Disposal Instructions (US)

For better protection of our earth, please don't throw this electronic device into municipal trash bin when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle the product.
For more information about the collection and recycling of Waste Electrical and Electronic Equipment (WEEE) , you are invited to visit our homepage at www.aopen.com under "Green Products"

廃棄上の指示

より良い地球保護のために、電子機器を廃棄処分にする時は、ゴミ箱に捨てないで下さい。汚染を最小限に抑え、地球環境の最大限の保護のために、製品をリサイクルして下さい。

廃電気電子機器（WEEE）の回収とリサイクルについての情報は、弊社ホームページwww.aopen.com の"Green Products"（環境に優しい製品）をご覧下さい。

廢棄及回收處理

爲了保護環境，請勿將本產品當作一般廢棄物處理。爲減少環境污染，維護地球資源，本產品報廢時，請回收本產品。

Instruktion til bortskaffelse (Danish)

Af hensyn til vores miljø bedes De ikke bortskaffe denne elektroniske enhed i en almindelig affaldsspand. For at mindske forurening og sikre beskyttelse af miljøet bedes De genbruge produktet. For yderligere information vedrørende indsamling og genbrug af elektronik-affald (Waste Electrical and Electronic Equipment (WEEE) er De velkommen til at besøge vores website www.aopen.com og laese naermere under “Green Products”.

Verwijderingsinstructie (Dutch)

Om mogelijke schade aan het milieu of de menselijke gezondheid door ongecontroleerde afvalverwijdering te voorkomen, moet u dit elektronisch product scheiden van andere soorten afval en op een verantwoorde manier recyclen. Verwijder dit product dan ook alstublieft niet samen met ander huishoudelijk afval. Voor meer informatie over de verzameling en recycling van elektrisch afval en elektronische apparatuur (WEEE), nodigen we u uit om onze homepage te bezoeken www.aopen.com onder “Green Products”.

Instruction de Disposition (French)

Pour une meilleure protection de la terre, ne jetez pas ce dispositif électronique dans la poubelle municipale lors de la disposition. Pour éliminer la pollution et assurer la plus grande protection de l’environnement global, réutilisez s’il vous plaît le produit. Pour plus d’informations sur la gestion des déchets d’Equipements Electriques et Electroniques (DEEE ou WEEE), vous êtes invité à visiter notre site à www.aopen.com sous “ Green Products”.

Entsorgungsanleitung (German)

Zum besseren Schutze unseres Planeten, schmeissen Sie elektrische Geräte bitte nicht in öffentliche Mülleimer. Zur Verringerung der Verschmutzung und zur Sicherstellung grösstmöglichen Schutzes der Umwelt recyceln Sie bitte das Produkt. Für mehr Informationen zum Sammeln und Recyceln von elektrischen und elektronischen Müll (WEEE) besuchen Sie bitte unsere Homepage unter www.aopen.com unter dem Punkt “Green Products”.

Istruzioni per lo smaltimento (Italian)

Per una migliore salvaguardia del nostro pianeta, si prega di non gettare questo dispositivo elettronico nei normali rifiuti al momento dell'eliminazione. Per ridurre al minimo l'inquinamento ed assicurare la massima protezione dell'ambiente, si prega di riciclare il prodotto. Per maggiori informazioni riguardanti la raccolta ed il riciclaggio delle apparecchiature elettriche ed elettroniche residue (WEEE), siete invitati a visitare la nostra homepage www.aopen.com alla voce "Green Products".

Instruksjoner for Resirkulering og Oppsamling (Norweigian)

For Í beskytte vÍr planet, kast ikke dette elektroniske utstyret sammen med vanlig avfall. For Í beskytte vÍr natur og miljř, vennligst resirkuler dette produktet. For mer informasjon om oppsamling og resirkulering i henhold til Waste Electrical and Electronic Equipment (WEEE), se vÍr hjemmeside pÍ www.aopen.com under "Green Products".

Programa de Tratamento de Resíduos de Equipamentos Eléctricos e Electrónicos (Portugese)

Para melhor protecção ambiental do nosso planeta terra, não coloque o dispositivo electrónico no receptáculo de lixo municipal. Para minimizar a poluição e garantir protecção máxima do ambiente global, recicle o produto. Para mais informações sobre acerca da recolha e reciclagem de Equipamento Eléctrico e Electrónico (WEEE), convidamos-lhe a visitar nossa página na Internet em www.aopen.com sobre "Green Products".

Instrucciones para depositar los productos electrónicos (Spanish)

Para proteger mejor el medio ambiente, por favor, no deposite los productos electrónicos en los contenedores de basura tradicionales. Para reducir la contaminación y proteger el medio ambiente se recomienda que los recicle. Para más información acerca de dónde depositar y cómo reciclar Equipos Electrónicos y Desperdicios Electrónicos (WEEE), por favor, visite la página web www.aopen.com y entre en la sección Productos Ecológicos "Green Products".

Kassering (Swedish)

För att bättre värna om vår jord bör denna elektroniska utrustning ej kasseras tillsammans med vanligt avfall. För att minimera mängden föroreningar och så långt som möjligt skydda den globala miljön bör produkten återvinnas. För vidare information om insamling och återvinning av uttjänta elektriska och elektroniska produkter (Waste Electrical and Electronic Equipment, WEEE), besök avsnittet “Green Products” på vår hemsida

Contents

Welcome

First of all, we would like to express our gratitude for purchasing AOpen products. This motherboard is designed to meet all your personal needs with industry-leading features, the newest components and a strong focus on quality manufacturing and the testing and service that brings a positive computing experience that lasts for years.

This manual will introduce how this motherboard is installed. Please keep it well for your future reference. If you lose your printed manual, you may also go to our website at http://www.aopen.com to download an updated file in PDF format. Now, we would like to invite you to experience this user-friendly manual and all of the powerful functions this AOpen product offers.

Notes and Warning labels used in the manual

Please pay attention when you see the following symbols. They point out useful information for this motherboard and make users aware of certain conditions.

Warning: 	Please be careful when you see this mark. Can possibly injure yourself or the motherboard if you do not follow instructions.

