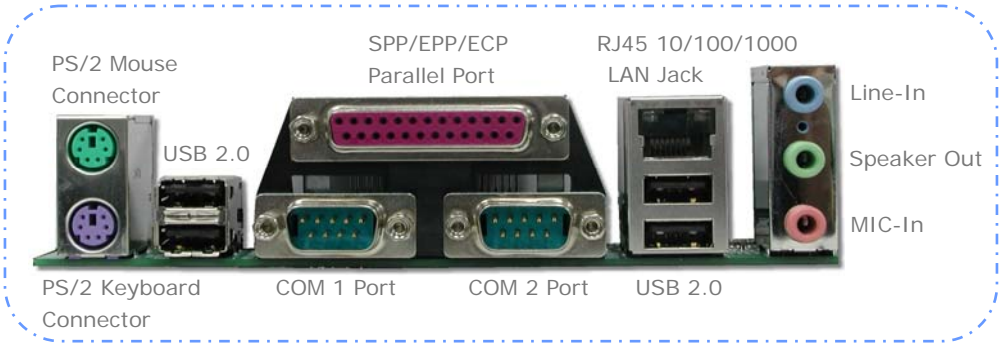
The onboard I/O devices have PS/2 Keyboard, PS/2 Mouse, RJ-45 LAN Connector, COM1, VGA port, Printer, USB, AC'97 sound and game ports. The view angle of drawing shown here is from the back panel of the housing.



- PS/2 Keyboard:** For standard keyboard, which use a PS/2 plug.
- PS/2 Mouse:** For PC-Mouse, which use a PS/2 plug.
- USB Port:** Available for connecting USB devices.
- Parallel Port:** To connect with SPP/ECP/EPP printer.
- COM1 Port:** To connect with pointing devices, modem or others serial devices.
- RJ-45 LAN Port:** To connect Ethernet for home or office use.
- VGA Connector:** To connect with PC monitor.
- Speaker Out:** To External Speaker, Earphone or Amplifier.
- Line-In:** Comes from the signal sources, such as CD/Tape player.
- MIC-In:** From Microphone

## Colored Coded Back Panel (for AX4SPE Max II)

The onboard I/O devices have PS/2 Keyboard, PS/2 Mouse, RJ-45 LAN Connector, COM1, COM2 port, Printer, USB, AC'97 sound and game ports. The view angle of drawing shown here is from the back panel of the housing.



**PS/2 Keyboard:** For standard keyboard, which use a PS/2 plug.

**PS/2 Mouse:** For PC-Mouse, which use a PS/2 plug.

**USB Port:** Available for connecting USB devices.

**Parallel Port:** To connect with SPP/ECP/EPP printer.

**COM1 Port:** To connect with pointing devices, modem or others serial devices.

**COM2 Port:** To connect with pointing devices, modem or others serial devices.

**RJ-45 LAN Port:** To connect Ethernet for home or office use.

**Speaker Out:** To External Speaker, Earphone or Amplifier.

**Line-In:** Comes from the signal sources, such as CD/Tape player.

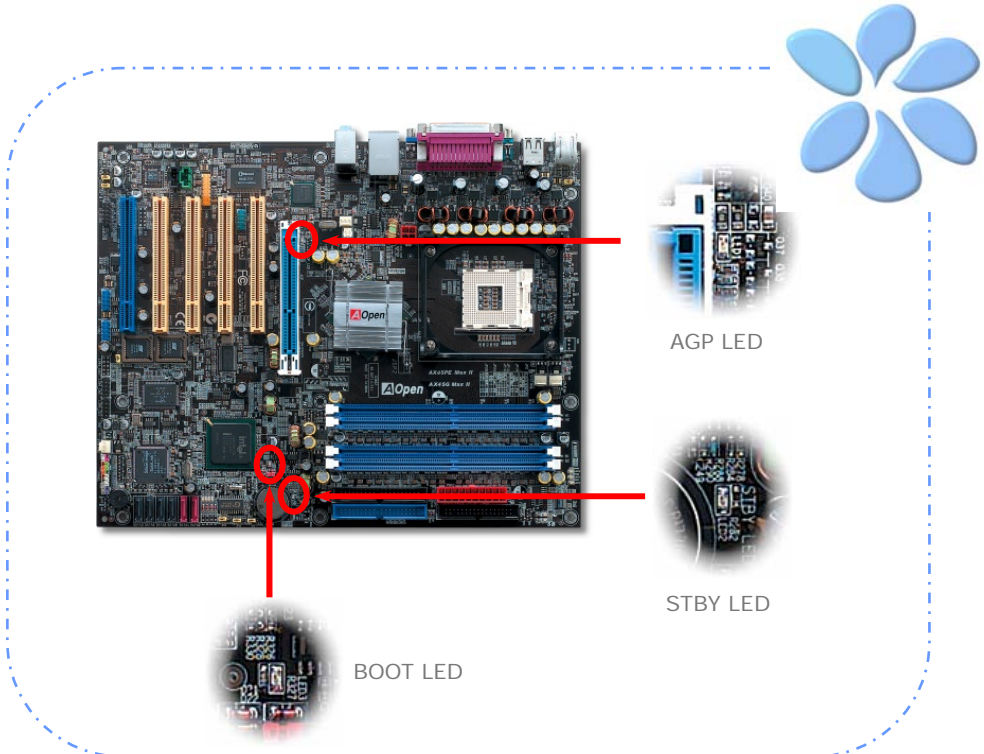
**MIC-In:** From Microphone

## LED Indication

LED indication including Boot LED, Standby LED and AGP LED are AOpen's considerate designs that aim at providing you friendly system information. The **STBY LED** will light up when power is provided to the motherboard, giving you a convenient indication check the system power status in circumstances such as power on/off, stand-by mode and RAM power status during Suspend to RAM mode.

