

# **DXPN-U**

## ***Online Manual***

DOC. NO.: DXPN-U-OL-E0306A



Overview

Hardware  
Installation

Drivers &  
Utilities

BIOS Setup

Glossary

Troubleshooting &  
Technical Support

## What's in this manual

<b>DXPN-U .....</b>	<b>1</b>
<i>What's in this manual</i> .....	2
<i>You Must Notice</i> .....	7
<i>Before You Start</i> .....	8
<i>Overview</i> .....	9
<i>Feature Highlight</i> .....	10
<i>Quick Installation Procedure</i> .....	13
<i>Motherboard Map</i> .....	14
<b>Hardware Installation.....</b>	<b>15</b>
<i>About "User Upgrade Optional" and "Manufacture Upgrade Optional"</i> .....	16
<i>CPU Installation</i> .....	17
<i>Installing CPU and Housing Fans</i> .....	18
<i>AGP 8x (Accelerated Graphic Port) Expansion Slot</i> .....	19
<i>DIMM Sockets</i> .....	20
<i>Multi Function Panel Connector</i> .....	23
<i>ATX Power Connector</i> .....	24
<i>AC Power Auto Recovery</i> .....	25

<i>IDE and Floppy Connector</i> .....	26
<i>ATA100 Supported</i> .....	28
<i>PC99 Color Coded Back Panel</i> .....	29
<i>Chassis Intrusion Sensor</i> .....	30
<i>JP1 Check Password Jumper</i> .....	31
<i>JP3 Clear CMOS Jumper</i> .....	32
<i>JP4 BIOS Configuration / Recovery Select Jumper</i> .....	33
<i>Support Two USB2.0 Channels (Four Ports)</i> .....	34
<i>WOL (Wake on LAN)</i> .....	36
<i>STBY LED</i> .....	38
<i>Resettable Fuse</i> .....	39
<i>Low ESR Capacitor</i> .....	40
<b>Driver and Utility</b> .....	<b>41</b>
<b>BIOS Setup Utility</b> .....	<b>42</b>
<i>Entering Setup</i> .....	43
<i>System Information</i> .....	46
<i>Product Information</i> .....	51
<i>Disk Devices</i> .....	53
<i>Onboard Peripherals</i> .....	61

<i>Power Management</i> .....	68
<i>Boot Options</i> .....	75
<i>Date and Time</i> .....	79
<i>System Security</i> .....	81
<i>Health Monitor Status</i> .....	85
<i>Load Default Settings</i> .....	86
<i>Abort Settings Change</i> .....	87
<b>Glossary</b> .....	<b>88</b>
<i>AC97 CODEC</i> .....	88
<i>ACPI (Advanced Configuration &amp; Power Interface)</i> .....	88
<i>ACR (Advanced Communication Riser)</i> .....	88
<i>AGP (Accelerated Graphic Port)</i> .....	89
<i>AMR (Audio/Modem Riser)</i> .....	89
<i>ATA (AT Attachment)</i> .....	89
<i>BIOS (Basic Input/Output System)</i> .....	90
<i>Bluetooth</i> .....	90
<i>CNR (Communication and Networking Riser)</i> .....	91
<i>DDR (Double Data Rate) RAM</i> .....	91
<i>ECC (Error Checking and Correction)</i> .....	92

<i>EEPROM (Electronic Erasable Programmable ROM)</i> .....	92
<i>EPROM (Erasable Programmable ROM)</i> .....	92
<i>EV6 Bus</i> .....	92
<i>FCC DoC (Declaration of Conformity)</i> .....	93
<i>FC-PGA (Flip Chip-Pin Grid Array)</i> .....	93
<i>FC-PGA2 (Flip Chip-Pin Grid Array)</i> .....	93
<i>Flash ROM</i> .....	93
<i>Hyper Threading</i> .....	93
<i>IEEE 1394</i> .....	94
<i>Parity Bit</i> .....	94
<i>PCI (Peripheral Component Interface) Bus</i> .....	95
<i>PDF Format</i> .....	95
<i>PnP (Plug and Play)</i> .....	95
<i>POST (Power-On Self Test)</i> .....	95
<i>PSB (Processor System Bus) Clock</i> .....	96
<i>RDRAM (Rambus Dynamic Random Access Memory)</i> .....	96
<i>RIMM (Rambus Inline Memory Module)</i> .....	96
<i>SDRAM (Synchronous DRAM)</i> .....	96
<i>SATA (Serial ATA)</i> .....	97

*SMBus (System Management Bus)..... 97*

*SPD (Serial Presence Detect)..... 97*

*USB 2.0 (Universal Serial Bus)..... 97*

*VCM (Virtual Channel Memory)..... 98*

*Wireless LAN – 802.11b..... 98*

*ZIP file..... 98*

**Troubleshooting..... 99**

**Technical Support ..... 103**

**Product Registration ..... 107**

**How to Contact Us ..... 108**



## You Must Notice



Adobe, the Adobe logo, Acrobat is trademarks of Adobe Systems Incorporated.

AMD, the AMD logo, Athlon and Duron are trademarks of Advanced Micro Devices, Inc.

Intel, the Intel logo, Intel Celeron, Pentium II, Pentium III, Pentium 4 and Xeon™ are trademarks of Intel Corporation.

Microsoft, Windows, and Windows logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

All product and brand names used on this manual are used for identification purposes only and may be the registered trademarks of their respective owners.

All of the specifications and information contained in this manual are subject to change without notice. AOpen reserves the right to revise this publication and to make reasonable changes. AOpen assumes no responsibility for any errors or inaccuracies that may appear in this manual, including the products and software described in it.

**This documentation is protected by copyright law. All rights are reserved.**

**No part of this document may be used or reproduced in any form or by any means, or stored in a database or retrieval system without prior written permission from AOpen Corporation.**

**Copyright© 1996-2003, AOpen Inc. All Rights Reserved.**



## Before You Start

This Online Manual will introduce you how this product is installed. All useful information will be described in later chapters. Please keep this manual carefully for future upgrades or system configuration changes. This Online Manual is saved in [PDF format](#), we recommend using Adobe Acrobat Reader 4.0 for online viewing, it is included in [Bonus CD disc](#) or you can get free download from [Adobe web site](#).

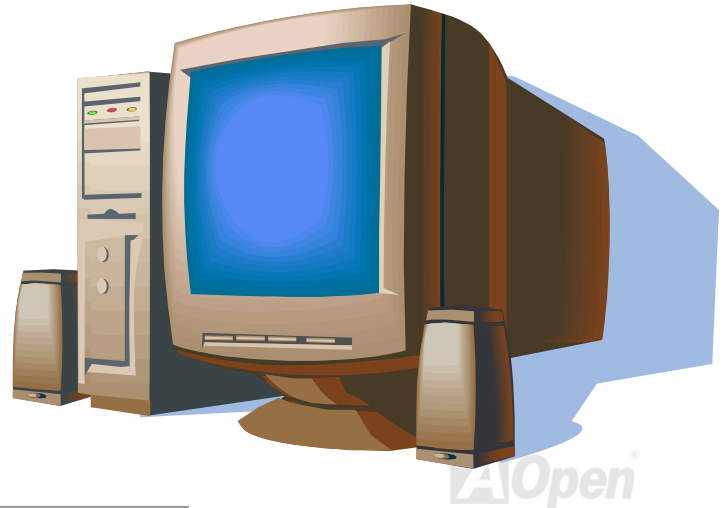
Although this Online Manual is optimized for screen viewing, it is still capable for hardcopy printing, you can print it by A4 paper size and set 2 pages per A4 sheet on your printer. To do so, choose **File > Page Setup** and follow the instruction of your printer driver.

Thanks for the help of saving our earth.



## Overview

Thank you for choosing AOpen DXPN-U motherboard. DXPN-U is Intel® Socket 604 motherboard (M/B) based on the BIG ATX form factor featuring the [Intel® E7505 Chipset](#). As high performance chipset built in the M/B, DXPN-U motherboard can support Intel® Socket 604 Intel® Xeon™ and up to 533MHz [Front Side Bus \(FSB\)](#) clock. The DXPN-U also integrates the Intel® 82540 GbE PCI Ethernet controller that supports 1 Gbites function for better remote site management. According to different customer's requirements, the chipset memory interface supports ECC DDR RAM devices with densities of 64, 128, 256, 512Mb, and 1Gb DDR RAM DIMM modules and the maximum memory size can be up to 4GB.



## **Feature Highlight**

### **CPU**

Supports Intel® Xeon™ 1.8GHz above with up to FSB533MHz (Front Side Bus) designed for Socket 604 technology.

### **Chipset**

With Intel® E7505 chipset is designed for use with the Intel® Xeon™ processor in the 604-pin package. It is optimized for the Intel® Xeon™ processor, supporting Dual channel of DDR 200/266.

### **Expansion Slots**

Including four 64-bit/66/100MHz PCI-X and one 32-bit/33MHz PCI slots.

### **Intel® 82540 GbE LAN controller**

Another cost-effective feature for network solution is the integration of Intel 82540 GbE Fast Ethernet controllers. The Intel 82540 GbE integrates Intel's fourth-generation Gigabit MAC design with fully integrated, physical-layer circuitry to provide a standard IEEE 802.3 Ethernet interface for 1000BASE-T and 100BASE-TX applications.

### **Memory**

The motherboard has four 184-pin DDR DIMM sockets. It supports DDR200/266MHz ECC unbuffered memory and is up to

4GB maximum. The socket can support 64, 128, 256, 512 and 1GB DDR DIMM modules.

### **USB2.0 Connectors**

There are two connectors on the back pane for USB interface devices, such as mouse, keyboard, modem, scanner, etc. All two USB Connectors support USB2.0. You can use proper cables to connect USB devices from PC99 back panel or connect the second USB channel header to the front panel of chassis.

### **Power Management/Plug and Play**

Supports the power management function that conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. It also offers [Plug-and-Play](#), helping save users from configuration problems and makes the system user-friendly.

### **Hardware Monitoring Management**

Supports CPU or system fans' status, temperature, voltage monitoring and alert through the on-board hardware monitor module.

### **Enhanced ACPI**

The fully implemented [ACPI](#) standard is Windows® 2000 series compatible; it also supports S1, S3, S4, S5 features.

## **Super Multi-I/O**

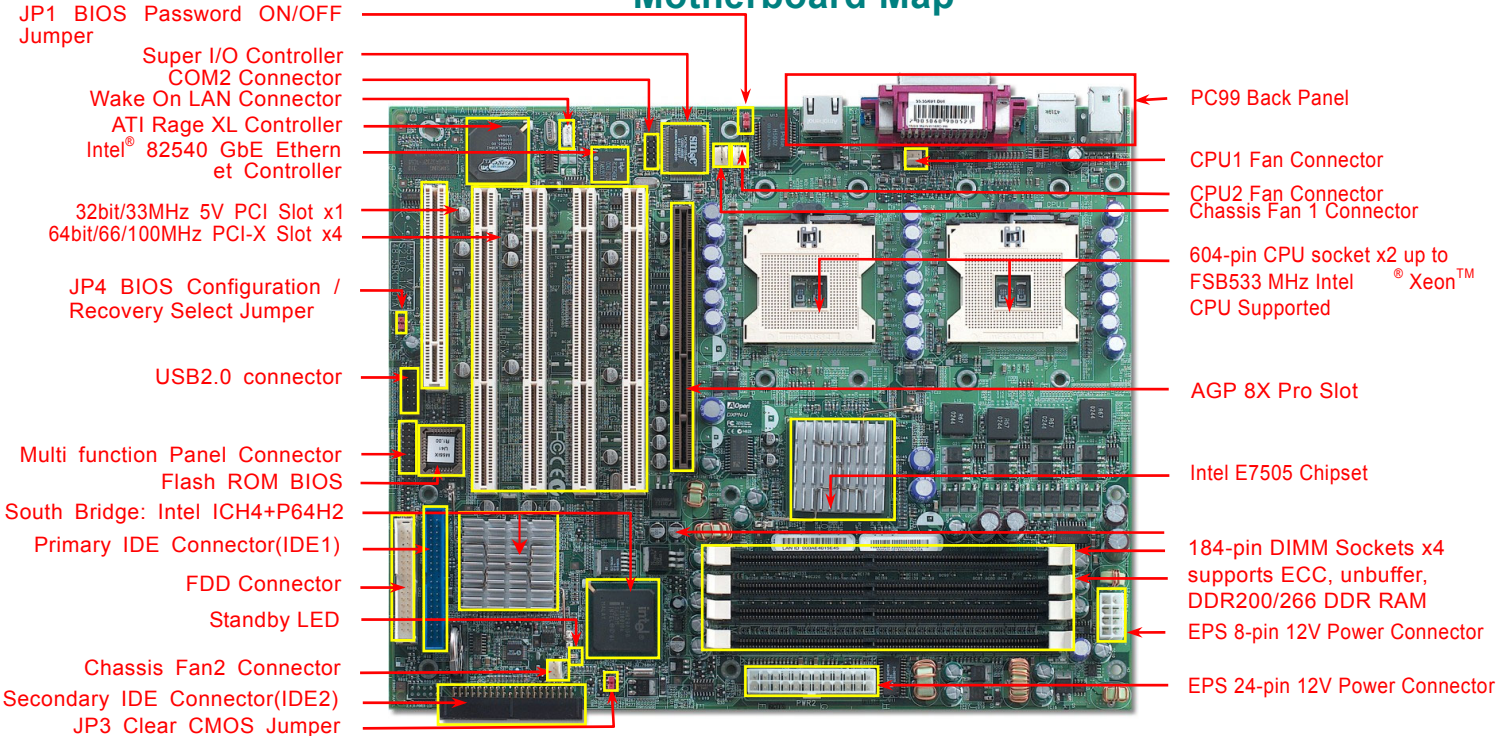
Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. You can also connect UART from COM1 to an Infrared Module for wireless connection.

## **Quick Installation Procedure**

This page gives you a quick procedure on how to install your system. Follow each step accordingly.

1. [Installing CPU and Fan](#)
2. [Installing System Memory \(DIMM\)](#)
3. [Connecting Front Panel Cable](#)
4. [Connecting IDE and Floppy Cable](#)
5. [Connecting ATX Power Cable](#)
6. [Connecting Back Panel Cable](#)
7. [Power-on and Load BIOS Setup Default](#)
8. [Setting CPU Frequency](#)
9. Reboot
10. Installing Operating System
11. [Installing Driver and Utility](#)

## Motherboard Map



# Hardware Installation

This chapter describes jumpers, connectors and hardware devices of this motherboard.