Note: 	This contains knowledge you should know when assembling or using this AOpen product, or some helpful tip.

Tip: 	This Tip tells you some useful information that will make your installation go smoothly.

Caution: 	Highlights where mistakes often occur during assembly or use.

Safety Information

Warning: 	1. Please wear a wrist strap and attach it to a metal part of the system unit before handling a component. You can also touch a metal object that has a ground connection or another metal surface. 2. Always unplug the power before you make any jumper settings. 3. Before you install or remove any components on the motherboard, please make sure to disconnect the power first to prevent damage to the motherboard or other components.

Chapter 1

Introducing the AOpen i946GZm-DF

Chapter 1 Introduction

1.1 Board and I/O Layout

Figure 1.1 Board Layout

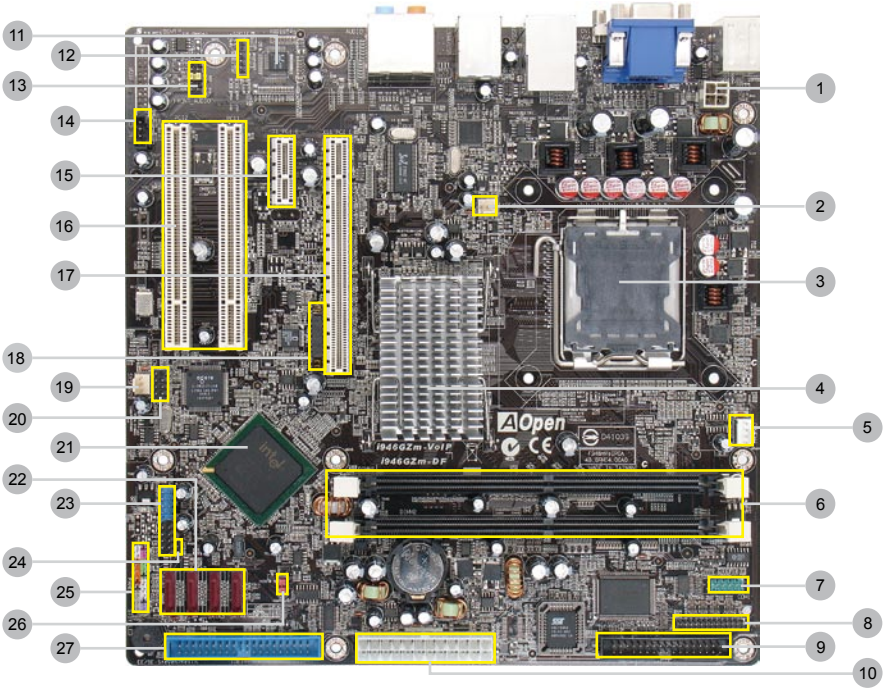


Table 1.1 Board Components

No.	Item	No.	Item
01.	4-pins 12V ATX Power Connector	15.	PCI Express x1 Slot
02.	SYSFAN1 Header	16.	PCI Slot
03.	LGA775 CPU socket	17.	PCI Express x16 Slot
04.	Intel 946GZ Chipset	18.	PCIe x16 Signal Control Jumper
05.	CPU Fan Header	19	SYSFAN2 Header
06.	DDR2 DIMM Slots	20.	1394 Connector
07.	COM1 Pin Header	21.	Intel ICH7 Chipset
08.	Printer Connector	22.	Serial ATA port
09.	FDD Connector	23.	USB 2.0 Connector
10.	24-pins ATX Power Connector	24.	Case Open (Intruder) Connector
11.	Onboard HD Audio Codec	25.	Front Panel Pin Header
12.	S/PDIF Connector	26.	JP14 CMOS Clear Jumper--
13.	Front Audio Connector	27.	IDE Connector
14.	CD_IN Connector		