**BOOT LED** will keep blinking when you power the system on and when your system is under POST (Power-On Self Test). After POST diagnoses everything all right and finishes the booting, the LED will stay on otherwise it will remain flashing to warn you that mistakes have occurred during POST

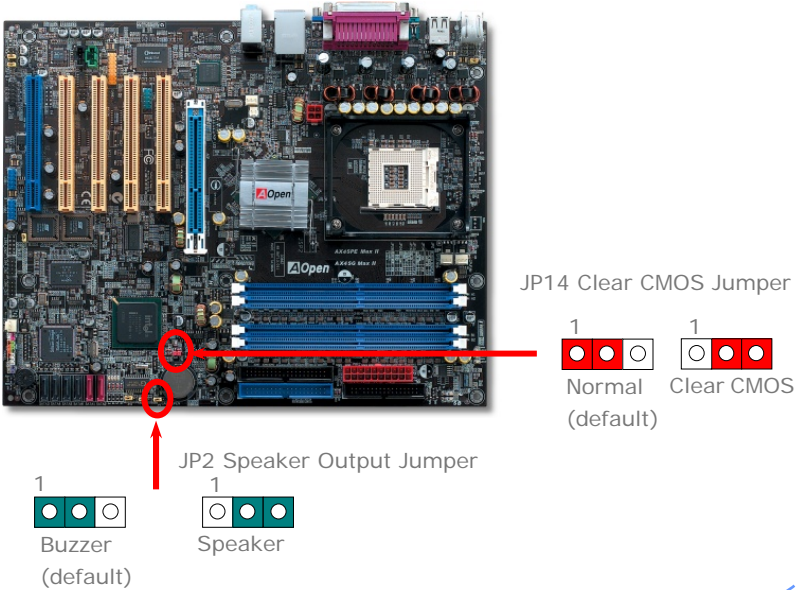
**AGP LED** aims to protect your motherboard from being damaged by over voltage of AGP card. When AGP Protection Technology is implemented, this motherboard will automatically detect the voltage of AGP card and prevent your chipsets from being burnt out. Please note that if you install an AGP card with 3.3V, which is not supported by Intel 865 chipset, the AGP LED on the motherboard will light up to warn you the possible damage of the exceeding voltage.



## 3.4 Jumper Settings

### JP2 Speaker Output

Allows you to turn off the voice from buzzer and speaker. You can choose not to be bothered by the warning made from Dr. Voice when it detects any error in operating system.



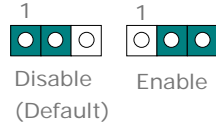
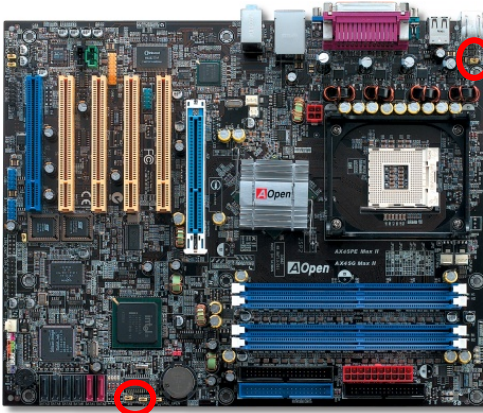
### JP14 Clear CMOS Data

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.

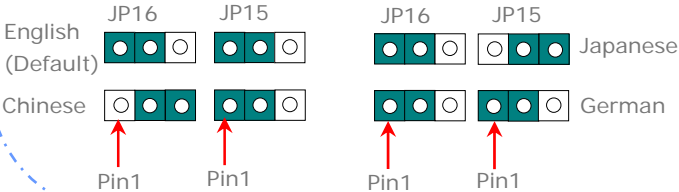
JP15/16 Dr. Voice Language Select

Dr. Voice provides four language versions: English, German, Japanese and Chinese. You can select your preferred language by JP15 & JP16 jumpers.



JP28 KB/Mouse Wakeup Jumper

JP15/16 Dr. Voice Languages Select Jumper



JP28 Keyboard / Mouse Wakeup Jumper

This motherboard provides PS2 keyboard / mouse wake-up function.

# Chapter 4 Special Features and Utilities

## RAID

### (Redundant Array of Independent Disks)

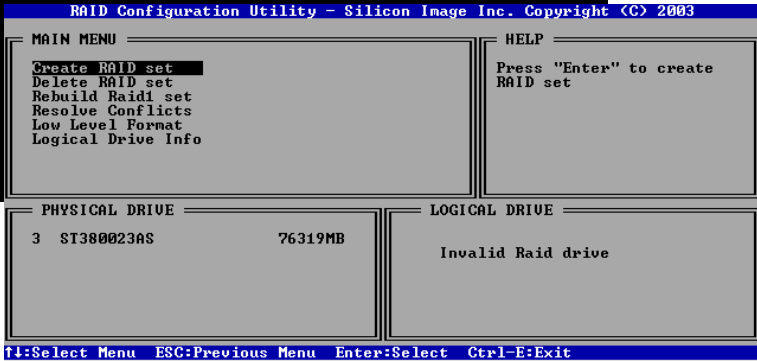
This motherboard supports RAID 0, RAID 1 and RAID 0+1 functions. For more RAID introduction, please visit our website: <http://english.aopen.com.tw/tech/techinside/RAID.htm>

### RAID Configuration Utility

In order to make sure your system can recognize and operate Serial ATA RAID device smoothly, we have to enter RAID Configuration Utility to do some settings. After finishing the the BIOS setup and reboot, you will see [Press CTRL + S to enter configuration Utility] about half way through the boot up. Please press these two buttons simultaneously. You will later be presented with a screen as shown below.

```
Initializing Intel(R) Boot Agent GE v1.2.16
PXE 2.1 Build 003 (WFM 2.0), RPL 01.21
Press <Ctrl+S> or F4 to enter utility

SiI 3114 SATAraid BIOS Version 5.0.20
Copyright (C) 1997-2003 Silicon Image, Inc.
Press <Ctrl+S> or F4 to enter RAID utility
```