**Note:** *Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.*

1. *Do not remove a component from its protective packaging until you are ready to install it.*
2. *Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.*

## About “User Upgrade Optional” and “Manufacture Upgrade Optional”...

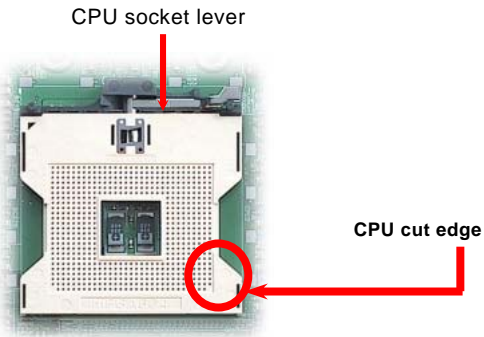
When you read this online manual and start to assemble your computer system, you may notice that some of the functions are marked as “User Upgrade Optional” or “Manufacture Upgrade Optional”. Although all of AOpen’s motherboards have included many amazing and powerful features, sometimes not every user is familiar with these powerful features. As a result of this we define features that can be upgraded by users as “User Upgrade Optional”. You can upgrade these functions by purchasing additional devices. As for functions that cannot be upgraded by users, we define them as “Manufacture Upgrade Optional”. If need be, you can contact our local distributors or resellers to purchase “Manufacture Upgrade Optional” components, and again you are also welcome to visit our official website at [Http://english.aopen.com.tw](http://english.aopen.com.tw) for detail information.





## CPU Installation

This motherboard supports Intel® Xeon™ Socket 604 series CPU. Be careful of CPU orientation when you plug it into CPU socket.



1. Pull up the CPU socket level 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 level and finish CPU installation.

**Caution:** If you do not match the CPU socket Pin 1 and CPU cut edge well, you may damage the CPU.

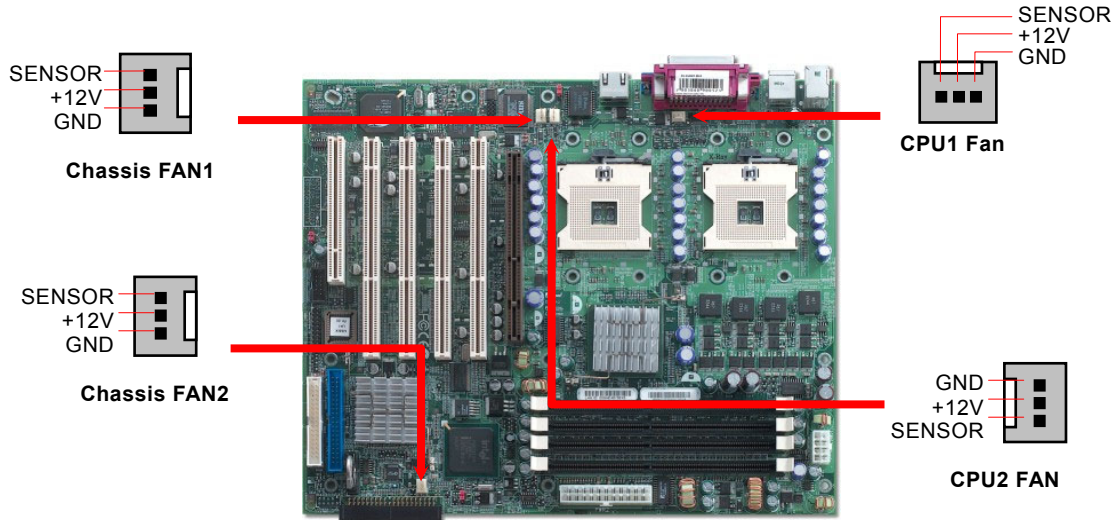
	CPU1	CPU2
Config1	V	N/A
Config2	V	V

### Notes:

1. Config1: CPU socket 1 is for single CPU setup
2. Config2: The same CPU frequency for both CPUs is a must!

## Installing CPU and Housing Fans

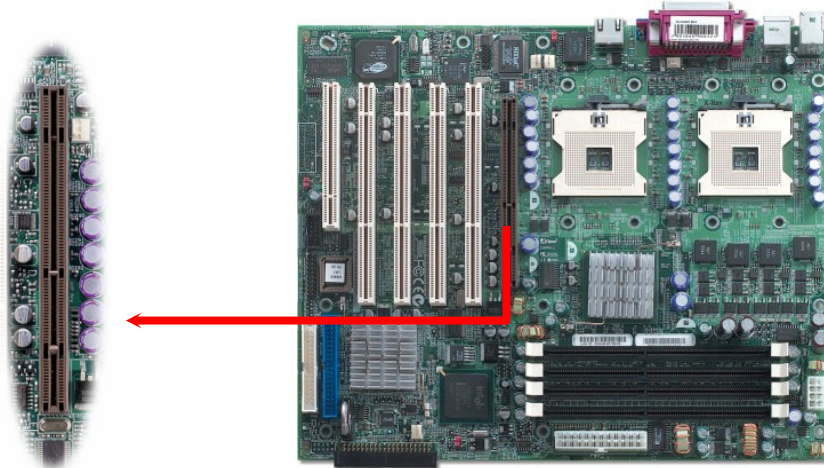
Plug in the CPU fan cable to the 3-pin CPU FAN connector and System Fan cable to the Chassis Fan connectors.



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

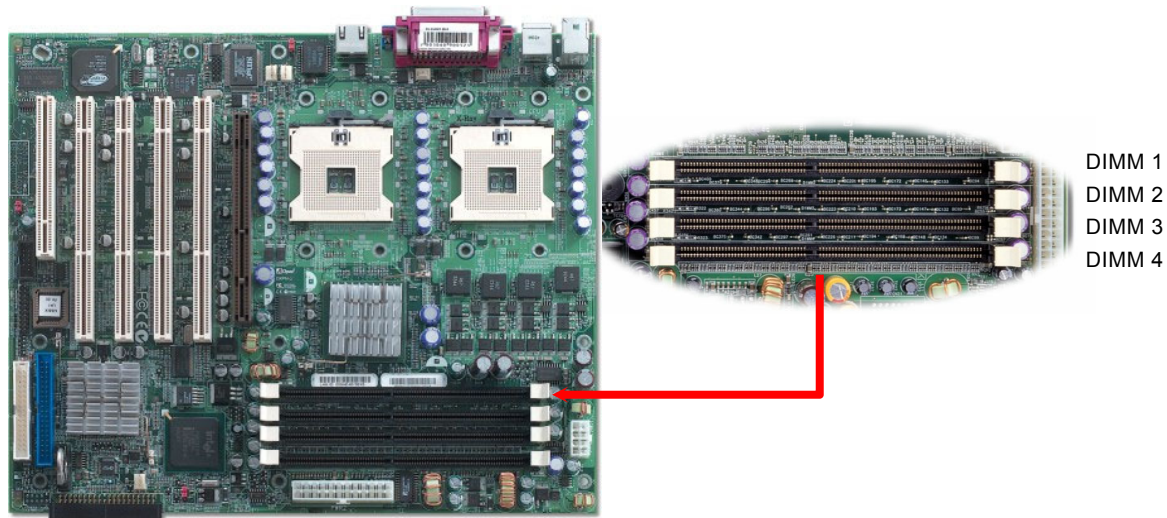
## **AGP 8x (Accelerated Graphic Port) Expansion Slot**

DXPN-U provides an AGP 8x slot. Accelerated Graphics Port (AGP) is a high-performance, component level interface targeted at 3D graphical display applications. Retaining backward compatibility with the older AGP 4x technology, AGP 8x doubles the graphics bandwidth of the AGP interface to 2.1 gigabytes per second (GB/s) which is designed to benefit applications on today's most popular workstation platforms.



## DIMM Sockets

This motherboard has four 184-pin DDR [DIMM](#) sockets that allow you to install [DDR200](#) or [DDR266](#) ECC memory up to 4GB. The unbuffer DDR RAM is supported.



DIMM 1  
DIMM 2  
DIMM 3  
DIMM 4

	DIMM1	DIMM2	DIMM3	DIMM4
Config1	V	V	N/A	N/A
Config2	N/A	N/A	V	V
<b>Config3</b>	V	V	V	V

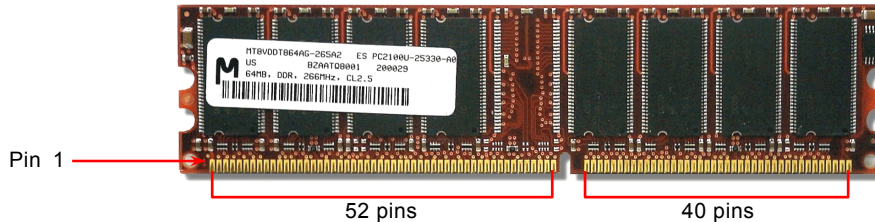
**Notes:**

1. 256MB, 512MB, 1GB ECC un-buffer DIMM alternative
2. Config1: It is for RAM installation.
3. Config2: Both DIMMs need to be with the same manufacture and capacity.
4. Config3: Each group or these two groups needs the same manufacture and capacity.
5. Single bank shall be put in DIMM1/2. Double bank shall be put in DIMM3/4 while installing them together.

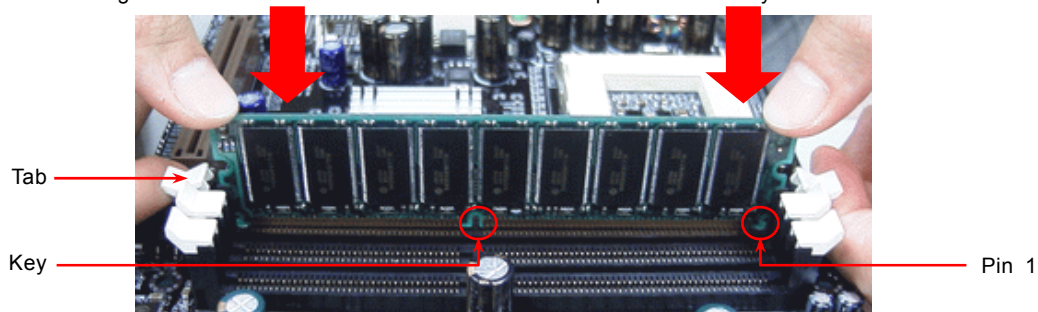
## How to Install Memory Modules

Please follow the procedure as shown below to finish memory installation.

1. Make sure the DIMM module's pin face down and match the socket's size as depicted below.



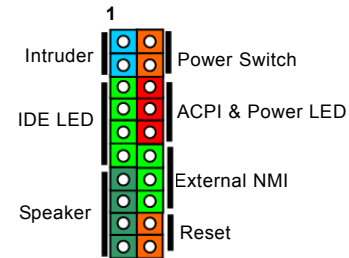
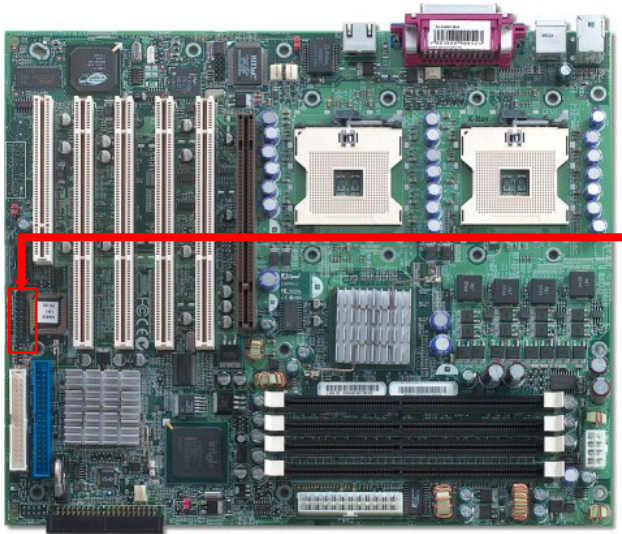
2. Insert the module straight down to the DIMM slot with both hands and press down firmly until the DIMM module is securely in place.



3. Repeat step 2 to finish additional DIMM modules installation.

## Multi Function Panel Connector

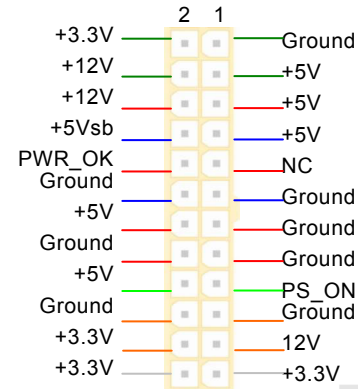
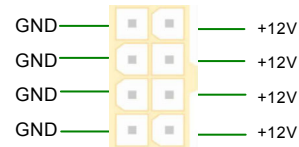
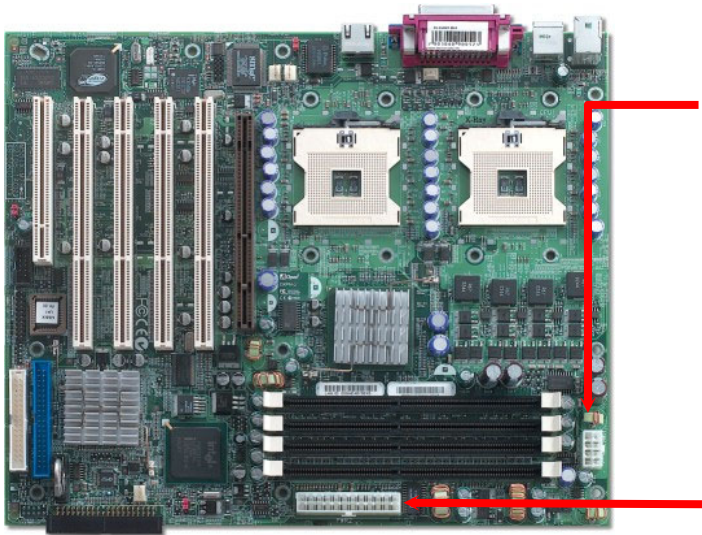
Attaching such as power switch, reset switch, HDD LED connector, etc to corresponding pins. Locate the power switch cable from your ATX housing. It is 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked **SPWR**.