1.2 Rear I/O Ports

Figure 1.1 Board I/O Layout

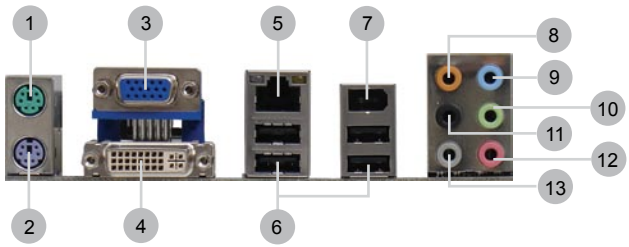


Table 1.2: Rear I/O

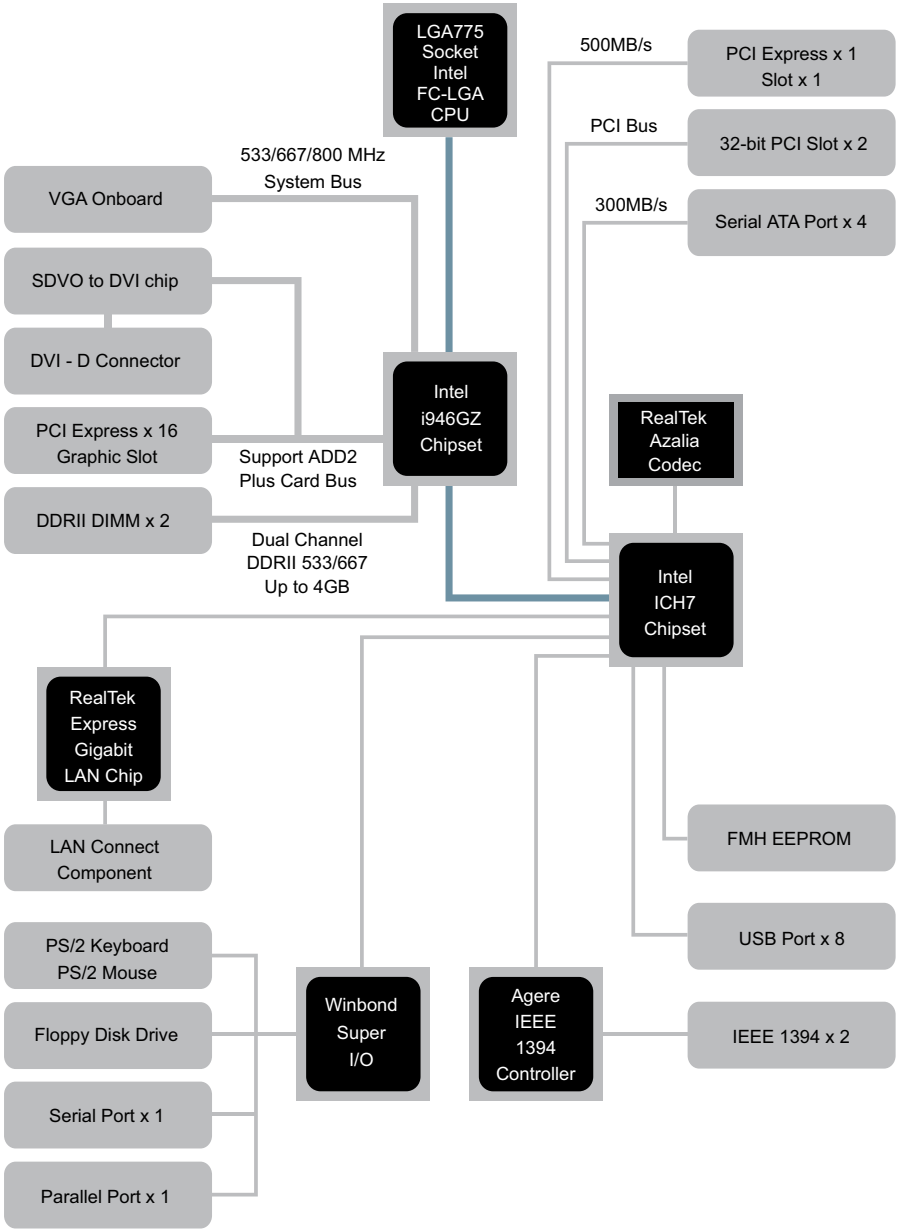
Item	**Item**
1. PS/2 Mouse Connector	8. Rear Surround
2. PS/2 Keyboard Connector	9. Line-In
3. VGA Port	10. Speaker Out
4. DVI Port	11. Center/Subwoofer
5. RJ-45 LAN Port	12. Mic-In
6. USB 2.0 Ports	13. Side Surround
7. 1394 Connector	

Table 1.3: i946GZm-DF Specifications

Model	i946GZm-DF
CPU	Intel Core 2 Duo / Pentium D / Pentium 4 / Celeron D Socket 775, 533/667/800 MHz
Chipset	Intel® i946GZ/ICH7
Main Memory	Dual Channel Mode DDRII 533/667 DDR DIMM x 2 DIMM Type : 256/512MB/1GB/2GB Max Memory : 4GB
Graphics	Integrated Intel® GMA 3000 (Graphics Media Accelerator) in Chipset PCI Express x 16 Graphics Slot Supports ADD2 Plus Cards
Storage	Integrated Serial ATA Controller
LAN	Realtek Gigabit LAN 8111b
Sound	Intel High Definition Audio On-board Support 7.1 Channel and Above
USB	Integrated in Chipset, USB 2.0 x 8
IEEE 1394	Agere 1394 Control Chip
Slots	PCI Express x 1 Slot x 1 PCI Express x 16 Graphics Slot x 1 PCI Slot x 2
Back Panel I/O	PS/2 Keyboard x 1, PS/2 Mouse x 1 VGA Port x 1 DVI Port x 1 USB Port x 4, LAN Port x 1, IEEE 1394 x 1 Speaker_Out x 1, Line_In x 1, Mic_In x 1 Side Surround x 1, Rear Surround x 1, Center/Subwoofer x 1
On-Board Connector	24-pin Power Supply Connector x 1 4-pin (2 x 2) 12V Connector x 1 Floppy Drive Connector x 1 IDE x 1 Serial ATA II Channel x 4 Front Panel x 1 Front Audio x 1 CPU FAN x 1, System FAN x 2 Case Open Connector x 1 CD_IN x 1 S/PDIF x 1 Printer Port x 1 COM Connector x 1 IEEE 1394 x 1 USB 2.0 pin header 10 pins x 2
BIOS	Award FWH 4MB Flash ROM BIOS
Board Size	244 mm x 244 mm

*Specifications are subject to change without notice

1.3 System Block Diagram



Notes:

Chapter 2

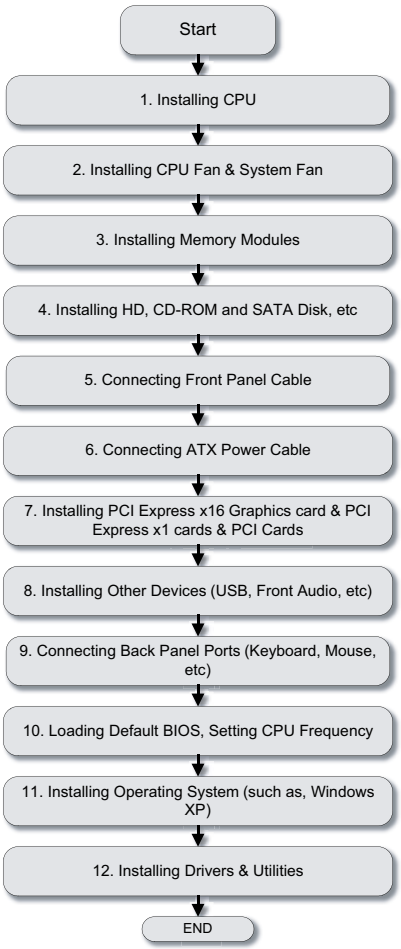
Hardware Installation

Chapter 2 Hardware Installation

Installation Procedures

2.1 Installation Overview

Generally, when installing a new motherboard and peripherals into a chassis, people typically follow a certain order of steps for the installation. The list below are the general steps:



2.2 Installing the CPU

This socket supports a single processor LGA775 package CPU (including Intel® Core™ 2 Duo, Pentium® D, Pentium® 4, Celeron® D processors) with a Front Side Bus (FSB) of 800/533 MHz.