**Warning:** The Serial ATA RAID function can be supported under **Windows XP and Windows .Net** environments.

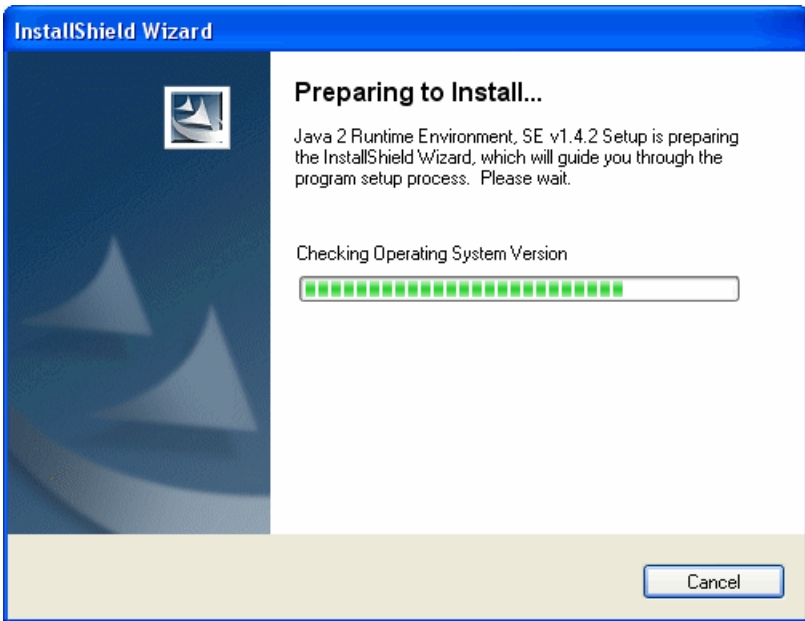
## Serial ATA RAID for Silicon Image 3114

Silicon Image's SATARaid™ provides Serial ATA RAID 0 (Striping), RAID 1 (Mirroring) and RAID 0+1 (Striping and Mirroring) functionality to enhance the industry's leading PCI-to-SATA host controller products. Standard with SATARaid software is a Graphical User Interface (GUI) that provides easy-to-use configurations for different RAID Sets supported.

### *JAVA 2 Runtime Environment Installation*

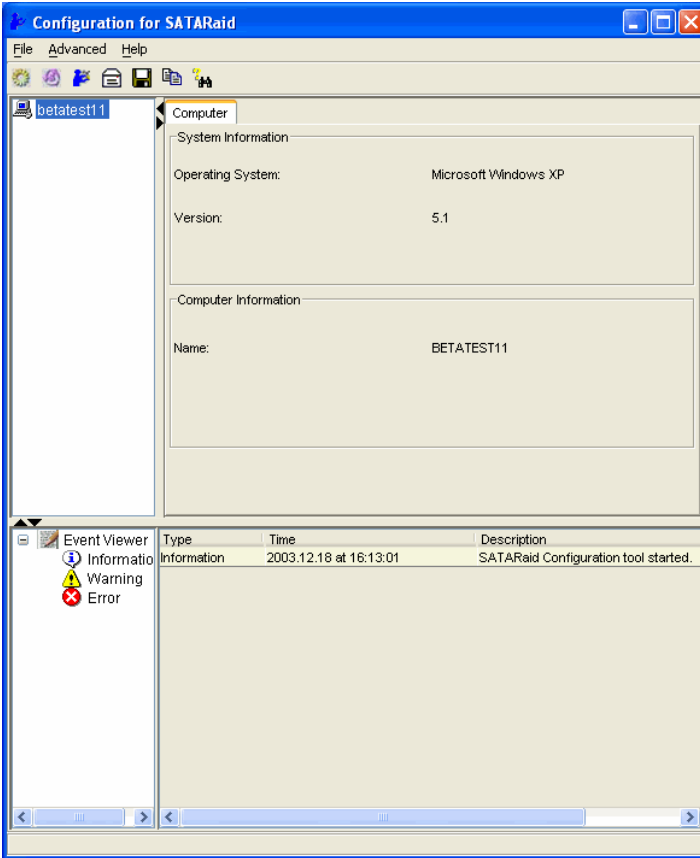
The Java 2 Runtime Environment is required for the SATARaid GUI. The Java 2 Runtime Installer and executable package must be downloaded from the Sun Microsystems website at <http://java.sun.com/j2se/downloads.html>. The computer must have an Internet connection set up before installation can proceed.

Save the installer file to a known location such as the My Documents folder. Using Windows Explorer or by clicking My Computer icon on the desktop, you can select the installation file and execute it. The installation will begin. The installer program will download the required files from Internet.



## Silicon Image SATAraid GUI Overview

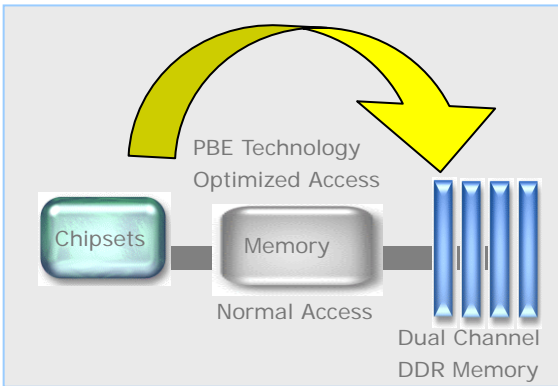
The SATAraid GUI Installation program configures the SATAraid GUI to automatically start when Windows is started. If the SATAraid GUI does not automatically start or is closed by user, choose the JAVA SATAraid program from Start Menu to launch the GUI.





# PBE – Performance Boost Engine

Configuring Intel 865 chipset, the performance of this motherboard had been uplifted by implementing PBE Technology (Performance Boosting Engine). Acting as similar as PAT in uplifting the system performance, PBE enables users to optimize the accessing speed and quality between CPU and Memory. Theoretically speaking, CPU must go through some standard paths to access memory. However, with an optimized path created, CPU can access memory through optimized path in a faster way. Therefore, PBE effectively shortens the distance between CPU and memory and thus increases system performance. To enable it, all you have to do is to go to BIOS screen, select Advanced Chipset Feature/Performance Boost Engine.



**Note:** Enabling this feature will make maximum use of your RAM modules though this is not standard specification of Intel 865G/865PE chipset. Uneven quality RAM modules in the market may not be able to withstand this kind of extreme usage and will cause your system unstable. You have to take your own risk for using this advantageous benefit.