## ATX Power Connector

This motherboard comes with a 24-pin and 8-pin ATX power connector. Make sure you plug in the right direction. We strongly recommend you to connect the 8-pin 12V ATX connector before connecting the 24-pin ATX power connector





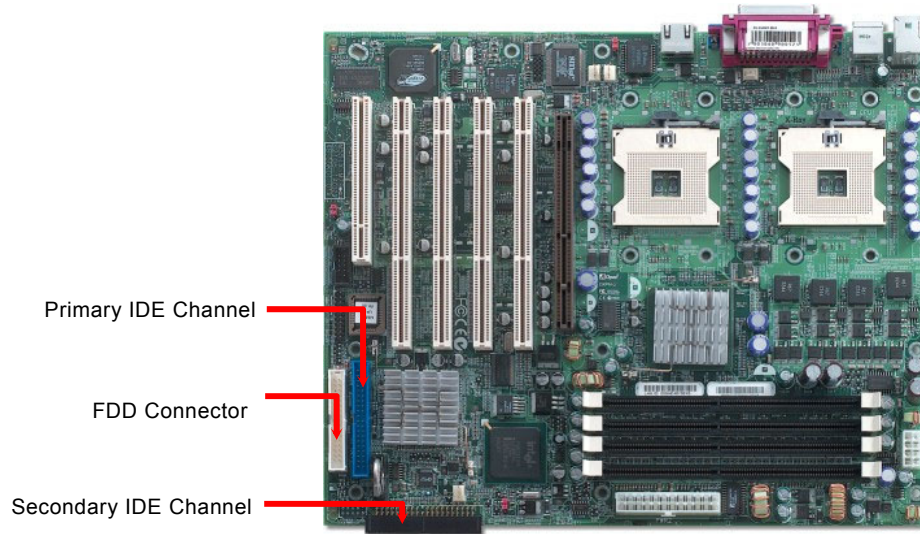
## ***AC Power Auto Recovery***

A traditional ATX system remains at power off stage when AC power resumes from power failure. This design is inconvenient for a network server or workstation without an UPS. This motherboard implements an AC Power Auto Recovery function to solve this problem.



## IDE and Floppy Connector

Connect 34-pin floppy cable and 40-pin IDE cable to floppy connector FDC and IDE connector. Pin1 of cable is normally marked with red color.



IDE1 is also known as the primary channel and IDE2 as the secondary channel. Each channel supports two IDE devices that make a total of four devices. In order to work together, the two devices on each channel must be set differently to **Master** and **Slave** mode. Either one can be the hard disk or the CDROM. The setting as master or slave mode depends on the jumper on your IDE device, so please refer to your hard disk and CDROM manual accordingly.



**Warning:** *The specification of the IDE cable is a maximum of 46cm (18 inches); make sure your cable does not exceed this length.*



**Tip:**

1. *For better signal quality, it is recommended to set the far end side device to master mode and follow the suggested sequence to install your new device. Please refer to above diagram*
2. *To achieve the best performance of Ultra DMA 66/100 hard disks, a special **80-wires IDE cable** for Ultra DMA 66/100 is required.*

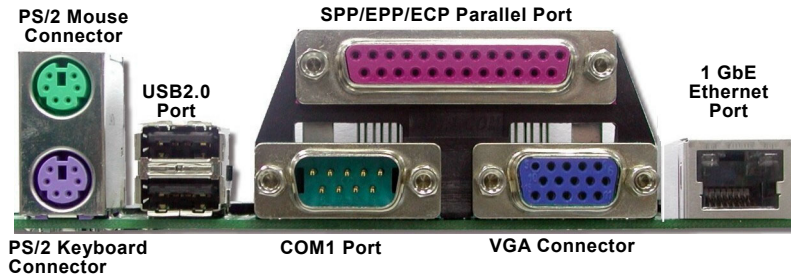
## ATA100 Supported

This motherboard supports [ATA66](#) or [ATA100](#) IDE devices. Following table lists the transfer rate of IDE PIO and DMA modes.

Mode	Clock Period	Clock Count	Cycle Time	Data Transfer Rate
PIO mode 0	30ns	20	600ns	$(1/600\text{ns}) \times 2\text{byte} = 3.3\text{MB/s}$
PIO mode 1	30ns	13	383ns	$(1/383\text{ns}) \times 2\text{byte} = 5.2\text{MB/s}$
PIO mode 2	30ns	8	240ns	$(1/240\text{ns}) \times 2\text{byte} = 8.3\text{MB/s}$
PIO mode 3	30ns	6	180ns	$(1/180\text{ns}) \times 2\text{byte} = 11.1\text{MB/s}$
PIO mode 4	30ns	4	120ns	$(1/120\text{ns}) \times 2\text{byte} = 16.6\text{MB/s}$
DMA mode 0	30ns	16	480ns	$(1/480\text{ns}) \times 2\text{byte} = 4.16\text{MB/s}$
DMA mode 1	30ns	5	150ns	$(1/150\text{ns}) \times 2\text{byte} = 13.3\text{MB/s}$
DMA mode 2	30ns	4	120ns	$(1/120\text{ns}) \times 2\text{byte} = 16.6\text{MB/s}$
DMA MODE3-4 (ATA 66)	30ns	2	60ns	$(1/60\text{ns}) \times 2\text{byte} \times 2 = 66\text{MB/s}$
DMA MODE5 (ATA 100)	20ns	2	40ns	$(1/40\text{ns}) \times 2\text{byte} \times 2 = 100\text{MB/s}$

## PC99 Color Coded Back Panel

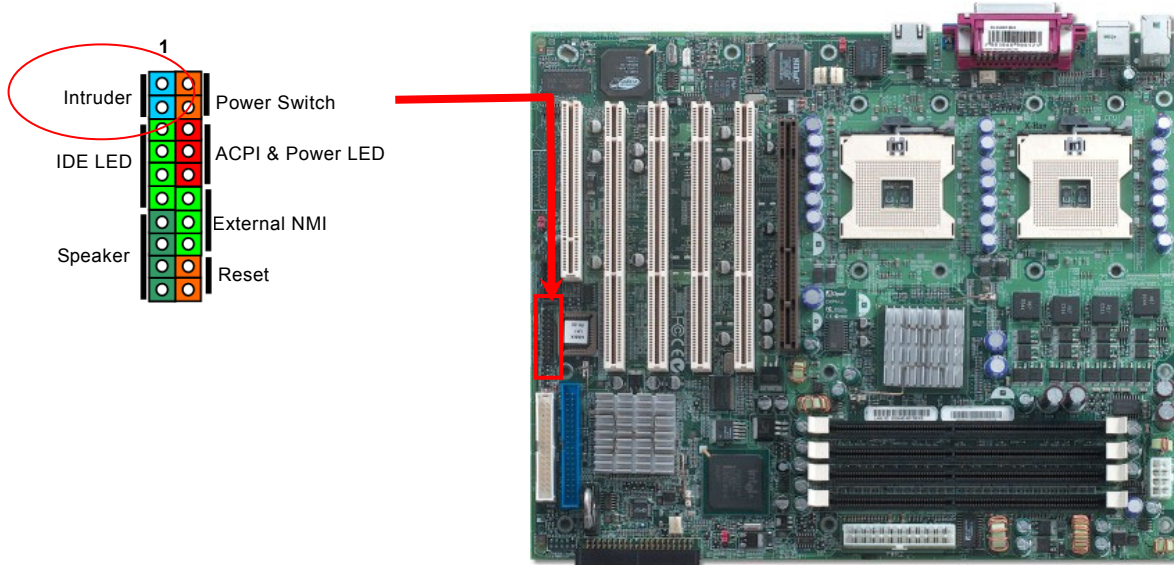
The onboard I/O devices are PS/2 Keyboard, PS/2 Mouse, COM1, VGA connector, Printer and USB2.0. The view angle of drawing shown here is from the back panel of the housing.



PS/2 Keyboard:	For standard keyboard, which is using a PS/2 plug.
PS/2 Mouse:	For PC-Mouse, which is using a PS/2 plug.
USB Port:	Available for connecting USB devices.
Parallel Port:	To connect with SPP/ECP/EPP printer.
COM1:	To connect with pointing devices, modem or others serial devices.
1GbE Ethernet Port:	To connect RJ-45 Ethernet Cable.
VGA Connector:	To connect monitor signal cable.

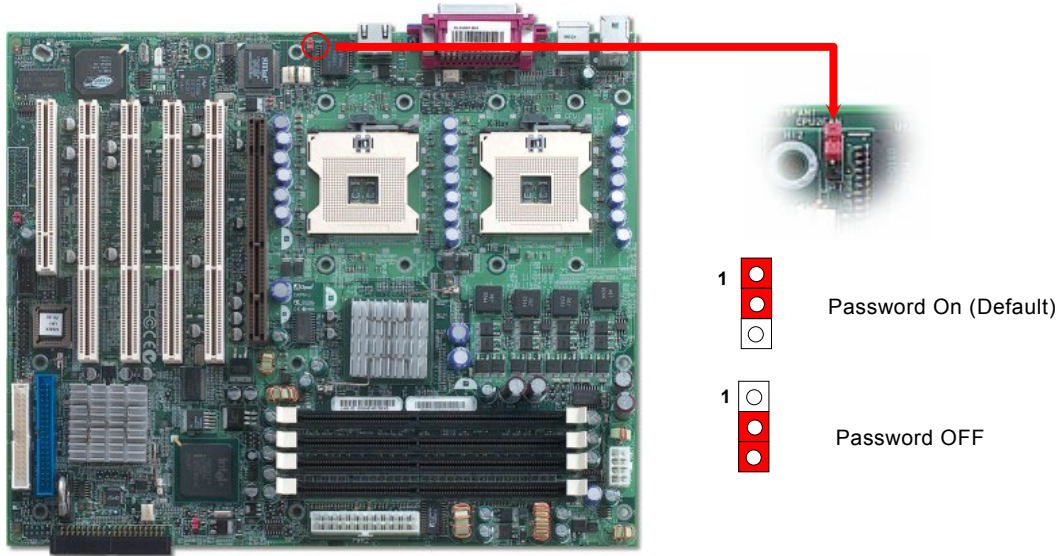
## Chassis Intrusion Sensor

The “CASE OPEN” header provides chassis intrusion-monitoring function. This function will log an event in the system BIOS when this header is connected. You can use the 2-pin chassis intrusion sensor to connect with this header, and enable the chassis monitoring function of system BIOS.



## **JP1 Check Password Jumper**

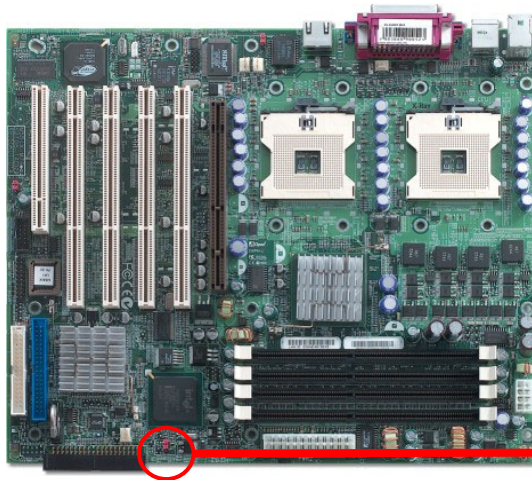
This motherboard provides check password function. You can use JP1 to enable or disable this function, which could prevent your system from unauthorized invasion. The factory default setting is set to "Enable"(1-2), and you may disable this function by setting the jumper to 2-3.



## JP3 Clear CMOS Jumper

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 JP3 and short pins 2-3 for a few seconds.
4. Return JP3 to its normal setting by shorting pin 1 & pin 2.
5. Connect ATX power cable back to connector PWR2.



Normal Operation  
(default)



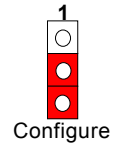
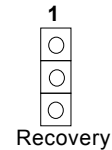
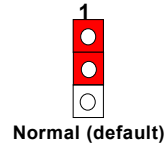
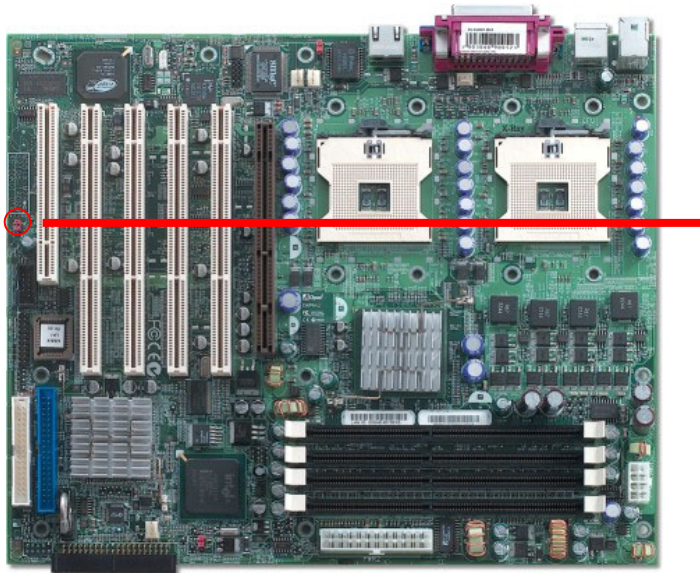
Clear CMOS





## **JP4 BIOS Configuration / Recovery Select Jumper**

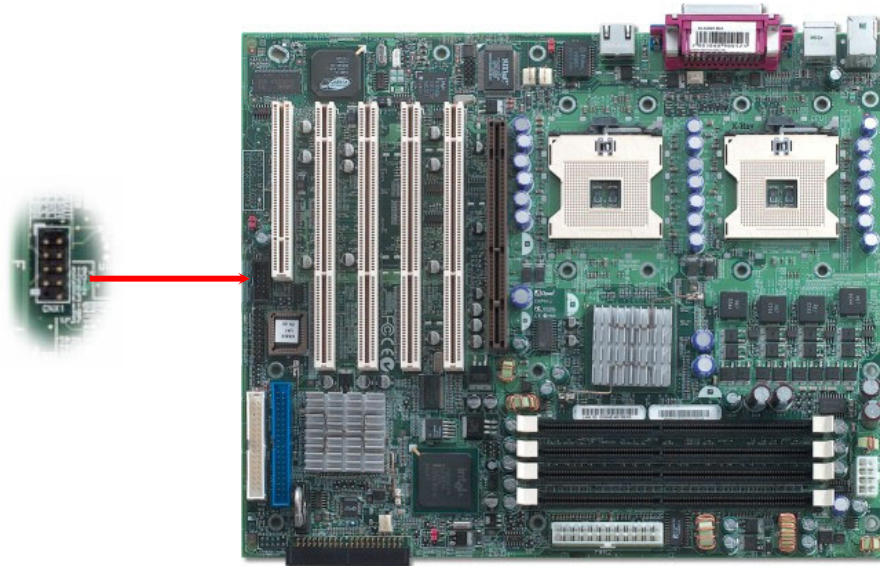
You can use JP4 to configure or recover your BIOS. The factory default setting is set to "Normal" (1-2), and you may configure your BIOS by setting the jumper to 2-3, and recover your BIOS by removing the jumper.