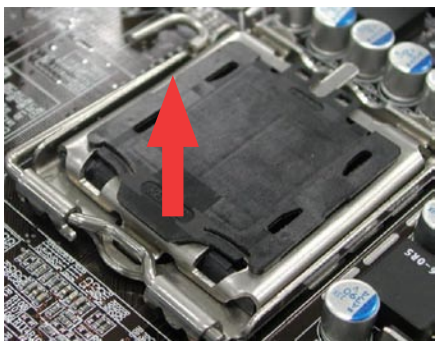
Please follow the steps below for installing the CPU.

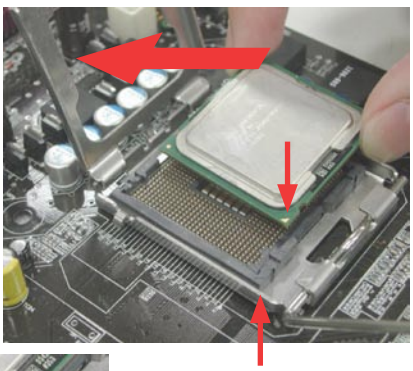
1. Pull the socket load lever down and away from the socket to unlock it. Lift the load lever (about 135°). Remove the protective cover. While supporting the load plate with your left hand, pry the tab of the protective cover back to remove it.

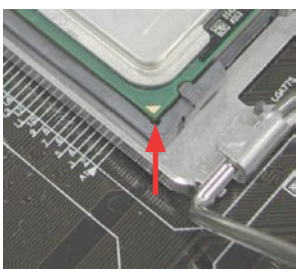
2. Push down on the rear tab of the load plate to raise the front of the load plate.

Warning: 	Never touch the socket pins. This could damage the connector. Only take off the protective cover when you are ready to install the CPU. Make sure the socket is free of any debris before proceeding.

3. Locate Pin 1 in the socket (the socket Pin 1 is the corner of the socket that is notched or flat (the other 3 corners of the socket are square). Now look for a golden arrow on the CPU's top side. Match Pin 1 and the golden arrow. Then insert the CPU into the socket.







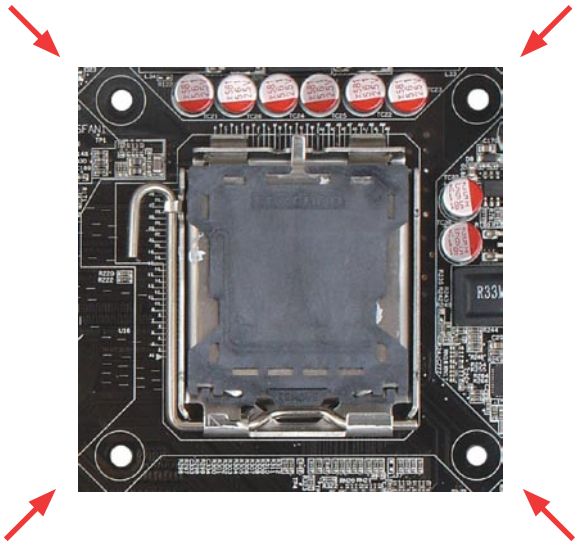
4. Press down the CPU load plate and close the lever to finish CPU installation.

Warning:	Close the lever very carefully. It can spring open if not held firmly. This could damage the pins if this happens.

2.3 Installing CPU Cooler

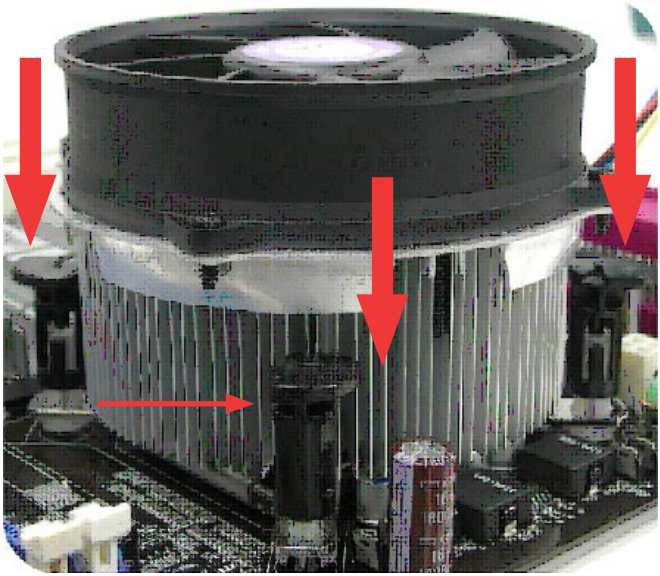
1. Gently put down the CPU fan on CPU socket with four studs aimed directly over the four mounting holes.

Warning:	Always use the correct amount of thermal grease when mounting the CPU cooler. Follow the instructions closely.



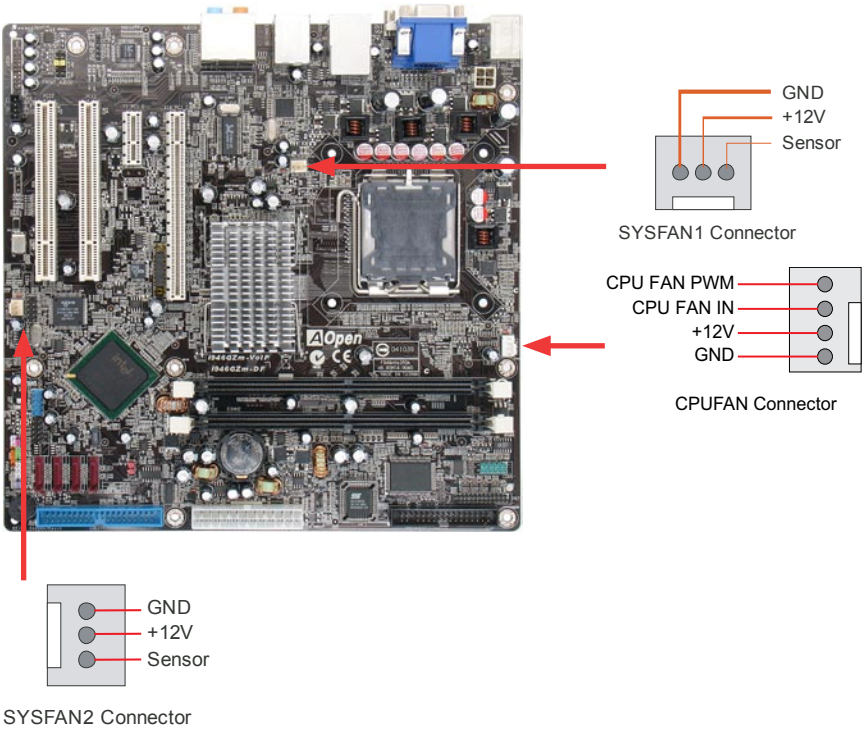
2. Press down the four mounting studs into the holes one by one. Make sure the studs are firmly fixed into the holes.