Phoenix - AwardBIOS CMOS Setup Utility  
Advanced Chipset Features

DRAM Timing Selectable By SPD  
x CAS Latency Time 2.5  
x Active to Precharge Delay E  
x DRAM RAS# to CAS#  
x DRAM RAS# Precharge

Performance Boost Engine  
Disabled ..... [ ]  
Fast ..... [ ]  
Turbo ..... [ ]

Performance Boost Engine Disabled

Enable or Disabled selection

PBE item: Disabled (Default)

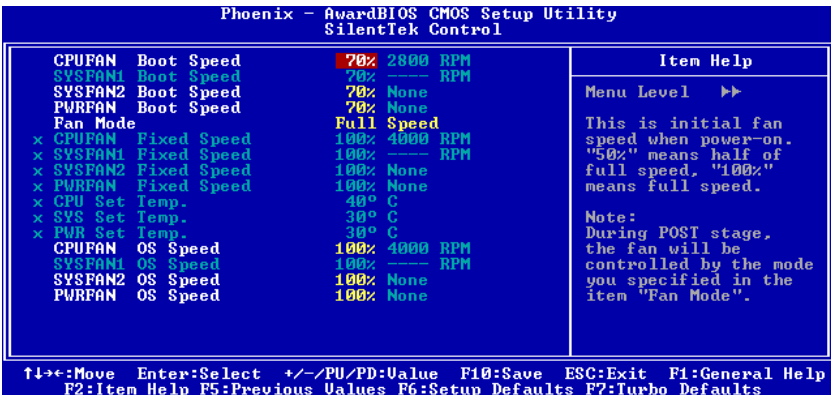
## SilentTek – Noise is Gone!



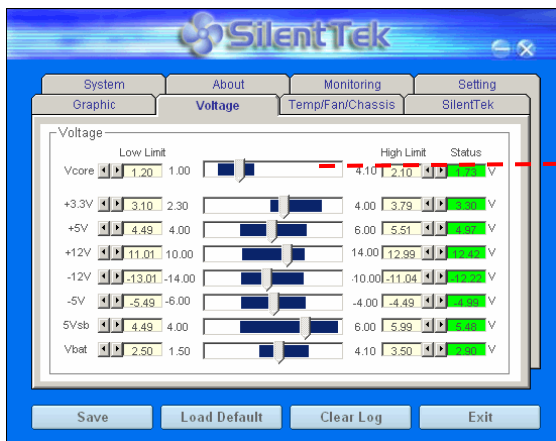
As CPU clock keeps rocketing higher and higher, it has inevitably brought higher heat and system temperature in a relative way. The way we deal with this heat problem, however, is to spare no effort to add one fan after another to protect our pampered system, expecting these fans cool down our machine as much as they can.

But at the same time, we believe that same users are affected terribly by the irritating noises of these fans while working with their PC. As a matter of fact, we do not have to get our fans running at such a high speed in most cases; on the contrary, we discovered that having your fans running at appropriate time and speed not only reduces the noise, but also consumes the least power the system needs, so as to prevent over-wasting of energy resource.

Today, AOpen Motherboard is honored to bring you a new overall solution, SilentTek, to make your system quiet. To collocate with hardware circuit, BIOS and the utility under Windows, SilentTek combines "Hardware-Status Monitoring", "Overheat Warning" and "Fan Speed Control" in a user-friendly interface to provide you a perfect balance among noises, system performance and stability.

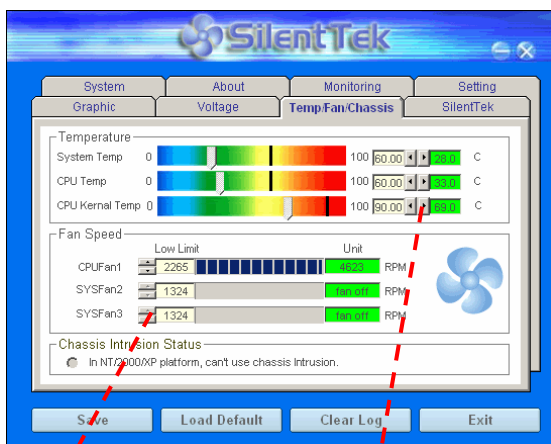


The first image you have here is Voltage Status page. You can find current status of all voltages here and set your expected margins of warning level.



You may check your system voltage from the indicating bar here.

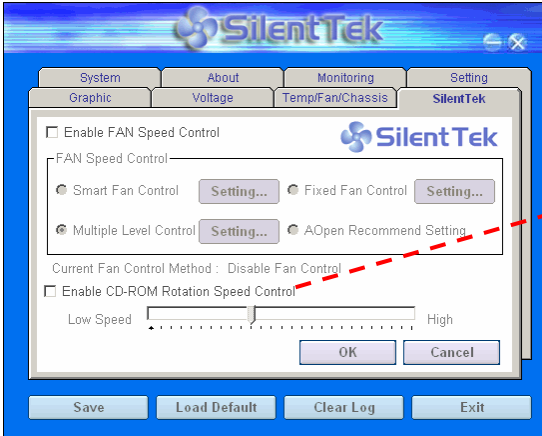
In "Temp/Fan/Case" page, you can get aware of the current temperature of CPU and the heat inside chassis. Also, you can check if fans are running properly.



Of course, you can set your defaulted lowest margin for your fans and SilentTek will also pop up a message box to alarm you when the fan is rotating slower than this specified speed.

You can set the highest margin of your CPU and system temperature as default, and SilentTek will pop up a message box to alert you with an alarm when the temperature goes beyond the specified margin.

The following page is surely the most important part of this utility. You can control the rotation speed of specific fans that you have got the options inside this page.




CD-ROM Rotation Speed Control: by enabling the CD-ROM Rotation Speed Control, you can adjust the rotation speed of your CD-ROM. When you set the speed to high level, the CD-ROM will work at its fastest speed and it will run at basic required speed while you set the value to low speed.

**Smart FAN Control:** This is the default setting of SilentTek and can be used for any branded computer housing. With a special algorithm developed by AOpen, the fan speed is automatically adjusted by the parameters of CPU and ambient temperature which is ease-of-use and trouble free at your service.