## Support Two USB2.0 Channels (Four Ports)

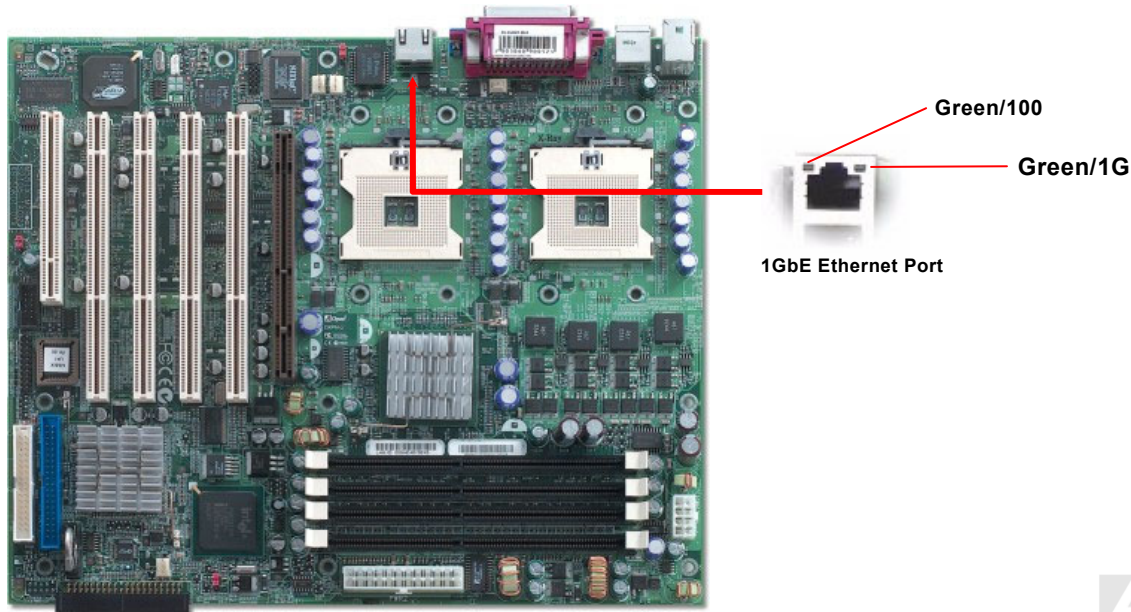
This motherboard provides two [USB](#) channels to link USB devices, such as mouse, keyboard, modem, printer, etc. There are two connectors on the PC99 back panel. You can use proper cable to connect other USB connectors to the back panel or front panel of chassis.

	1	2	
+5V			+5V
SBD2-			SBD3-
SBD2+			SBD3+
GND			GND
KEY			NC



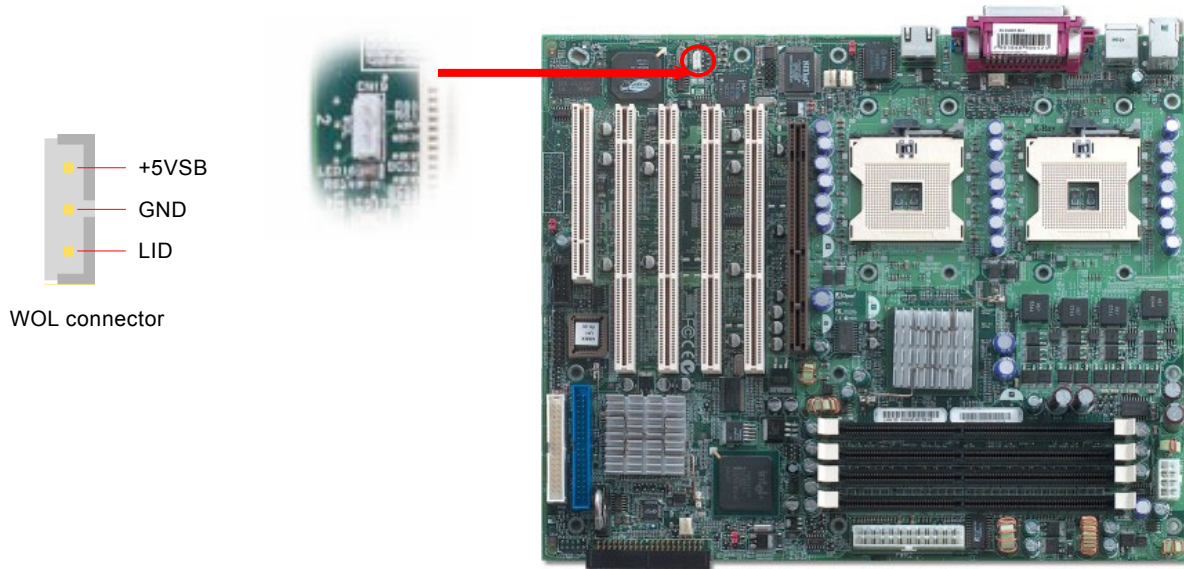
## Support 1Gbps LAN onboard

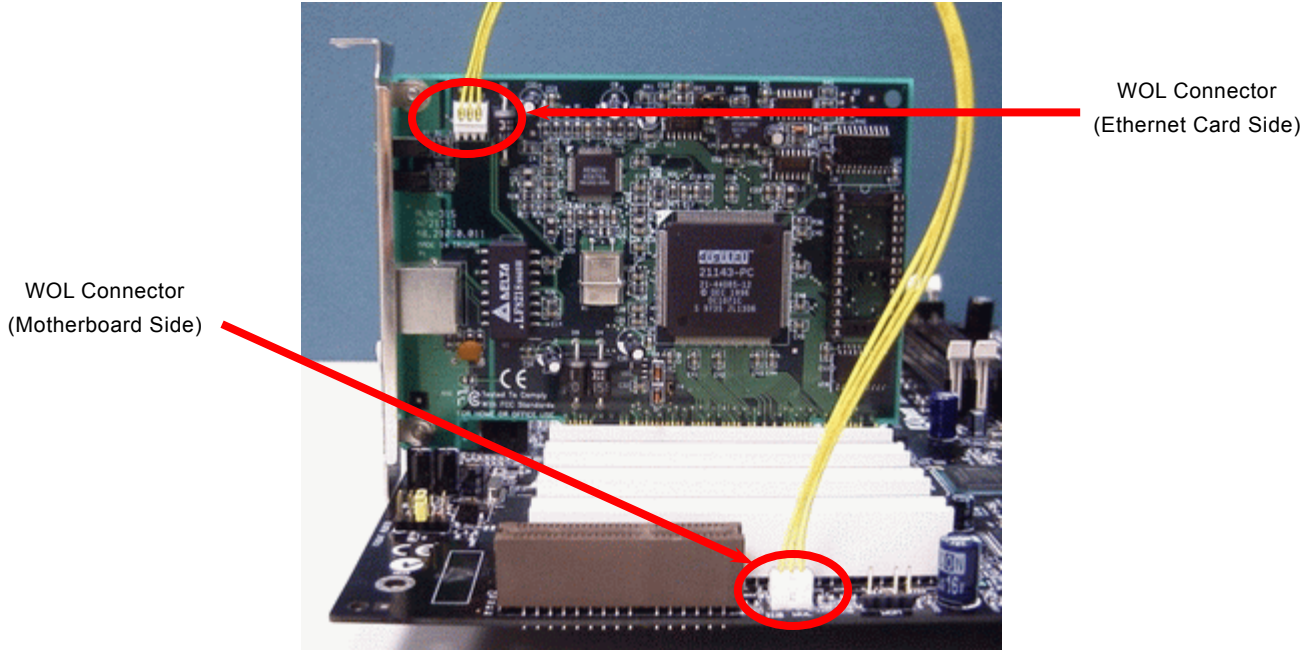
The Intel 82540 integrates Intel's fourth-generation Gigabit MAC design with fully integrated, physical-layer circuitry to provide a standard IEEE 802.3 Ethernet interface for 1000BASE-T and 100BASE-TX applications. The left green LED indicates the link mode, it lights when linking to network and blinking when transferring data in 100Mbps mode. The right green LED indicates the transfer mode, and it lights when data is transferring in 1Gbps mode.



## WOL (Wake on LAN)

To use Wake On LAN function, you must have a network card with chipset that supports this feature, and connect a cable from LAN card to motherboard WOL connector. The system identification information (probably IP address) is stored on network card and because there is a lot of traffic on the Ethernet, you need to install network management software, such as ADM, for the checking of how to wake up the system. Note that, at least 600mA ATX standby current is required to support the LAN card for this function.





Note: This picture is for example only; it may not exactly look the same with the motherboard you purchased.



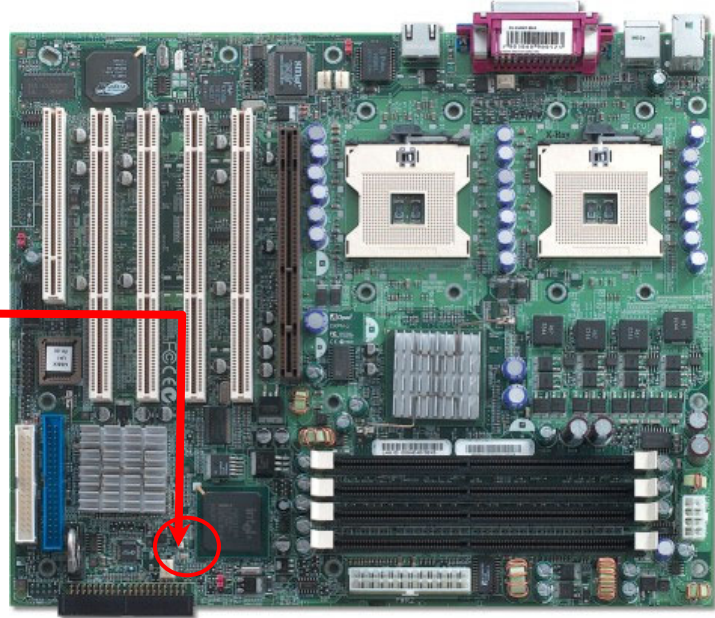
## STBY LED

STBY LED is AOpen's considerate designs that we aim at providing you friendly system information. The STBY LED will light up when power is provided to the motherboard. This is a convenient indication for you to check the system power status in many circumstances such as power on/off, stand-by mode and RAM power status.

STBY LED



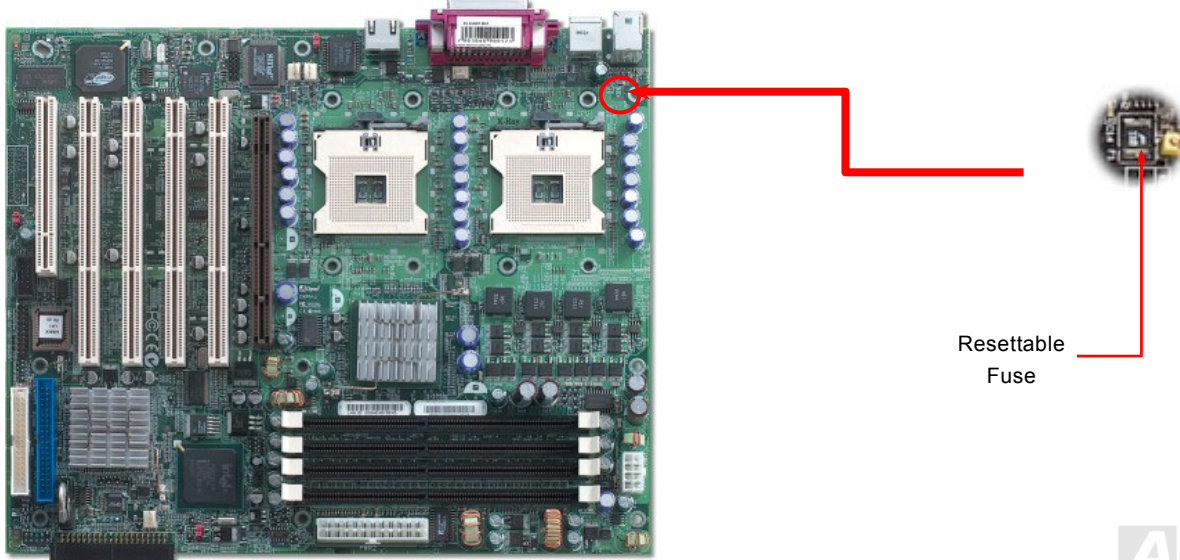
**Warning:** Do not install or remove the DIMM module or others devices when the STBY



## **Resettable Fuse**

Traditional motherboard uses fuses to prevent Keyboard and [USB](#) port from over-current or shortage. These fuses are soldered onboard that when it is broken (function to protect motherboard), user cannot replace them and result in malfunction of motherboard.

With expensive Resettable Fuse, the motherboard can be resumed back to normal function even after the fuse had done its protection job.

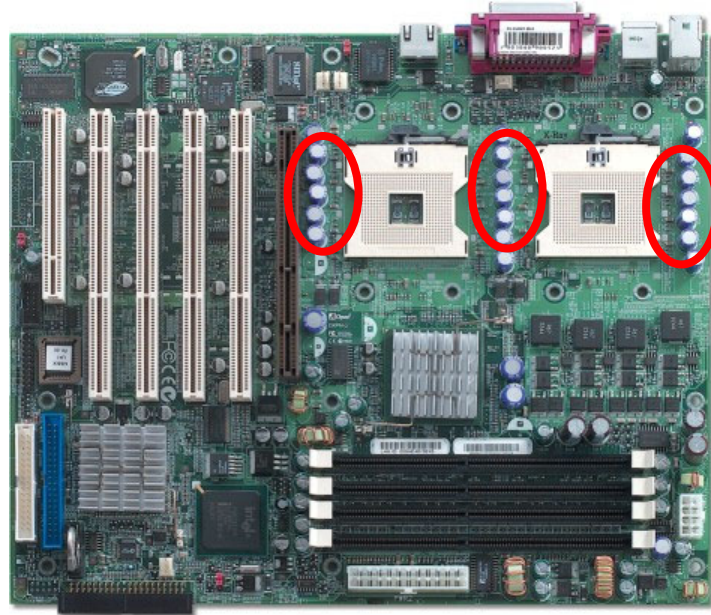


Resettable  
Fuse



## Low ESR Capacitor

The quality of low ESR capacitor (Low Equivalent Series Resistance) during high frequency operation is very important for stability of CPU power. The location of where to put these capacitors is another know-how that requires experience and detail calculation.