Note:	This cooler and picture shown might be different from your purchased product.



2.4 Installing CPU and System Fans

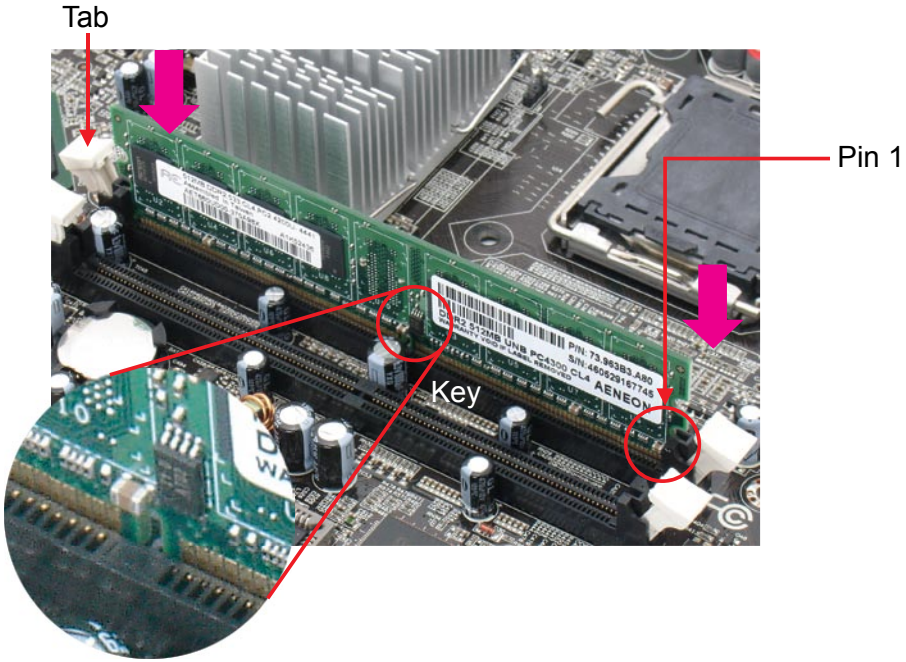
Plug the CPU fan cable to the 4-pin CPU FAN connector. If you have a chassis fan, you can also plug it into the SYSFAN1 connector.



Note:	Some fans do not have a sensor pin, so fan monitoring is not supported.

2.5 Installing System Memory Modules

DIMM slots are colored in black and dark blue so they are very easy to recognize and distinguish. Insert the module straight down into the DIMM slot with both hands and press down firmly until the DIMM module is securely in place.



Note:	Pay careful attention to align the slot in the middle of the memory module. The tabs of the DIMM slot will clip to hold the DIMM in place when the DIMM touches the slot's bottom. You can hear it click into place.

2.6 Gaining Maximum Dual Channel Performance

To obtain the highest performance for dual channels, the configuration of DIMM must meet the following conditions.

Matched DIMM configuration in each channel

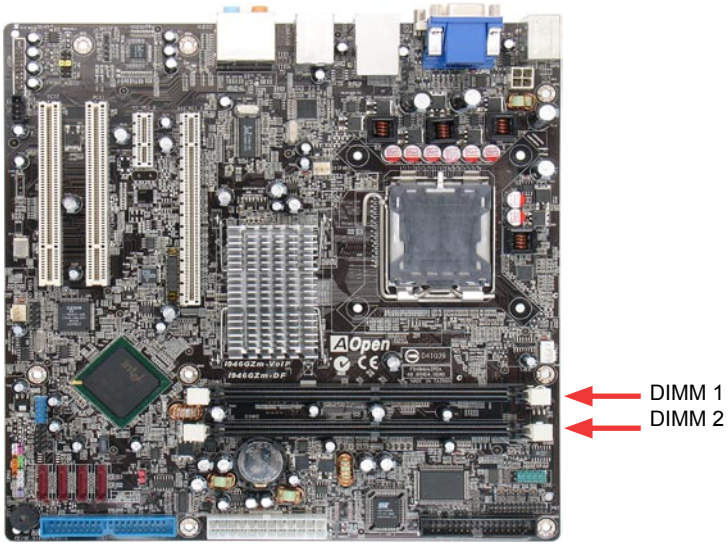
1. Same density (256MB~2GB)

As long as you insert memory modules of same density into (DIMM 1) or (DIMM 2), dual channel mode will be enabled.

For example, if you insert 1GB memory module into DIMM1 and another 1GB memory module into DIMM2, the chipset will enable dual channel mode.