**Fixed FAN Control:** Under this setting, a desired fan speed is set fixed when operating.

**Multiple Level Controls:** This is the most versatile setting that allows you to set fan speed in relation to temperature. You may find that this setting fits you best.

**AOpen Recommend Setting:** This setting is designed specifically for AOpen housing. A series of lab tests were conducted under the real world scenario to determine optimum fan speed to reduce noise level within CPU working condition and temperature. Most of the time, the fan would remain still when CPU is not fully utilized.

 **Note:** Due to hundreds brands of fans on market, inaccuracy may happen in some cases when you have your rotation speed adjusted. It is still under the criterion and please rest assured that it won't cause any problem to your system.

## Other Useful Features

With excellent design ability of R&D team, AOpen boasts for its various powerful and handy features that come with our product like follows. You are welcomed to visit our technical website to learn more about those features.

<http://english.aopen.com.tw/tech/techinside>



Gigabit LAN



RAID



CPU 1MHz Stepping



AOConfig



AGP 1MHz Stepping



DDR400



IEEE1394



AGP8X



Watch Dog ABS



FSB800



WinBIOS



Dual Channel



SERIAL ATA

# Chapter 5 Setting BIOS

## Introduction

System parameters can be modified by going into BIOS Setup menu; this menu allows you to configure the system parameters and save the configuration into the 128 bytes CMOS area (normally in the RTC chip or in the main chipset).

The Phoenix-Award BIOS™ that installed in the Flash ROM of the motherboard is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as hard disk drives, serial and parallel ports.

AOpen's R&D engineering team had optimized most BIOS settings of this motherboard. However, some default settings of BIOS cannot fine-tune those sections that controlled by chipset. Therefore, this chapter is intended to guide you and help you to configure some other settings.

To enter BIOS setup menu, press <Del> when POST (Power-On Self Test) screen is shown on your monitor.



**Note:** *Because BIOS code is the most often changed part on motherboard, the BIOS information contained in this manual may be different from the BIOS version that comes with your motherboard.*

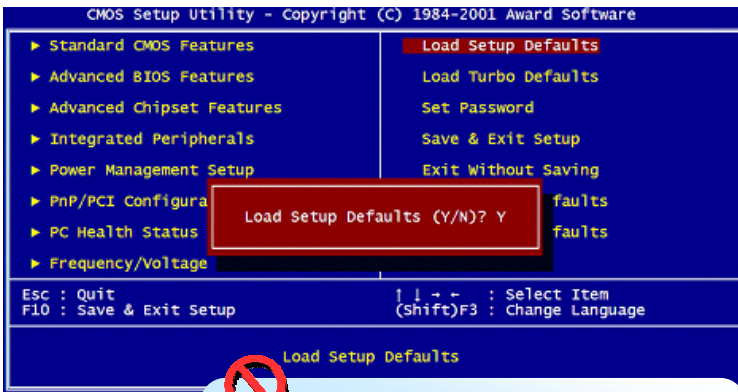
## How To Use Phoenix-Award™ BIOS Setup Program

Generally, you can use arrow keys to highlight items that you want to choose, press <Enter> key to select, and use <Page Up> and <Page Down> keys to change setting values. You can press <Esc> key to quit Phoenix-Award™ BIOS setup program. The following table provides details about how to use keyboard in the Phoenix-Award™ BIOS setup program. Alternatively, it's strongly recommended to install AOpen's newest WinBIOS Utility to get more detailed description, further powerful functions and advanced setting of BIOS.

Key	Description
Page Up or +	Change setting to next value or increase the value.
Page Down or -	Change setting to previous value or decrease value.
Enter	Select the item.
Esc	In main menu: Quit without saving any changes. In sub menu: Exit current menu to main menu.
Up Arrow	Highlight previous item.
Down Arrow	Highlight next item.
Left Arrow	Move the light bar to left side of menu.
Right Arrow	Move the light bar to right side of menu.
F6	Load Setup Default setting value from CMOS.
F7	Load turbo setting value from CMOS.
F10	Save changed settings and exit setup program.

## How To Enter BIOS Setup

After finishing the jumper settings and connecting cables, you can power on and enter the BIOS Setup. Press <Del> during POST (Power-On Self Test) and choose "Load Setup Defaults" for recommended optimal performance.



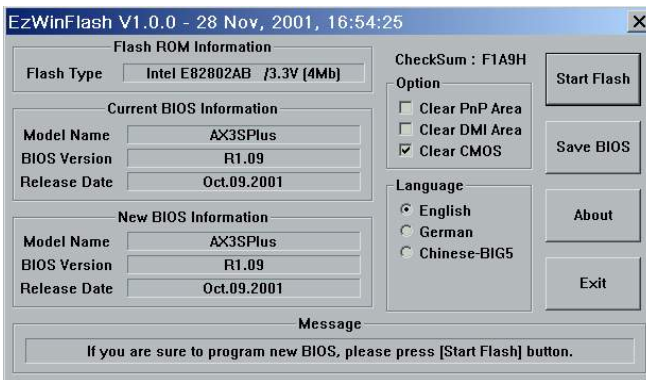
**Warning:** Please avoid of using "Load Turbo Defaults", unless you are certain your system components (CPU, SDRAM, HDD, etc.) are good enough for turbo setting.

## BIOS Upgrade under Windows environment



With outstanding R&D ability of AOpen, we now bring you a whole new BIOS Flash wizard ---- EzWinFlash. With an eye to convenience for users, EzWinFlash combines the BIOS binary code and flash module together, so the only thing you have to do is just clicking on the utility you downloaded from web and let it help you complete the flash process automatically. EzWinFlash detects your motherboard and checks the BIOS version cleverly to prevent your system from any possible failure. Moreover, EzWinFlash has been taken into consideration to go with any windows platform you might be using, no matter if you're using Windows 95/98, 98SE/ME, NT4.0/2000, or Windows XP.

In the meanwhile, in order to provide a much more user-friendly operating environment, AOpen EzWinFlash is natively designed to have multi-language function to provide easier way for user in changing BIOS setting.