## **Driver and Utility**

There are motherboard drivers and utilities included in [AOpen Bonus CD](#). You don't need to install all of them in order to boot your system. But after you finish the hardware installation, you have to install your operation system first before you can install any drivers or utilities. Please refer to your operation system's installation guide.

# **BIOS Setup Utility**

Most of system had already configured by the manufacturer or the dealer. There is no need to run BIOS setup program when starting the computer unless you get a run setup program message.

The setup program loads configuration values into the battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.



**If you repeatedly receive Run Setup messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.**

The system will reboot immediately after you exit Setup.

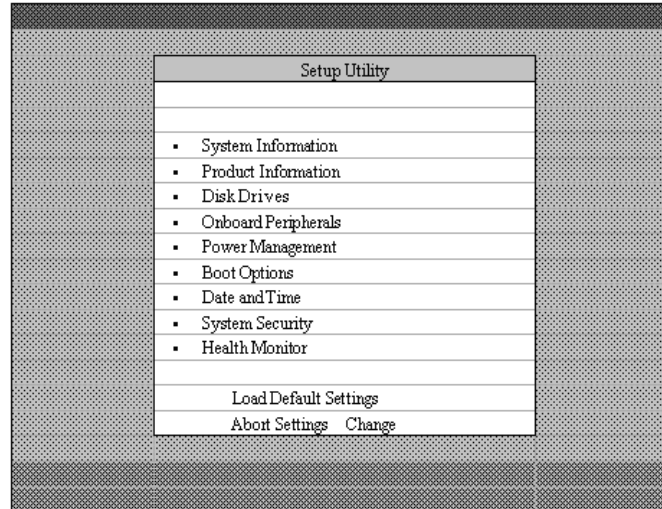
## ***Entering Setup***

To enter Setup, press the DELETE key.



**You must press DELETE while the system is booting. This key does not work during any other time.**

The Setup Utility Main Menu appears:



The system supports two BIOS Utility levels: Basic and Advanced.

If you are an advanced user, you may want to check the detailed configuration of your system.

Detailed system configurations are contained in the Advanced Level. To view the Advanced Level, press **F8**.







**The asterisk (\*) mark indicates that the parameter appears only when you are in the Advanced Level.**

**The parameters on the screens show default values.**

**These values may not be the same as those in your system.**

**The grayed items on the screens have fixed settings and are not user-configurable.**

Use the arrow keys  and  to move around the Setup Utility screen.

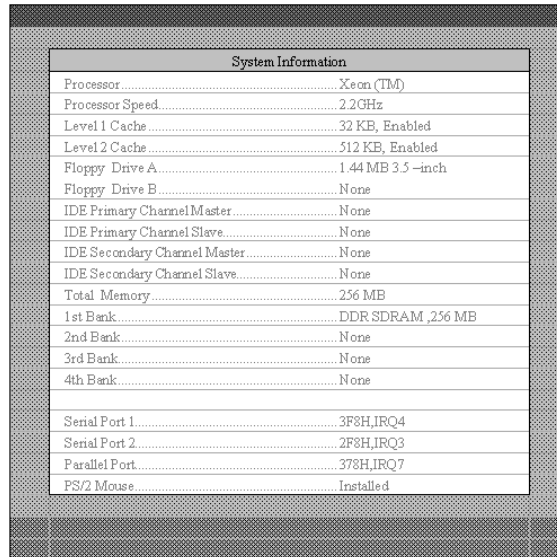
Use  to move to the next page or  to return to the previous page if the setup screen has more than one page available.

Use , , "+" or "-" to select the options if they are available.

Press  to return to the Main menu.

## System Information

The following screen appears if you select System Information from the Main menu:



System Information	
Processor.....	Xeon (TM)
Processor Speed.....	2.2GHz
Level 1 Cache.....	32 KB, Enabled
Level 2 Cache.....	512 KB, Enabled
Floppy Drive A.....	1.44 MB 3.5 -inch
Floppy Drive B.....	None
IDE Primary Channel Master.....	None
IDE Primary Channel Slave.....	None
IDE Secondary Channel Master.....	None
IDE Secondary Channel Slave.....	None
Total Memory.....	256 MB
1st Bank.....	DDR SDRAM, 256 MB
2nd Bank.....	None
3rd Bank.....	None
4th Bank.....	None
Serial Port 1.....	3F8H, IRQ4
Serial Port 2.....	2F8H, IRQ3
Parallel Port.....	378H, IRQ7
PS/2 Mouse.....	Installed

The System Information menu shows the current basic configuration of your system.

The sections below explain the parameters.

### **Processor**

The Processor parameter specifies the type of processor currently installed in your system. The system supports Intel Xeon™ 1.8 GHz above.

### **Processor Speed**

The Processor Speed parameter specifies the speed of the processor currently installed in your system.

### **Level 1 Cache**

This parameter specifies the first-level or the internal fast accessed memory (i.e., the memory integrated into the CPU) size, and whether it is enabled or disabled.

### **Level 2 Cache**

This parameter specifies the second-level cache memory size that comes with the CPU. The available cache size is 128 / 1024KB.

### **Floppy Drive A**

This parameter specifies the system's current diskette drive A settings.

### **Floppy Drive B**

This parameter specifies the system's current diskette drive B settings.

### **IDE Primary Channel Master**

This parameter specifies the current configuration of the IDE device connected to the master port of the primary IDE channel.

### **IDE Primary Channel Slave**

This parameter specifies the current configuration of the IDE device connected to the slave port of the primary IDE channel.

### **IDE Secondary Channel Master**

This parameter specifies the current configuration of the IDE device connected to the master port of the secondary IDE channel.



### IDE Secondary Channel Slave

This parameter specifies the current configuration of the IDE device connected to the slave port of the secondary IDE channel.

### Total Memory

This parameter specifies the total amount of onboard memory. The memory size is automatically detected by BIOS during the POST. If you install additional memory, the system automatically adjusts this parameter to display the new memory size. Intel strongly commented the user using double channel for DIMM plugged.

### 1st Bank/2nd Bank/3rd Bank/4th Bank

The 1st Bank, 2nd Bank, 3rd Bank, and 4th Bank parameters indicate the type and size of DRAM installed in DIMM sockets 1, 2, 3 and 4 respectively. The “None” setting indicates that there is no DRAM installed.

### 1<sup>st</sup>/2<sup>nd</sup>/3<sup>rd</sup> /4<sup>th</sup> Bank

Type and Size of DRAM installed in DIMM socket 1, 2, 3 and 4 respectively. The “None” setting indicates that there is no DRAM installed.

### **Serial Port 1**

This parameter shows the serial port 1 address and IRQ setting.

### **Serial Port 2**

This parameter shows the serial port 2 address and IRQ setting.

### **Parallel Port**

This parameter shows the parallel port address and IRQ setting.

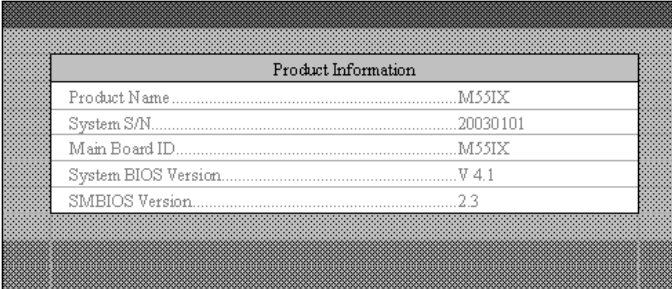
### **PS/2 Mouse**

The BIOS utility automatically detects if there is a pointing device connected to your system. If there is, this parameter displays the "**Installed**" setting. Otherwise, this is set to "**None**".

## Product Information

The Product Information contains the general data about the system, such as the product name, serial number, BIOS version, etc. This information is necessary for troubleshooting (may be required when asking for technical support).

The following shows how the Product Information screen appears:

A screenshot of a BIOS screen titled "Product Information". The screen displays a table with five rows of system data. The background of the BIOS screen is a dark, textured gray.

Product Information	
Product Name .....	M55IX
System S/N .....	20030101
Main Board ID .....	M55IX
System BIOS Version .....	V 4.1
SMBIOS Version .....	2.3

**Product Name**

This parameter specifies the official name of the system.

**System S/N**

This parameter specifies the system's serial number.

**Main Board ID**

This parameter specifies the motherboard's identification number.

**System BIOS Version**

This parameter specifies the version of the BIOS utility.

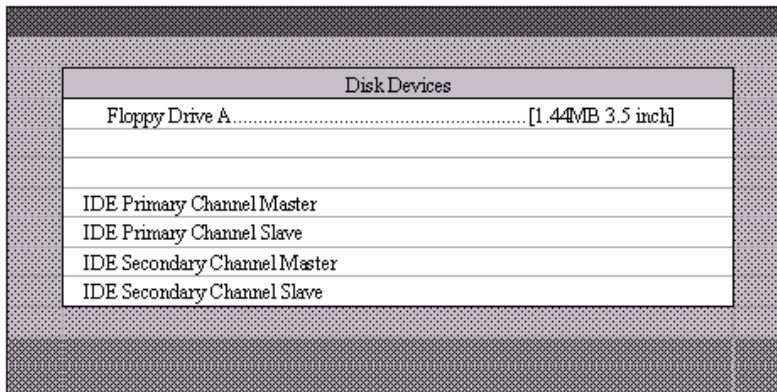
**SMBIOS Version**

This parameter specifies the version of the SMBIOS version.

## Disk Devices

Select Disk Drives to input configuration values for disk drives.

The following screen shows the Disk Drives menu:



## Floppy Drive A

To enter the configuration value for the first floppy drive, highlight the Floppy Drive A parameter. Press **PGUP** or **PGDN** key to view the options and select the appropriate value.

### **Drive A/Drive B**

None

360KB 5.25"

1.2MB 5.25"

720KB 3.5"

1.44MB 3.5"

2.88MB 3.5"

These items select the floppy drive type. The available settings and types supported by the motherboard are listed to the left.

Follow the same procedure to configure floppy drive B. Choose "**None**" if you do not have a second floppy drive.

## IDE Drives

To configure the IDE drives connected to your system, select the parameter that represents the channel and port where the desired hard disk to configure is connected. The options are:

### IDE Primary Channel Master

This option lets you configure the hard disk drive connected to the master port of IDE channel 1.

IDE Primary Channel Master	
Device Detection Mode .....	[Auto]
Device Type .....	None
Cylinder .....	[ 0]
Head .....	[ 0]
Sector .....	[ 0]
Size .....	[ 0] M.B.
Hard Disk LBA Mode .....	[Auto]

**IDE Primary Channel Slave**

This option lets you configure the hard disk drive connected to the slave port of IDE channel 1.

IDE Primary Channel Slave	
Device Detection Mode.....	[Auto]
Device Type.....	None
Cylinder.....	[ 0]
Head.....	[ 0]
Sector.....	[ 0]
Size .....	[ 0] MB.
Hard Disk LBA Mode .....	[Auto]



**IDE Secondary Channel Master**

This option lets you configure the hard disk drive connected to the Master port of IDE channel 2.

IDE Secondary Channel Master	
Device Detection Mode.....	[Auto]
Device Type.....	None
Cylinder.....	[ 0]
Head.....	[ 0]
Sector.....	[ 0]
Size.....	[ 0] M.B.
Hard Disk LBAMode .....	[Auto]

**IDE Secondary Channel Slave**

This option lets you configure the hard disk drive connected to the Slave port of IDE channel 2.

IDE Secondary Channel Slave	
Device Detection Mode.....	[ Auto]
Device Type.....	None
Cylinder.....	[ 0]
Head.....	[ 0]
Sector.....	[ 0]
Size.....	[ 0] M.B.
Hard Disk LBAMode.....	[ Auto]

The following screen appears if you select any of the IDE Drive parameters:

### Device Detection Mode

<u>Device Detection</u>
-------------------------

<u>Mode</u>
-------------

Auto (Default)
----------------

User
------

None
------

If you select "Manual", you need to fill in all remaining field, such as Cylinder, Head, and Sector on this selected item. If the item "Auto" is selected, the items will remain "0". And when the system boot up, system will detect the hard disk and configure it automatically. "None" means there is no device in the channel.

### Device Type

This parameter shows which type of IDE drive currently used.

### Cylinder

This parameter specifies the number of cylinders of your hard disk, and is automatically set depending on your Type parameter setting.

## Head

This parameter specifies the number of heads of your hard disk, and is automatically set depending on your Type parameter setting.

## Sector

This parameter specifies the number of sectors of your hard disk, and is automatically set depending on your Type parameter setting.

## Size

This parameter specifies the size of your hard disk, in MB.

## Hard Disk LBA Mode

<b><u>Hard Disk Block Mode</u></b>
------------------------------------

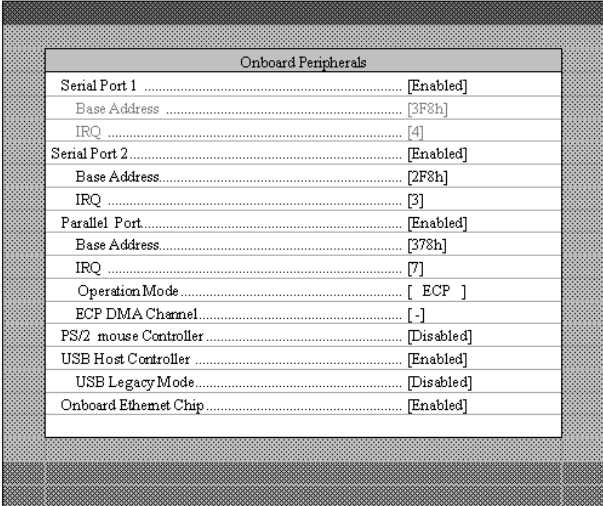
Auto (Default)
----------------

Disabled
----------

This function enhances disk performance depending on the hard disk in use. If you set this parameter to **“Auto”**, the BIOS utility automatically detects if the installed hard disk drive supports the Block Mode function. If supported, it allows data transfer in blocks (multiple sectors) at a rate of 256 bytes per cycle. To disregard the feature, change the setting to **“Disable”**.