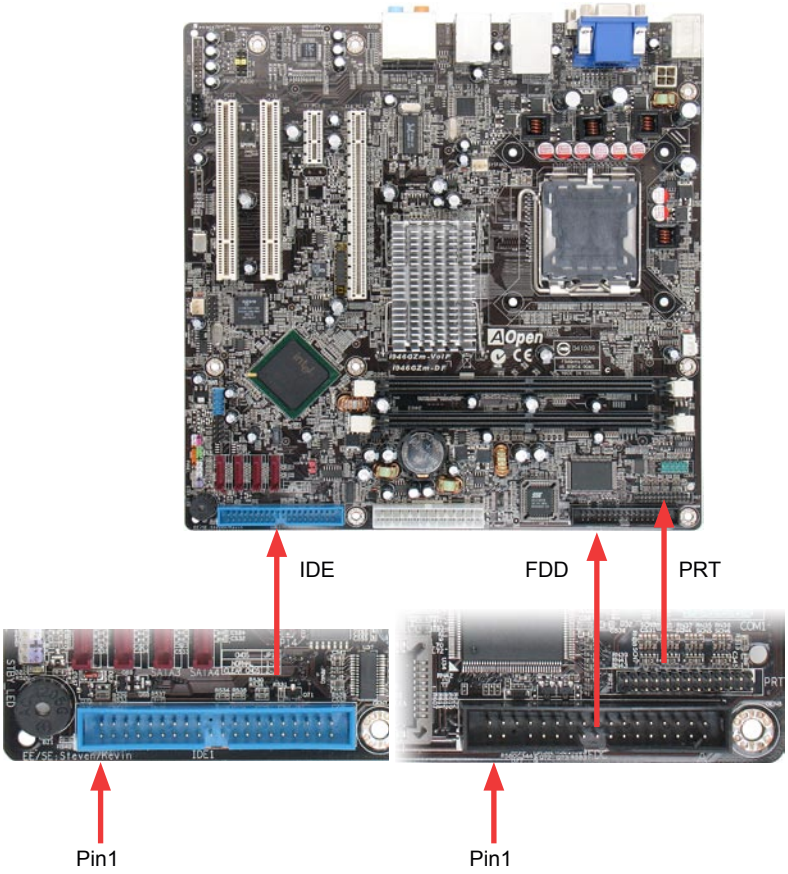
2. Same DRAM bus width (x8 or x16)
3. Either single-sided or double-sided

Note:	Using memory modules with different DIMM chips in them could cause unstable system operation.



2.7 Connecting Floppy, Printer and IDE Cables

Connect the 34-pin floppy cable. Be careful of the Pin 1 orientation. Connecting the cable in the wrong orientation could cause system damage.



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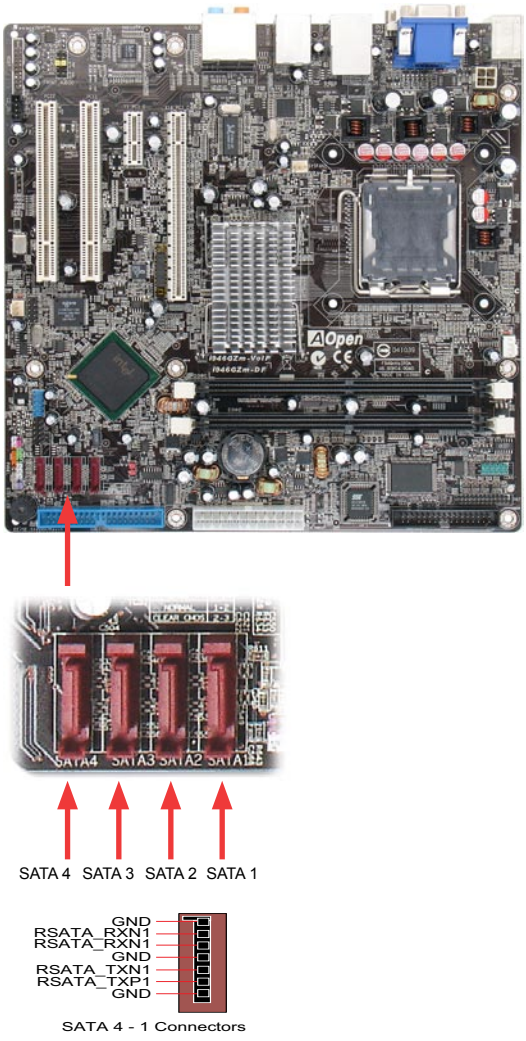
2.8 Connecting Serial ATAII

To connect a serial ATA II disk, you have to have a 7-pin serial ATA cable. Connect the serial ATA II cable to the serial ATA II header on the motherboard and the disk. Like every other traditional disk, you also have to connect a power cable. Please note that it is a jumper free setup, you don't need to set jumpers to define a master or slave disk. When serial ATA II hard disks are installed on serial ATA II ports, the one connected on Port0 (SATA1) will be set as the first boot device automatically. Please also note that it doesn't support the Hot-Plug in function