**Caution:** You are taking a risk of BIOS flash failure when you update your system. If your motherboard is working stable, and there are no major bugs to be fixed by a latter BIOS revision, we recommend that you **DO NOT** upgrade your BIOS. If you intent on upgrade **PLEASE MAKE SURE** you get the right BIOS revision for your motherboard model so as to avoid any possible failure.

**Note:** The model name on this BIOS picture is for reference only. It may not be the same model with your motherboard.





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

Download the latest version of BIOS package zip file from AOpen official web site. (Ex: <http://english.aopen.com.tw/>)

Unzip the downloaded BIOS package (ex: WSGMAXII102.ZIP) with WinZip (<http://www.winzip.com>) in Windows environment.

Save the unzipped files into a folder, for example, WSGMAXII102.EXE & WSGMAXII102.BIN.

Double click WSGMAXII102.EXE; EzWinFlash will detect the model name and BIOS version of your motherboard. If you collect wrong BIOS, you will not be allowed to proceed with the flash steps.

You may select a preferred language in main menu, then click [Start Flash] to begin the BIOS upgrade procedure.

EzWinFlash will complete all the process automatically, and a dialogue box will pop up to ask you to restart Windows. Click [YES] to reboot Windows.

Press <Del> at POST to enter BIOS setup screen; choose "Load Setup Defaults", then "Save & Exit Setup". Done!

It is strongly recommended NOT to turn off the power or run any applications during FLASH PROCESS.



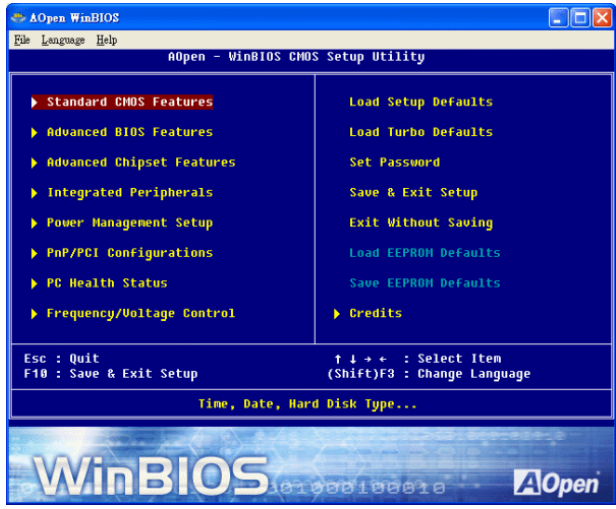
**Warning:** *The new BIOS upgrade will permanently replace your original BIOS setting when flashing. You may need to reconfigure the BIOS setting before your system goes back to work as normal.*










In the past, users have to keep punching the DEL key during POST (Power-On-Self-Test) screen to get into the BIOS, which is inconvenient and clumsy. From now on, AOpen provides an easier way to configure your BIOS. WinBIOS is a customized utility, running exclusively on AOpen motherboards, to allow you setting up BIOS under Windows environment. Designed to remain traditional-BIOS-alike interface, you can adjust BIOS parameter with clear descriptions for every item.

WinBIOS is natively designed with multi-language support. There are various widely-used languages provided on our website for you to download, which also helps to prevent wrong settings caused by misunderstanding of the languages. The only thing you have to do is to visit our official website and download your respective language pack (of few KB size), then double-click on it to activate the support with your chosen language.

Moreover, with high scalability, either for newly bought motherboard or the latest BIOS version with new function, you don't have to re-install the whole program again and again. All you have to do is to grab the latest profile from our website, double-click on the profile. You don't have to spend any extra effort to have your motherboard supported by WinBIOS.

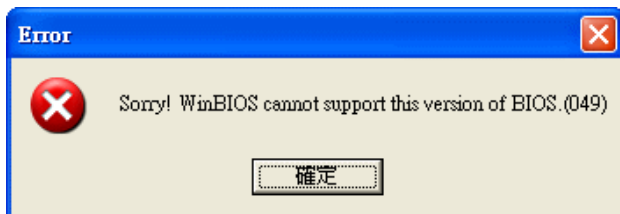


## Function keys:

It's rather easy to handle WinBIOS as if you're using traditional BIOS setting. Users can use the arrow keys such as     to move around items in WinBIOS screen. And use  , "+" or "-" to change the setting value. Press  to go back to previous screen. Furthermore, the hotkeys shown in the table may help you and save your time. Some settings may not come into effect until you reboot your system.

Hotkey	Function Description
F1	Get help description.
F2	Item Help
F3	Changing menu language.
F5	Load previous setting
F6	Load setup default setting
F7	Load turbo setting
F10	Save changed setting and exit setup program.
F12	Full Screen / Normal Mode

**Caution:** After updating your BIOS, please remember to update WinBIOS profile as well. If the upgraded BIOS version is newer than WinBIOS profile, WinBIOS will not be able to launch and a dialog box of error message will pop up. This verification is designed on purpose to protect your BIOS from being damaged by wrong profile version.



For the latest WinBIOS profile and language pack modules, you can find them on AOpen official web site:

<http://download.aopen.com.tw/downloads/default.asp>



**Note:** Because BIOS versions are updated in an extremely fast speed, it is strongly recommended to download the latest BIOS version and WinBIOS profile from our website upon receipt of the motherboard.



## Vivid BIOS technology



Have you been fed up with the conservative and immutable POST screen? Let's rule out the tradition idea that POST screen are stiff and frigid, and let AOpen show you the newly developed VividBIOS to experience the lively vivid colorful POST screen!

Unlike earlier graphic POST screen which could occupy the whole screen and mask text information during POST, AOpen VividBIOS deals with graphics and texts separately, and makes them running simultaneously during POST. With this innovative design, VividBIOS now brings you a beautiful and sleek 256 colors screen without missing any important information shown on POST screen.

In addition, the limited space of BIOS ROM is another big issue. When all of the traditional BIOS can only show space-consuming and uncompressed Bitmap, AOpen has considerably tuned the BIOS to next generation, to recognize the smaller-sized GIF format and even dynamic-showing GIF animation.