## Onboard Peripherals

The Onboard Peripherals Configuration allows you to configure the onboard communication ports and the onboard devices. Selecting this option displays the following screen:



Onboard Peripherals	
Serial Port 1 .....	[Enabled]
Base Address .....	[3F8h]
IRQ .....	[4]
Serial Port 2 .....	[Enabled]
Base Address.....	[2F8h]
IRQ .....	[3]
Parallel Port.....	[Enabled]
Base Address.....	[378h]
IRQ .....	[7]
Operation Mode.....	[ ECP ]
ECP DMA Channel.....	[ - ]
PS/2 mouse Controller.....	[Disabled]
USB Host Controller .....	[Enabled]
USB Legacy Mode.....	[Disabled]
Onboard Ethernet Chip.....	[Enabled]

## Serial Ports 1 and 2

### Serial Port 1 & 2

Enabled (Default)

Disabled

These parameters allow you to enable or disable serial ports 1 and 2.

### Base Address

#### Base Address

Serial Port 1:

3F8h (Default)

3E8h

2E8h

Serial Port 2:

2F8h (Default)

2E8h

3E8h

This item allows you to assign address and interrupt for the board serial port.

## IRQ

**IRQ**

Serial Port 1:

4 (Default), 11

Serial Port 2:

3 (Default), 10

This function lets you assign an interrupt for serial ports 1 and 2. The options for serial ports 1 are IRQ 4 and 11. The options for serial port 2 are IRQ 3 and 10.



The Base Address and IRQ parameters for each port are configurable only if the port is enabled.

**Parallel Port****Parallel Port**

Enabled (Default)

Disabled

This parameter allows you to enable or disable the parallel port.

## Base Address

**Base Address**

378h (Default)

3BCh

278h

This item allows you to assign address and interrupt for the board serial port.

## IRQ

**IRQ**

7 (Default), 5

This function lets you assign an interrupt for the parallel port. The options are IRQ 5 and 7.



The Base Address and IRQ parameters are configurable only if Parallel Port is enabled.

If you install an add-on card that has a parallel port whose address conflicts with the onboard parallel port, a warning appears on the screen.

Check the parallel port address of the add-on card and change



the address to one that does not conflict.

#### Operation Mode

##### **Operation Mode**

EPP (Default)

Bi-Directional

Standard

ECP

This item lets you set the parallel port mode. The mode options are Standard, Bi-directional, EPP (Enhanced Parallel Port) and ECP (Extended Parallel Port).

Setting	Function
Standard Parallel Port (Standard)	Allows normal speed one-way operation
Bi-directional Parallel Port (Bi-directional)	Allows normal speed operation in a two-way mode
Enhanced Parallel Port (EPP)	Allows bi-directional parallel port operation at maximum speed

Setting	Function
Extended Capabilities Port (ECP)	Allows parallel port to operate in bi-directional mode and at a speed higher than the maximum data transfer rate

## ECP DMA Channel

**ECP Mode Use DMA**

3

1 (Default)

This item becomes active only if you select Extended Capabilities Port (ECP) as the operation mode. It allows you to assign DMA channel 1 or DMA channel 3 for the ECP parallel port function (as required in Windows 95).

## PS/2 Mouse Controller

**PS/2 Mouse Controller**

Enabled (Default)

Disabled

This parameter enables or disables the onboard PS/2 mouse controller.

## USB Host Controller

**USB Host  
Controller**

Enabled (Default)

Disabled

This parameter lets you enable or disable the USB controller on board. When enabled, it activates the USB function of the system. When disabled, it deactivates the function.

## USB Legacy Mode

**USB Legacy Mode**

Enabled

Disabled (Default)

This parameter lets you enable or disable the USB controller on board. When enabled, it activates the USB function of the system. When disabled, it deactivates the function.

## Onboard Ethernet Chip

**On-board  
Ethernet Chip**

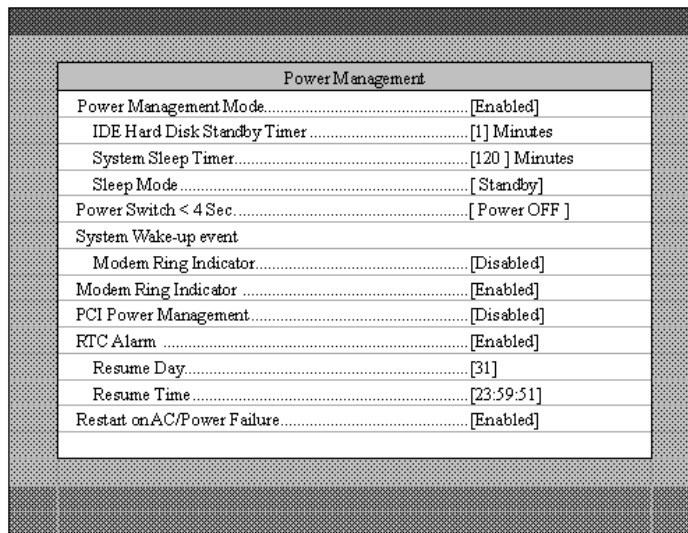
Enabled (Default)

Disabled

This parameter allows you to enable or disable the onboard network feature.

## Power Management

The Power Management menu allows you to configure the system power-management feature. The following screen shows the Power Management parameters and their default settings:



Power Management	
Power Management Mode.....	[Enabled]
IDE Hard Disk Standby Timer .....	[1] Minutes
System Sleep Timer.....	[120 ] Minutes
Sleep Mode.....	[ Standby]
Power Switch < 4 Sec.....	[ Power OFF ]
System Wake-up event	
Modem Ring Indicator.....	[Disabled]
Modem Ring Indicator .....	[Enabled]
PCI Power Management.....	[Disabled]
RTC Alarm .....	[Enabled]
Resume Day.....	[31]
Resume Time .....	[23:59:51]
Restart onAC/Power Failure.....	[Enabled]



A parameter with an asterisk (\*) mark indicates that the parameter appears only when you are using in the **Advanced Level**. See “**Entering Setup**” on Page

### Power Management Mode

**Power  
Management  
Mode**

Enabled (Default)

Disabled

This parameter allows you to reduce power consumption. When this parameter is set to “**Enabled**”, you can configure the IDE hard disk and system timers. Setting it to “**Disabled**” deactivates the power-management feature and its timers.

**IDE Hard Disk Standby Timer****IDE Hard Disk  
Standby Timer**

Off (Default)

1 to 15min

This parameter allows the hard disk to enter standby mode after inactivity of **1 to 15** minutes, depending on your setting. When you access the hard disk again, allow 3 to 5 seconds (depending on the hard disk) for the disk to return to normal speed. Set this parameter to **"Off"** if your hard disk does not support this function.

**System Sleep Timer****System Sleep  
Timer**

Off (Default)

120, 110, 100...20,  
15, 10, 5, 2min

This parameter sets the system to the lowest power-saving mode after a specified period of inactivity. Any keyboard or mouse action or any activity detected from the IRQ channels resumes system operation.

**Sleep Mode****Sleep Mode**

Standby

Suspend (Default)

This parameter lets you specify the power-saving mode that the system will enter after a specified period of inactivity. The options are "**Standby**" and "**Suspend**" modes. This parameter becomes configurable only if the System Sleep Timer is enabled. Any keyboard or mouse action, or any enabled monitored activities occurring through the IRQ channels resume system operation.

**Power Switch < 4 sec.****Power Switch < 4  
Sec.**

Suspend

Power Off (Default)

When set to "**Power Off**", the system automatically turns off when the power switch is pressed for less than 4 seconds. When set to "**Suspend**", the system enters the suspend mode when pressed for less than 4 seconds.

## System Wake-up Event

The system wake-up event allows the system to resume operation when the modem ring indicator is enabled.

### Modem Ring Indicator

**Modem Ring  
Indicator**

Enabled (Default)

Disabled

When "**Enabled**" any fax/modem activity wakes up the system from suspend mode. The default setting is "**Enabled**".

### PCI Power Management

**PCI Power  
Management**

Enabled (Default)

Disabled

This item allows you to enable or disable the PCI power management function.



**RTC Alarm****RTC Alarm**

Enabled

Disabled (Default)

This item allows you to set a certain time on a certain day to wake-up the system from suspend mode.

**Resume Day****Resume Day**

1 to 31

This item is displayed when you enable the “**RTC Timer**” option. Here you can specify what date you want to wake up the system. For example, setting to 15, the system will wake up on the 15<sup>th</sup> day of every month.

**Resume Time****Resume Time**

Hh:mm:ss

This item is displayed when you enable the RTC Wake Up Timer option. Here you can specify what time you want to wake up the system.

**Restart On AC/Power Failure****Restart On**  
**AC/Power Failure**

Enabled (Default)

Disabled

Pre-State

When “**Enabled**”, the system automatically turns on when the power comes back. When “**Disabled**” the system turns off and does not turn on when the power comes back. When set to “**Pre-State**”, the system maintains the last power state when the power comes back.

## Boot Options

This option allows you to specify your preferred setting for boot up.

The following screen appears if you select Boot Options from the Basic Configuration menu:

Boot Options	
Boot Sequence	
1st [Floppy Disk A:]	
2nd [IDE CD ROM ]	
3rd [Hard Disk C: ]	
Primary Display Adapter .....	[Auto]
Hyper-Threading Technology.....	[Enable]
Fast Boot.....	[Auto]
Silent Boot.....	[Enabled]
Num Lock After Boot.....	[Enabled]
Memory Test.....	[Disabled]
Boot From LAB Desk (R) Service Agent.....	[Enabled]

## Boot Sequence

This parameter allows you to specify the boot search sequence during POST.

- 1<sup>st</sup>. The system checks this drive first.
- 2<sup>nd</sup>. The system then checks this drive if it can not boot from the 1<sup>st</sup> specified drive.
- 3<sup>rd</sup>. If the 1<sup>st</sup> and 2<sup>nd</sup> searches fail then it boots from this drive.
- 4<sup>th</sup>. If the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> searches fail then it boots from this drive.

BIOS will display an error message if the drive(s) specified is not bootable.

## Hyper-Threading Technology

### Hyper-Threading Technology

Enable (Default)

Disabled

This parameter allows the system to use hyper-threading technology.

## Fast Boot

### Fast Boot

Auto (Default)

Disabled

This parameter allows the system to boot faster by skipping some POST routines.

## Silent Boot

### Silent Boot

Enabled (Default)

Disabled

This parameter enables or disables the Silent Boot function. When set to "**Enabled**", BIOS is in graphical mode and displays only an identification logo during POST and while booting. After booting the screen displays the operating system prompt (such as DOS) or logo (such as Windows 95). If any error occurs while booting, the system automatically switches to the text mode.

Even if your setting is "**Enabled**", you may also switch to the text mode while booting by pressing  when you see the "**Press DELETE key to enter setup**" message on the screen.

When set to "**Disabled**", BIOS is in the conventional text mode where you see the system initialization details on the screen.

### Num Lock After Boot

**Num Lock After  
Boot**

Enabled (Default)  
Disabled

This parameter allows you to activate the Num Lock function upon booting.

### Memory Test

**Memory Test**

Enabled  
Disabled (Default)

When set to "**Enabled**", this parameter allows the system to perform a RAM test during the POST routine. When set to "**Disabled**", the system detects only the memory size and bypasses the test routine.

### Boot From LAN Desk (R) Service Agent

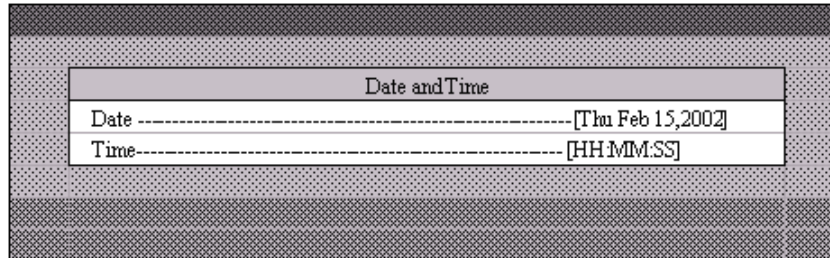
**Boot From LAN  
Desk(R) Service  
Agent**

Enabled  
Disabled (Default)

When set to "**Enabled**", this parameter allows system to boot from LAN Desk (R) Service Agent.

## Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you do not need to enter them every time you turn on the system. As long as the internal battery remains good (approximately seven years) and connected, the clock continues to keep the date and time accurately even when the power is off.



### Date

#### Date

ww:mm:dd:yy

Highlight the items on the Date parameter and press **[PGUP]** or **[PGDN]** to set the date following the weekday-month-day-year format.

Valid values for weekday, month, day, and year are:

- Weekday: Sun, Mon, Tue, Wed, Thu, Fri, Sat
- Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
- Day: 1 to 31
- Year: 1980 to 2079

## Time

### Time

hh:mm:ss

Highlight the items on the Time parameter and press **PGUP** or **PGDN** to set the time following the hour-minute-second format.

Valid values for hour, minute, and second are:

- Hour 00 to 23
- Minute 00 to 59
- Second 00 to 59



## System Security

The Setup program has a number of security features to prevent unauthorized access to the system and its data.

The following screen appears if you select System Security from the Main menu:

System Security	
Supervisor Password.....	[None]
User Password.....	[- - - -]
Password on Boot.....	[- - - - -]
Disk Drive Controller	
Floppy Drive.....	[Normal]
Hard Disk Drive.....	[Normal]

## Supervisor Password

**Supervisor**  
**Password**

None (Default)

Present

This item can prevent unauthorized access to the BIOS utility. The "**Present**" setting allows you to set a setup password.

1. Enable the Supervisor Password parameter in the System Security menu by pressing the ENTER key. The Supervisor Password windows will appear as shown above.
2. Type a password. The password may consist of up to seven characters.



Be very careful when typing your password because the actual characters do not appear on the screen.

3. Press the ENTER key. Re-type the password to verify your first entry then press ENTER key again.
4. Highlight the "**Set or change password**" option and press ENTER key.
5. Press the ESC key to return the System Security screen.
6. Press the ESC key to exit setup. The Exit Setup screen will appear.

7. Choose **"Yes"** to save your setting and exit Setup. Your password will be saved to CMOS.
8. If you want to remove the password, please select **"Disabled"** to disable this function.