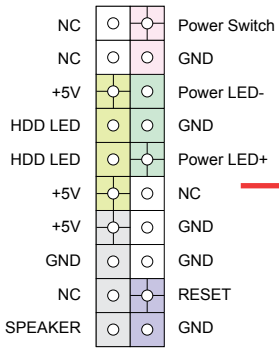


SATA 4 - 1 Connectors

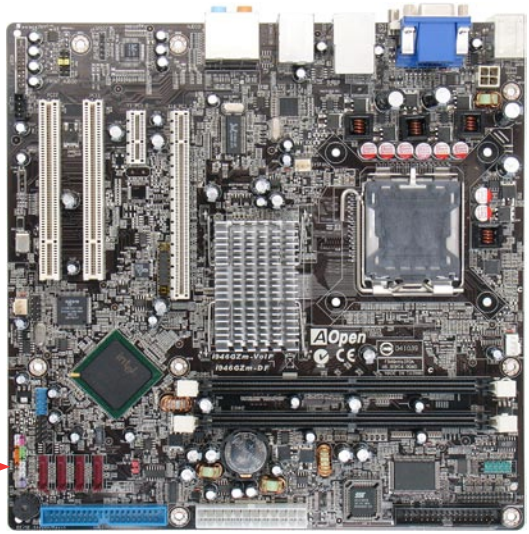
2.9 Connecting Front Panel Cable

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

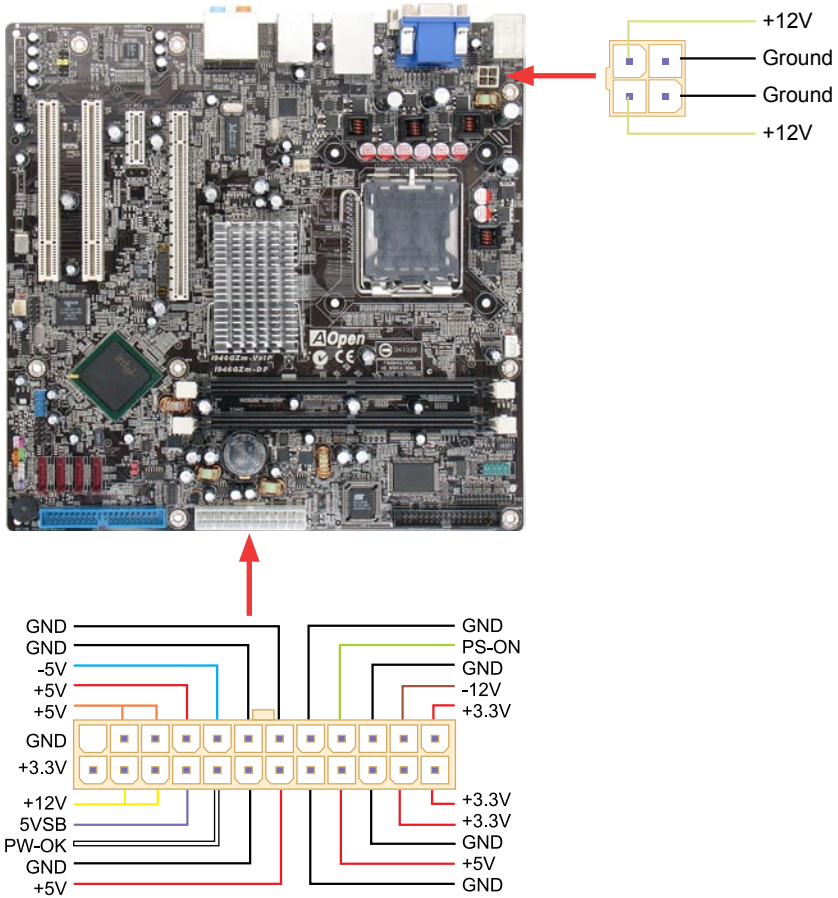


Front Panel Connector



2.10 Connecting ATX Power Cables

This motherboard comes with a 24-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 24-pin connector.



2.11 Setting CPU Voltage and Frequency

Setting CPU Core Voltage

This motherboard supports Voltage ID (VID) function to detect CPU voltage automatically during power-on.

Setting CPU Frequency

This motherboard is a CPU jumperless design, perform CPU overclocking by changing the BIOS setting of the CPU frequency 1MHz at a time. CPU Core Frequency = CPU External Frequency x CPU Ratio. All CPUs now being sold on the market belong to "Fixed Multiplier" models. That means users can not adjust the CPU Ratio, but only change CPU FSB clock to achieve over-clocking. (Perform overclocking at your own risk!)

BIOS Setup > Frequency / Voltage Control > CPU Bus Frequency

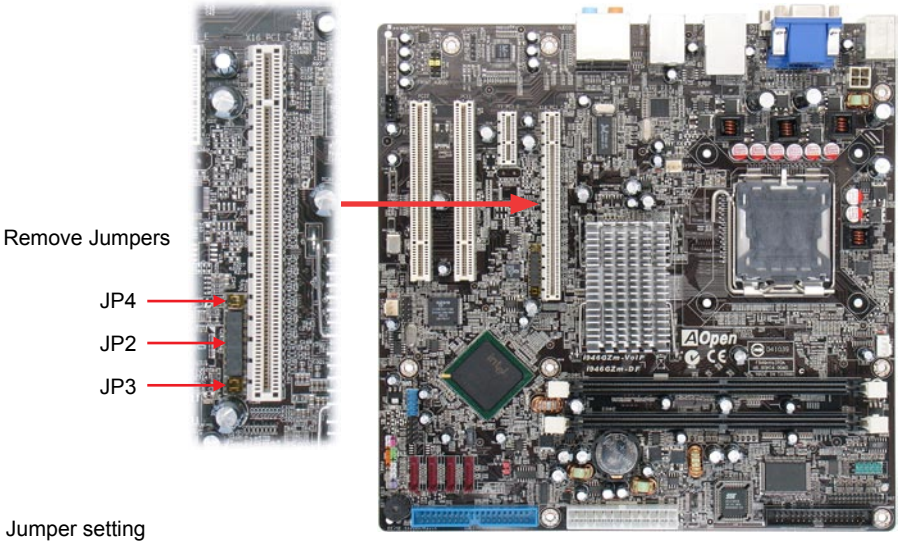
CPU Ratio	4x, 7x… 17x, 18x, 20x
CPU FSB (Adjustment manually)	FSB = 133MHz - 200MHz by 1MHz Stepping CPU Overclocking

Processor Number	Architecture	Clock Speed	Front Side Bus	Cache	Ratio
Core 2 Duo E4300	65nm Conroe	1.80Ghz	800Mhz	2MB	9
Core Duo 960	65nm Presler	3.60Ghz	800Mhz	4MB	18
Core Duo 950	65nm Presler	3.40Ghz	800Mhz	4MB	17
Core Duo 945	65nm Presler	3.40Ghz	800Mhz	4MB	17
Core Duo 935	65nm Presler	3.20Ghz	800Mhz	4MB	16
Core Duo 925	65nm Presler	3.00Ghz	800Mhz	4MB	15
Core Duo 915	65nm Presler	2.80Ghz	800Mhz	4MB	14
Core Duo 820	90nm Smithfield	2.80Ghz	800Mhz	2MB	14
Core Duo 805	90nm Smithfield	2.66Ghz	533Mhz	2MB	16

Note:	With CPU speed changing rapidly, there may be faster CPUs on the market by the time you read this installation guide. The table is just for your reference.