Vivid BIOS shares the same fundamental technology with Open JukeBox CD Player, you may use the same EzSkin utility to change your VividBIOS screen or to download your favorite Open JukeBox skin. If you see this little logo shown beside



your model name on the motherboard download page, <http://english.aopen.com.tw/tech/ezskin/vivid.htm>, it is assured that your motherboard supports this innovative feature!

# Chapter 6 Installing Drivers



You may think that installing drivers and utilities would be a repeated task of going through those installation wizards and steps-by-steps. Now, you will be surprised with how “Ez” EzInstall could do. Without wizards or steps, all you have to do is to do one click and then it’s done. Click and done. Yes. EzInstall makes installation easy and even foolproof!

After putting in the CD, you will be prompted with AOpen welcome page and our branches information.

First, click on the install driver ICON at left side for necessary drivers.

Second, click on the install utility ICON at left side for preferred utilities.

Practically, it’s done. But you may also browse CD contents, Readme to get more information or just exit the CD installation.

The screenshot shows the AOpen EzInstall welcome screen. On the left side, there are five circular icons: a CD-ROM, a folder, a magnifying glass, a document, and a folder with a red X. Callout boxes point to these icons with the following labels: 'Install driver', 'Install utility', 'Browse CD Contents', 'Readme', and 'Exit CD'. On the right side, there is a callout box pointing to a stack of books icon labeled 'Click to install online manual'. The main content area features the AOpen logo, a 'Welcome' message, and contact information for various branches. A callout box on the right points to this contact information area, labeled 'AOpen branches information'.

**AOpen**

**Welcome**

Thank you for choosing AOpen AX4SG Max II

Contact us

AOpen Inc. http://www.aopen.com.tw TEL: +886-2-3789-5888 FAX: +886-2-3789-5899	AOpen Computer GmbH. http://www.aopencom.de TEL: +49-2131-1243-710 FAX: +49-2131-1243-999
AOpen America Inc. http://english.aopen.com.tw TEL: +1-408-232-1200 FAX: +1-408-232-1280	AOpen Japan Inc. http://www.aopen.co.jp TEL: +81-048-290-1800 FAX: +81-048-290-1820
AOpen Computer B.V. http://www.aopen.nl TEL: +31-73-645-9516 FAX: +31-73-645-9604	AOpen International Co., Ltd. http://www.aopen.com.cn TEL: +86-21-6225-8622 FAX: +86-21-6225-7926

Ez Install

Install User manual of your motherboard

Install driver

Install utility

Browse CD Contents

Readme

Exit CD

Click to install online manual

AOpen branches information

## 6.1 Installing Drivers

As you may see from the Installing driver page, EzInstall had picked up necessary for your motherboard. All you have to do is just click on the "GO", and no more steps afterward, of all listed drivers, grey checks indicate necessary drivers; you cannot click them off. Red checks can be disabled if you don't want to install them now.



Press the icon will prompt the "Install Driver" page. You may also press "Back" to return to the Main page.



Once clicking "GO", EzInstall will run the installing procedure automatically, and prompt a reboot dialog (Some drivers or utilities may skip the reboot part).

## 6.2 Installing Utilities

Installing Utilities is virtually the same as installing drivers. AOpen provides you many friendly and powerful utilities to manage your system. You may find lots of fabulous utilities listed there, and all you have to do is to click on the “GO”, then it will install the utilities to your system right away without complicated steps.

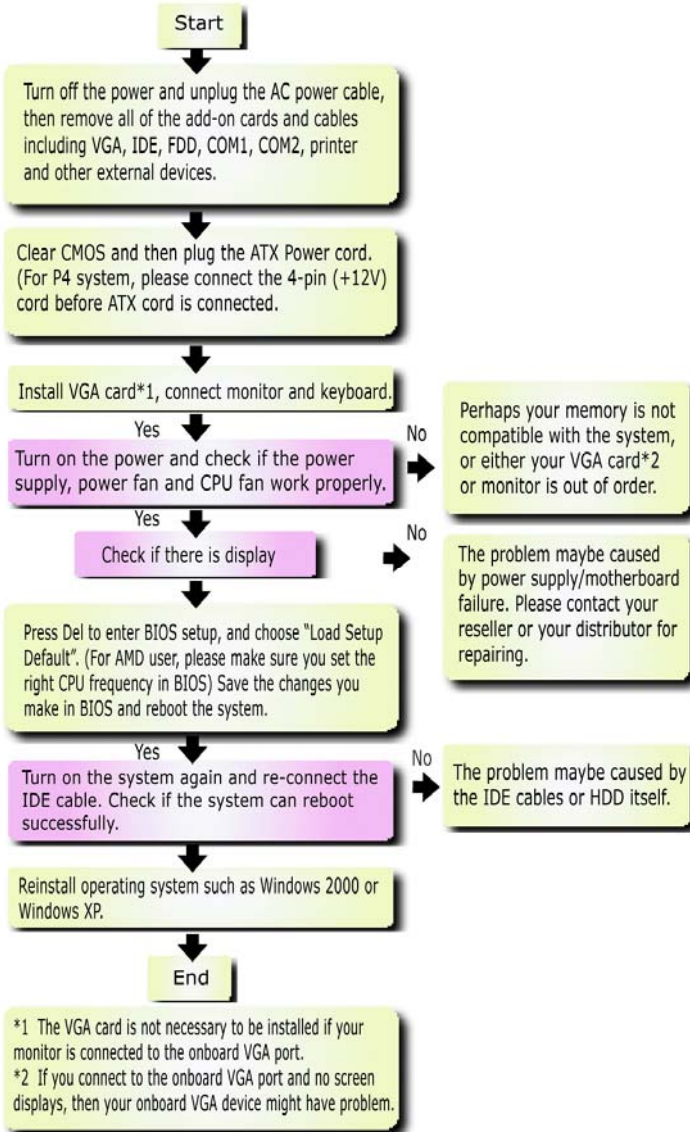


Press the icon will prompt the “**Install Utilities**” page for your selection. You may also press “**Back**” to get back to the Main page.