### User Password

<u>User Password</u>
None (Default)
Present

This item can secure your system against unauthorized use. Once you set this password, you have to type it whenever you boot the system. This item is available when only Supervisor Password is set.

### Disk Drive Controller

The disk drive control features allow you to control the floppy drive or the hard disk drive boot function to prevent loading operating systems or other programs from a certain drive while the other drives are operational (under DOS mode only).

The table below lists the drive control settings and their corresponding functions.

Floppy Drive	
Setting	Description
Normal	Floppy drive functions normally

Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector
Hard Disk Drive	
Setting	Description
Normal	Hard disk drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector

## Health Monitor Status

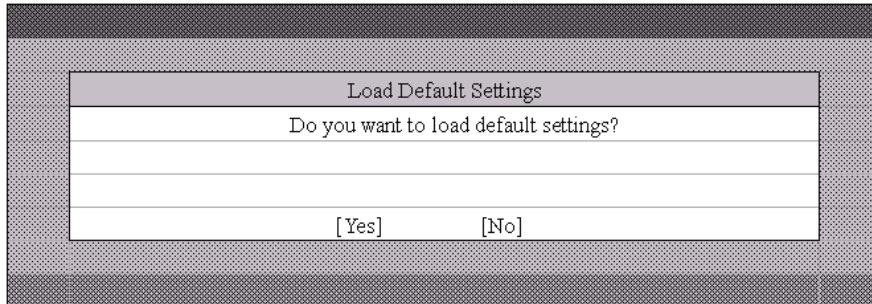
As you turn on your system, the health monitor status will continue to monitor your system's working voltage, fan status and CPU temperature. Selecting the option displays the following screen:

Health Monitor	
• View Events	
• Health Monitor Status	
Event Logging .....	[Enabled]
Temperature/Voltage/Fan .....	[Enabled]
Memory ECC .....	[Enabled]
Clear Event Log .....	[Disabled]
Total Event Log Number .....	1
Remain of Event log Area .....	98%
Post Event Action	
Power off if CPU Fan Fail .....	[Disabled]
Power off if CPU Temperature too High .....	[Enabled]
Fan Monitor	
1st CPU Fan .....	[Enabled]
2nd CPU Fan .....	[Enabled]
1st System Fan .....	[Enabled]
2nd System Fan .....	[Enabled]

## Load Default Settings

Use this option to load the default settings for the optimized system configuration. When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed parameters are not user-configurable.

The following dialog box appears when you select Load Default Settings from the main menu:



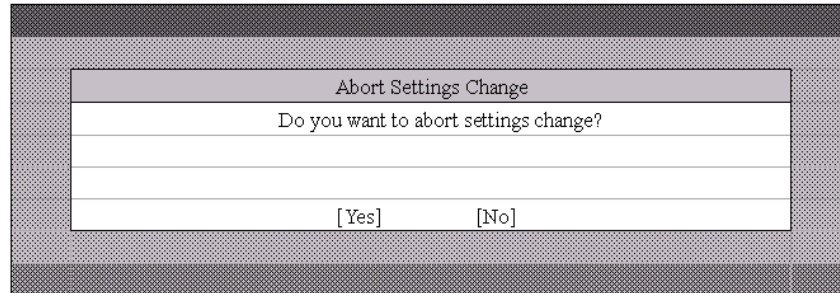
Select **"Yes"** to load the default settings.

Select **"No"** to ignore the message and return to the BIOS utility.

## Abort Settings Change

Use this option to disregard your changes to the BIOS and reload your previous settings.

The following dialog box appears when you select Abort Settings Change from the main menu:



Select **"Yes"** to disregard your changes and reload your previous settings. After reload, the main menu appears on screen.

Select **"No"** to ignore the message and return to the BIOS utility.

# Glossary

## **AC97 CODEC**

Basically, AC97 CODEC is the standard structure of PCI sound card. As we know, computer is digital-based, but music is based on analog-based. Therefore, there must be a process to turn digital into analog during the last stage processing of sound in computer. Hence, the component on sound card that play this important task is what we called CODEC.

Audio CODEC 97 (briefly called AC97) is the specification regulated by Intel, and it's about the structure of audio conversion. The special place about CODEC is that it is separated from sound card (CODEC is an independent chipset). Therefore, PCI sound card could possess with 90db and do other application process as well. We called CODEC that meets this structure AC97 CODEC.

## **ACPI (Advanced Configuration & Power Interface)**

ACPI is the power management specification of PC97 (1997). It intends to save more power by taking full control of power management to operating system and bypass [BIOS](#). The chipset or super I/O chip needs to provide standard register interface to operating system (such as Windows 98). This is a bit similar as the [PnP](#) register interface. ACPI defines ATX momentary soft power switch to control the power state transition.

## **ACR (Advanced Communication Riser)**

Building on the PC motherboard riser architecture, ACR slot is backward compatible with AMR but beyond the limitation of it. The ACR specification is designed to support modem, audio, Local Area Network (LAN) and Digital Subscriber Line (DSL).



**AGP (Accelerated Graphic Port)**

The main function of AGP simply put is to tell monitor what screen information had to be shown, a visual transmission device actually. With the rapid developing of AGP card, we can see that it had been developed from single colorful AGP card to 2D and 3D graphic. AGP supports only memory read/write operation and single-master single-slave one-to-one only. Though AGP and PCI share the same algorithm of 32-bit, its frequencies are 66MHz and 33MHz respectively. AGP interface had been developed from 2X to 8x.

1X AGP, data transfer rate is  $66\text{MHz} \times 4\text{byte} \times 1 = 264\text{MB/s}$

2X AGP, data transfer rate is  $66\text{MHz} \times 4\text{byte} \times 2 = 528\text{MB/s}$

4X AGP, data transfer rate is  $66\text{MHz} \times 4\text{byte} \times 4 = 1056\text{MB/s}$ .

8X AGP, data transfer rate is  $66\text{MHz} \times 4\text{byte} \times 8 = 2112\text{MB/s}$ .

**AMR (Audio/Modem Riser)**

The CODEC circuit of AC97 sound/modem solution can be put on motherboard or put on a riser card (AMR card) that connects to motherboard through AMR connector.

**ATA (AT Attachment)**

Before talking about ATA (AT Attachment), we must understand **DMA** (Direct Memory Access), which allows devices to skip the CPU devices and access memory directly. DMA specification could not only eliminate the workload of CPU, but also accelerate the transmission of data. DMA begins with a data transfer rate of 16.6MB/Sec, but afterward developed to new data rate of 33.3MB/Sec, which is twice the data rate and we called it **Ultra DMA**. **ATA** details power and data signals between the drive

and integrated drive controller and the computer's motherboard. Two drives (master and slave) are supported. The ATA specification allows the drive to connect directly to the ISA bus on the computer. ATA transfer rate then had been developed to 133MHz/Sec and would come out with fastest rate later (please refer to [Serial ATA](#)).

**DMA**, data transfer rate is 16.6MHz/s.

**Ultra DMA**, data transfer rate is  $16.6\text{MHz} \times 2 = 33\text{MB/s}$ .

**ATA/66**, data transfer rate is  $16.6\text{MHz} \times 4 = 66\text{MB/s}$ .

**ATA/100**, data transfer rate is  $16.6\text{MHz} \times 6 = 100\text{MB/s}$ .

**ATA/133**, data transfer rate is  $16.6\text{MHz} \times 8 = 133\text{MB/s}$ .

(ATA/133 uses both rising edge and falling edge as ATA/66 but clock cycle time is reduced to 30ns.)

### **BIOS (Basic Input/Output System)**

BIOS, is a set of assembly routine/program that reside in [EPROM](#) or [Flash ROM](#). BIOS controls Input/output devices and other hardware devices of motherboard. In general, to provide hardware independent portability, operation system and drivers is required to access BIOS without directly access hardware devices.

### **Bluetooth**

Bluetooth is a wireless transferring technology that enables short-range wireless connections between desktop and laptop computers, personal digital assistants (PDAs), cellular phones, printers, scanners, digital cameras and even home appliances. The principle of Bluetooth (a chipset) is to transfer information and voices at the frequency of ISM Band. Every Bluetooth technology devices do come with a standard address for you to connect one-to-one or one-to-seven (to form a Pico-net), with transferring range up to 10 meters (100 meters to follow), using low power radio. Bluetooth do not only possess

high transfer rate of 1MB/s, it also could be encrypted with pin code. With hopping rate of 1600 hops per second, it's difficult to be intercepted and are less interrupted by electromagnetic wave.

### **CNR (Communication and Networking Riser)**

The CNR specification provides the PC industry the opportunity to deliver a flexible and cost reduced method of implementing LAN, home networking, DSL, USB, wireless, audio and modem subsystems widely used in today's "connected PCs". The CNR specification is an open industry specification and is supported by OEMs, IHV card manufacturers, silicon supplier and Microsoft.

### **DDR (Double Data Rate) RAM**

DDR RAM utilizes the existing [SDRAM](#) (For ex, PC-100, PC-133) infrastructure and technology while doubling the nominal bandwidth available to systems in an easy to design and simple to adopt way. Based on FSB frequency, DDR RAM on the market are DDR200, DDR266 and DDR333 with more coming around soon.

**DDR200**, transfer bandwidth up to  $200 \times 64 / 8 = 1600 \text{MB/s}$  (PC1600)

**DDR266**, transfer bandwidth up to  $266 \times 64 / 8 = 2100 \text{MB/s}$  (PC2100)

**DDR333**, transfer bandwidth up to  $333 \times 64 / 8 = 2700 \text{MB/s}$  (PC2700)

**DDR400**, transfer bandwidth up to  $400 \times 64 / 8 = 3200 \text{MB/s}$  (PC3200)

**ECC (Error Checking and Correction)**

The ECC mode needs 8 ECC bits for 64-bit data. Each time memory is accessed; ECC bits are updated and checked by a special algorithm. The ECC algorithm has the ability to detect double-bit error and automatically correct single-bit error while parity mode can only detect single-bit error.

**EEPROM (Electronic Erasable Programmable ROM)**

Also known as E<sup>2</sup>PROM. Both EEPROM and [Flash ROM](#) can be re-programmed by electronic signals, but the interface technology is different. Size of EEPROM is much smaller than flash ROM.

**EPROM (Erasable Programmable ROM)**

Traditional motherboard stores BIOS code in EPROM. EPROM can only be erased by ultra-violet (UV) light. If BIOS has to be upgraded, you need to remove EPROM from motherboard, clear by UV light, re-program, and then insert back.

**EV6 Bus**

EV6 Bus is the technology of Alpha processor from Digital Equipment Corporation. EV6 bus uses both rising and falling clock edge to transfer data, similar as DDR RAM or ATA/66 IDE bus.

EV6 Bus Speed = CPU external bus clock x 2.

**200 MHz EV6 bus, 200MHz = 100 MHz external bus clock x 2**

***FCC DoC (Declaration of Conformity)***

The DoC is component certification standard of FCC EMI regulations. This standard allows DIY component (such as motherboard) to apply DoC label separately without a shielding of housing.

***FC-PGA (Flip Chip-Pin Grid Array)***

FC means Flip Chip, FC-PGA is a package of Intel for Pentium III for 0.18 $\mu$ m process CPU, which can be plugged into SKT370 socket.

***FC-PGA2 (Flip Chip-Pin Grid Array)***

After FC-PGA, FC-PGA2 is the package for 0.13 $\mu$ m process CPU developed by Intel, which can be plugged into SKT423/478 socket as well.

***Flash ROM***

Flash ROM can be re-programmed by electronic signals. It is easier for BIOS to upgrade by a flash utility, but it is also easier to be infected by virus. Because of increase of new functions, BIOS size is increased from 64KB to 512KB (4M bit).

***Hyper Threading***

Hyper-Threading technology is an innovative design from Intel that enables multi-threaded software applications to process threads in parallel within each processor resulting in increased utilization of processor execution resources. As a result, an average improvement of ~40% in CPU resource utilization yields higher processing throughput.



**IEEE 1394**

IEEE 1394, which also called Firewire, is a serial data transfer protocol and interconnection system. The main feature of the Firewire that assures its adoption for the digital video and audio (A/V) consumer application is its low cost. Fire wire interface is capable of supporting various high-end digital A/V applications, such as consumer A/V device control and signal routing, Digital Video (DV) editing, home networking, and more than 32 channels of digital mixing. Gone are those days of expensive video capture cards. Firewire allows for video capture from both newer DV camcorders with Firewire ports and older analog equipment using A/V to Firewire converters.

The advantages of the IEEE1394:

**High data transfer rate** – Start from 400 Mbps, (with 800/1600/3200 Mbps coming soon), which is about 30 times faster than USB 1.1.

**Supports up to 63 devices** (16 - daisy chained) with cable length up to about 4.5 m (14 feet).

**Hot-pluggable** (like USB). No need to turn of your device to connect or disconnect, and you don't need to reboot your PC. Also, it is a plug-and-play bus.

**IEEE1394 is very easy to connect** (Like USB1.1/2/0).

**Parity Bit**

The parity mode uses 1 parity bit for each byte, normally it is even parity mode, that is, each time the memory data is updated, parity bit will be adjusted to have even count "1" for each byte. When next time, if memory is read with odd number of "1", the parity error is occurred and this is called single bit error detection.

**PCI (Peripheral Component Interface) Bus**

Developed by Intel, Peripheral Component Interconnect (PCI) is a local bus standard. A bus is a channel used to transfer data to (input) and from (output) a computer and to or from a peripheral device. Most PCs have a PCI bus usually implemented at 32-bits providing a 33 MHz clock speed with a throughput rate of 133 MBps.

**PDF Format**

With PDF file, it is easy to do universal document exchange. Virtually any document may be converted in Portable Document Format (PDF). Contents in PDF documents are exactly the same as the original file, including fonts and graphics, and they can be distributed by e-mail or stored on the World Wide Web, an intranet, a file system, or a CD-ROM for other users to view on any platforms. You may download Acrobat Reader in order to read PDF file from its website ([www.adobe.com](http://www.adobe.com)).

**PnP (Plug and Play)**

Oversimplified, Plug-and-Play automatically tells the software (device drivers) where to find various pieces of hardware (devices) such as modems, network cards, sound cards, etc. Plug-and-Play's task is to match up physical devices with the software (device drivers) that operates them and to establish channels of communication between each physical device and its driver.

**POST (Power-On Self Test)**

The BIOS self-test procedure after power-on, sometimes, it is the first or the second screen shown on your monitor during system boot.