## TroubleShooting





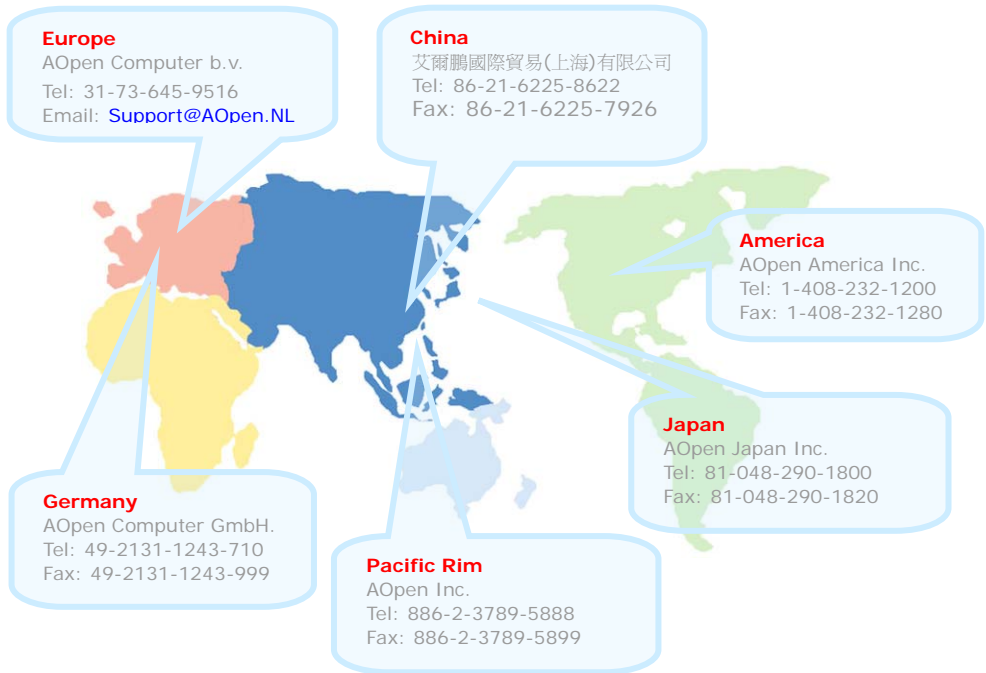
# Chapter 8 Technical Support

Dear Customer,

Thanks for choosing AOpen products. We invite you to register at <http://www.aopen.com> to become a Gold Member of Club AOpen so as to ensure quality service in the future. In order to maintain the best service to every customer of us, we recommend you to follow the procedures below and seek help from our branches according to the region you buy the product. With your help, we can then continue to provide efficient and the best quality service to every customer.

Thanks very much for your understanding!

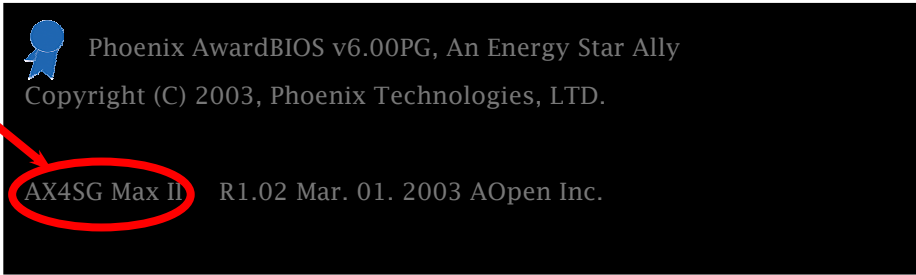
AOpen Technical Supporting Team



Europe Email: [Support@AOpen.NL](mailto:Support@AOpen.NL)  
Pacific Rim: <http://www.aopen.com.tw/tech/default.htm>  
China: <http://www.aopen.com.cn/tech/default.htm>  
Germany: <http://www.aopencom.de/tech/default.htm>  
America: <http://english.aopen.com.tw/tech/default.htm>  
Japan: <http://www.aopen.co.jp/tech/default.htm>

## 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:



AX4SG Max II is model name of motherboard; R1.02 is BIOS version

## Register Your Motherboard

Thanks for choosing AOpen product, please register this motherboard at <http://club.aopen.com.tw/productreg/> to become a Gold member of Club AOpen, and to ensure high service quality and priority from AOpen. You will also have a chance to play slot machine game to win prize from AOpen. Please prepare the following information before you start: Model Name, Part Number (P/N), Serial Number (S/N) and Purchase Date. 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:



Part No.

Serial No.

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

### Phoenix-Award BIOS ERROR Message

Beep Sound	Message
1 short(Beep)	System booting is normally.
1 long - 1 short(Beep)	DRAM ERROR
1 long - 2 short(Beep)	Display card or monitor connected error
1 long - 3 short(Beep)	Keyboard Error
Long(Beep) continuous	DRAM hasn't inset correctly.





# Technical Support

**Online Manual:** To download manual, please log on and then select your preferred language. Under "Type" directory, choose "Manuals" to go to our manual database. You can also find the manual and EIG in AOpen Bonus Pack.

<http://download.aopen.com.tw/downloads>

**Test Report:** We recommend you to choose board/card/device from the compatibility test reports for assembling your PC. It may prevent incompatibility problems.

<http://english.aopen.com.tw/tech/report/default.htm>

**FAQ:** Here we list problems that users often encounter and FAQ (Frequently Asked Questions). You may select your preferred language after log on, and may be able to find a solution to your problem.

<http://club.aopen.com.tw/faq/>

**Download Software:** After log on and having language selected, you may get the latest updated BIOS/utility and drivers you need under "Type" directory. In most case, newer versions of drivers and BIOS have solved earlier bugs or compatibility problems.

<http://download.aopen.com.tw/downloads>

**eForum:** AOpen eForum is provided to discuss our products with other users, in which your problem probably had been discussed before or will be answered. After log on, you may select your preferred language under "Multi-language".

<http://club.aopen.com.tw/forum>

**Contact Us:** Please prepare detail system configuration and error symptom before contacting us. The part number, serial number and BIOS version are also very helpful.

**Contact Distributors/Resellers:** We sell our products through resellers and integrators. They should know your system configuration very well and should be able to solve your problem efficiently and provide important reference for you.