**PSB (Processor System Bus) Clock**

PSB Clock means the external bus clock of CPU.

CPU internal clock = CPU PSB Clock x CPU Clock Ratio

**RDRAM (Rambus Dynamic Random Access Memory)**

A DRAM technology developed by Rambus Corporation\*, to achieve high speed of memory through the use of multiple channels in parallel by 16-bits. Basically, RDRAM uses new structure of Multibank, which is quite different from FPM, EDO, SDRAM. Using different memory module as well, RDRAM uses "RIMM" with transfer rate of 600/700/800MHz, providing bandwidth as high to 1.6GB.

**RIMM (Rambus Inline Memory Module)**

184-pin memory module that supports [RDRAM](#) memory technology. A RIMM memory module may contain up to maximum of 16 RDRAM devices.

**SDRAM (Synchronous DRAM)**

SDRAM is one of the DRAM technologies that allow DRAM to use the same clock as the CPU host bus (EDO and FPM are asynchronous and do not have clock signal). It is similar as PBSRAM to use burst mode transfer. SDRAM comes in 64-bit 168-pin DIMM and operates at 3.3V, and have been gradually replaced by DDR RAM.



**SATA (Serial ATA)**

The Serial ATA specification is designed to overcome speed limitations while enabling the storage interface to scale with the growing media rate demands of PC platforms. Serial ATA is to replace parallel [ATA](#) with the compatibility with existing operating systems and drivers, adding performance headroom for years to come. It is developed with data transfer rate of 150 Mbytes/second, and 300M/bs, 600M/bs to come. It reduces voltage and pins count requirements and can be implemented with thin and easy to route cables.

**SMBus (System Management Bus)**

SMBus is also called I<sup>2</sup>C bus. It is a two-wire bus developed for component communication (especially for semiconductor IC). For example, set clock of clock generator for jumper-less motherboard. The data transfer rate of SMBus is only 100Kbit/s, it allows one host to communicate with CPU and many masters and slaves to send/receive message.

**SPD (Serial Presence Detect)**

SPD is a small ROM or [EEPROM](#) device resided on the DIMM or [RIMM](#). SPD stores memory module information such as DRAM timing and chip parameters. SPD can be used by [BIOS](#) to decide best timing for this DIMM or RIMM.

**USB 2.0 (Universal Serial Bus)**

A Universal Serial Bus (USB) is an external bus (an interconnection) standard that supports data transfer rates of 12 Mbps. A single USB port can be used to connect up to 127 peripheral devices, such as mouse, modems and keyboards. Introduced in 1996, USB has completely replaced serial and parallel ports. It also supports plug-and-play installations and hot plugging. Plug-and-play is the ability to add and remove devices to a computer while the computer is running and have the operating

system automatically recognize the change. USB 2.0, which supports data transfer rates of 480 Mbps, has been widely used in motherboard these days.

### **VCM (Virtual Channel Memory)**

NEC's Virtual Channel Memory (VCM) is a new DRAM core architecture that dramatically improves the memory system's ability to service multimedia requirements. VCM increases memory bus efficiency and performance of any DRAM technology by providing a set of fast static registers between the memory core and I/O pins. Using VCM technology results in reduced data access latency and reduced power consumption.

### **Wireless LAN – 802.11b**

802.11 is a specification developed by IEEE and Wireless LAN technology, which is an interface between a wireless client and a base station or between two wireless clients.

802.11 family includes the following specifications and with more coming:

**802.11** = 1 or 2 Mbps transmission in the 2.4 GHz band, using either frequency hopping spread spectrum (FHSS) or direct sequence spread spectrum (DSSS)).

**802.11a** = 54 Mbps in the 5GHz band, using orthogonal frequency division multiplexing)

**802.11b** (11 Mbps transmission in the 2.4 GHz band, using direct sequence spread spectrum (DSSS)).


### **ZIP file**

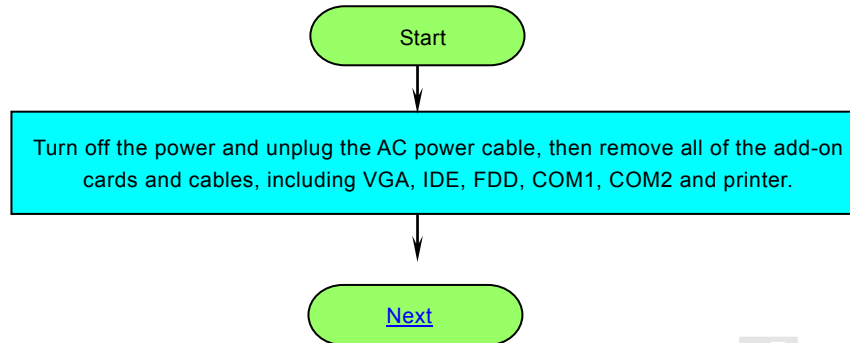
A compressed file format to reduce file size. To unzip file, run shareware PKUNZIP (<http://www.pkware.com/>) for DOS and other operating system or WINZIP (<http://www.winzip.com/>) for windows environment.

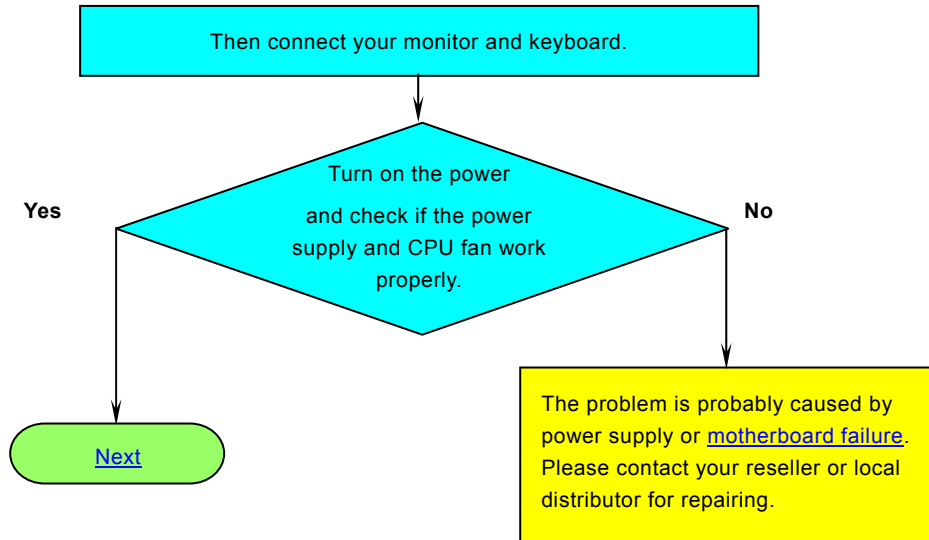


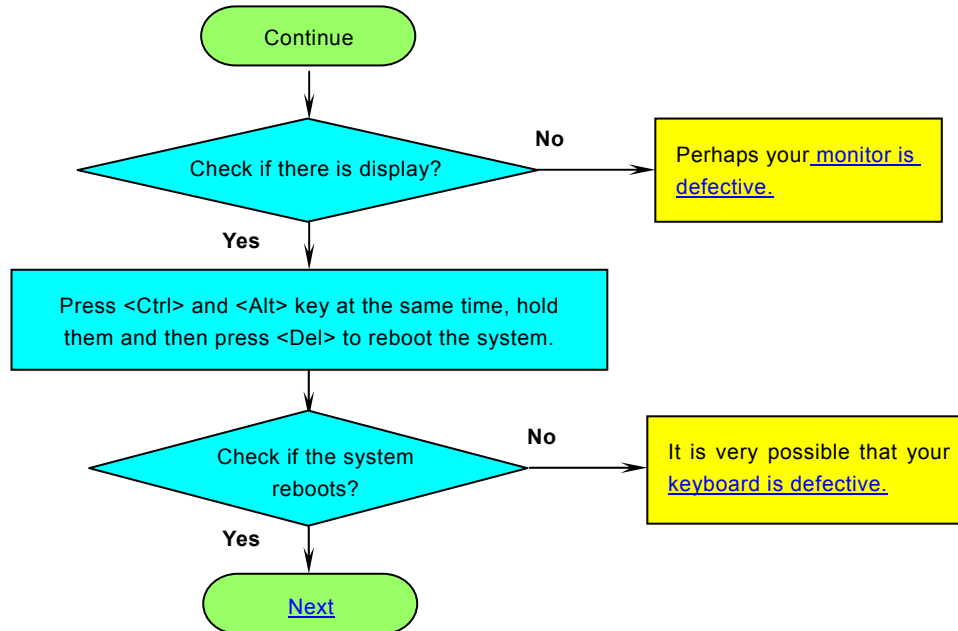
# Troubleshooting

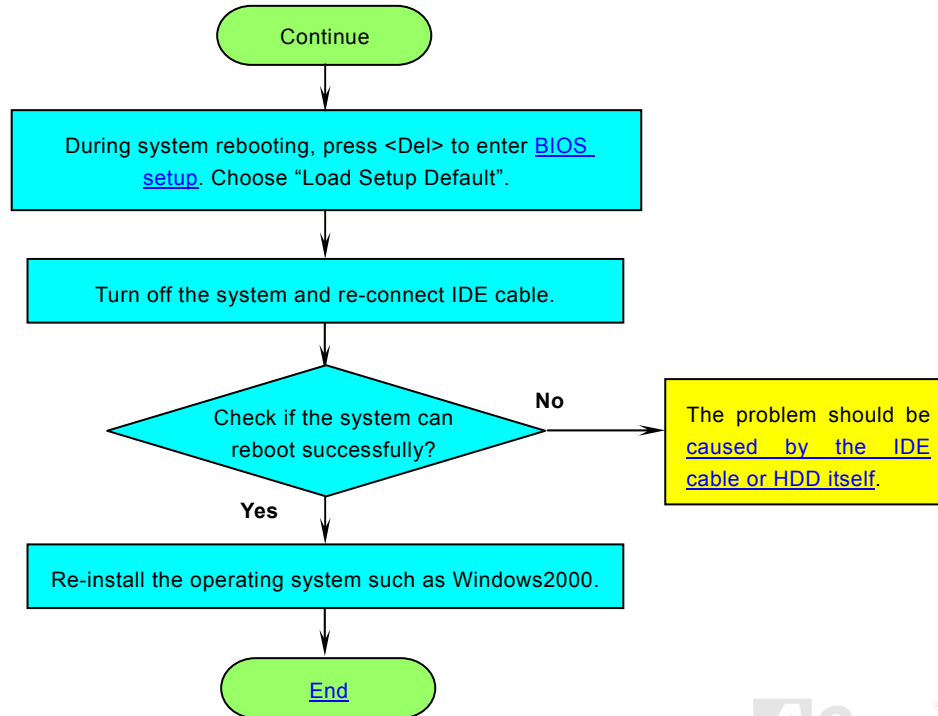
If you encounter any trouble to boot your system, follow the procedures accordingly to resolve the problem.

 **Note:** If using some DIMMs beyond available list, press F10 key when power on, may solve some DIMMs issues.











## 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

1

**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>

2

**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/>

3

**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/>

AOpen

**4**

**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>

**5**

**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.

**6**

**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.

### 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:

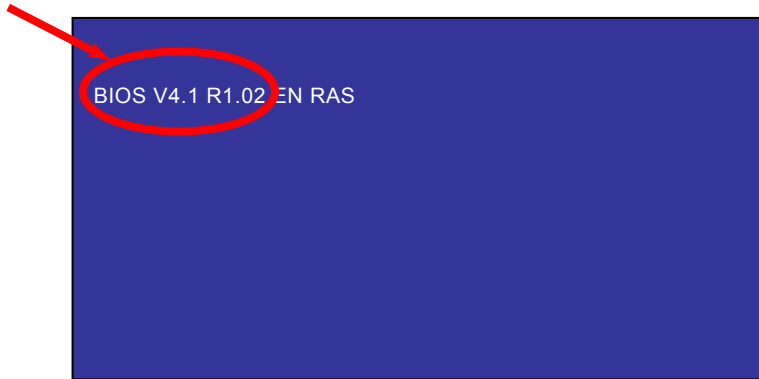




**P/N: 91.88110.201** is part number, **S/N: 91949378KN73** is serial number.

**BIOS version**

BIOS version can be found on upper left corner of first boot screen ([POST](#) screen). For example:



**BIOS Version : R1.02** June 19, 2003



# Product Registration

ClubAOpen

Welcome to AOpen Inc.



Thank you for choosing AOpen product. AOpen encourages you to spend few minutes in completing the following product registration. To register your product will ensure the high quality of services from AOpen. After the registration, you will:

- Have opportunities to play online slot machine and win a prize from AOpen by accumulating your bonuses for later prize exchange.
- Be upgraded to gold membership of Club AOpen program.
- Receive email notification about product safety alerts. Its purpose is to alert consumers quickly and conveniently when products contain technical issues.
- Receive email notification about latest product's announcements.
- Be able to personalize your AOpen web pages.
- Receive e-mail notification about latest BIOS/Driver/Software release information.
- Have opportunities to participate special product promotional programs.
- Enjoy higher service priority to receive technical assistance provided by AOpen specialists worldwide.
- Be able to join the discussions of web-based news groups.

AOpen makes sure that the information you provide is encrypted, so that it cannot be read or intercepted by other people or companies. Further, AOpen will not disclose any of information you submitted under any conditions. Please consult our [online privacy policy](#) for further information on our company policy.

**Note:** *If registering products purchased from different dealers/retails and/or purchased on different dates, please submit a separate form for each product.*

en



## How to Contact Us



Pacific Rim  
AOpen Inc.  
Tel: 886-2-3789-5888  
Fax: 886-2-3789-5899

Europe  
AOpen Computer b.v.  
Tel: 31-73-645-9516  
Email: Support@AOpen.NL

America  
AOpen America Inc.  
Tel: 1-510-489-8928  
Fax: 1-510-489-1998

China  
艾爾鵬國際貿易(上海)有限公司  
Tel: 86-21-6225-8622  
Fax: 86-21-6225-7926

Germany  
AOpen Computer GmbH.  
Tel: 49-1805-559191  
Fax: 49-2102-157799

Japan  
AOpen Japan Inc.  
Tel: 81-048-290-1800  
Fax: 81-048-290-1820

Web Site: <http://www.aopen.com/>

E-mail: Send us email by going through the contact form below.

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

Japanese <http://www.aopen.co.jp/tech/default.htm>

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

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

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