2.12 PCI Express x16 Slot

i946GZm-DF provides a PCI Express x 16 Graphics slot, supporting the latest PCI Express x 16 specifications on this motherboard. PCI Express x16 is a bus interface targeted for high-performance 3D graphics. Traditionally AGP used both the rising and falling edge of the 66MHz clock for 8X AGP, and the data transfer rate could achieve 2.1GB/s. PCI Express x16 supports a higher data transfer rate, up to 8.0GB/s (250MB/s x 16 x 2, with 4.0GB/s per direction). The i946GZm-DF's PCI Express x16 Graphics slot can automatically recognize a PCI Express x16 Graphics card or a Multiplexed Intel SDVO Output depending on which card is inserted, such as PCI Express x16 Graphics, or ADD2 Plus cards (AGP Digital Display 2) cards. With an ADD2 Plus card used in this slot, Multiplexed Intel SDVO output is provided with a high-speed digital connection for digital displays or TV-OUT functionality.



Jumper setting

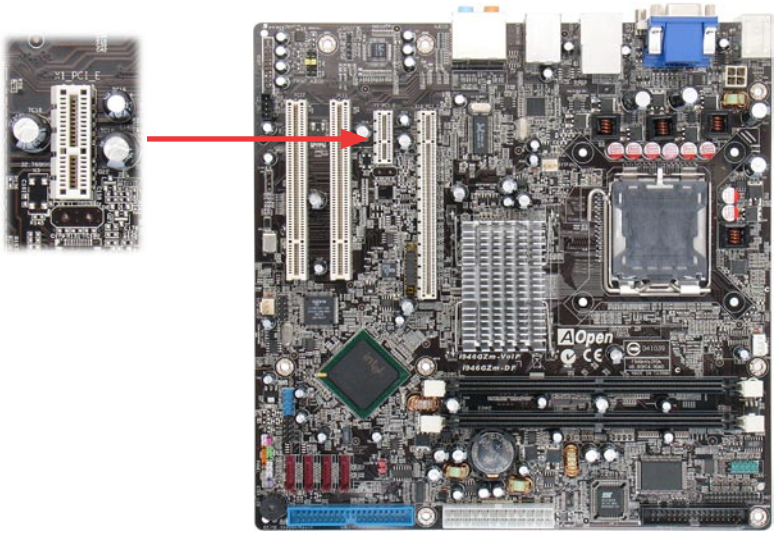
Jumper / Function	JP2	JP3	JP4
DVI	ON	ON	ON
PCIE x16	OFF	OFF	OFF

PCIe x16 Signal Control Jumper

Warning:	If using a PCI Express x 16 graphics card, you must remove the jumpers beside the PCI Express x 16 slot. If the jumpers are not removed, it might make the system unstable.

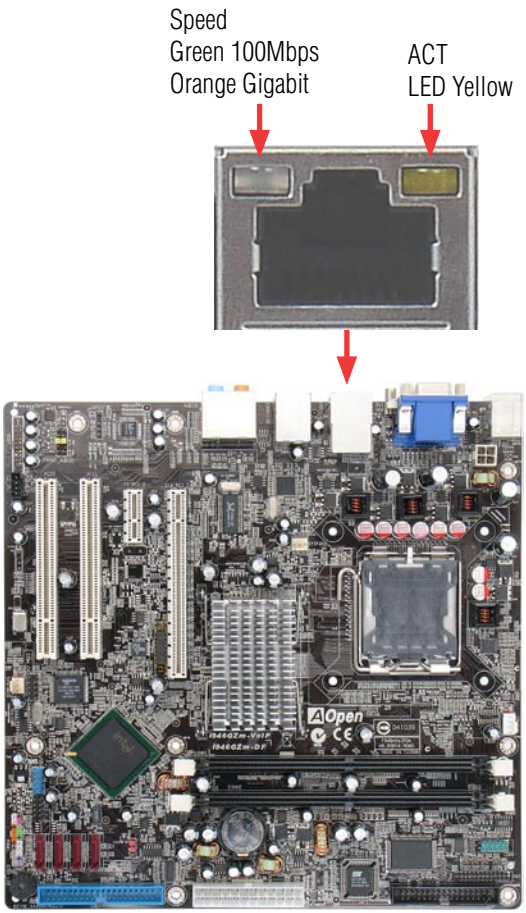
2.13 PCI Express x1 Slot

This motherboard provides one PCI Express x 1 slot, which is located between the PCI Express x 16 and traditional PCI slot. PCI Express x 1 provides higher I/O bandwidth for expansion. The transfer data rate can achieve 250MB/s, which is close to twice the traditional PCI 2.2 data transfer rate. You can install any PCI Express x 1 device in the slot of your preference.



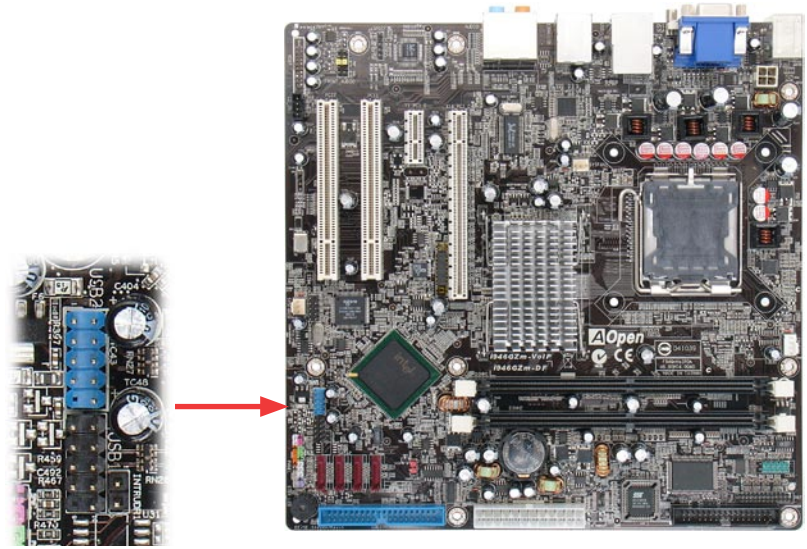
2.14 Gigabit LAN

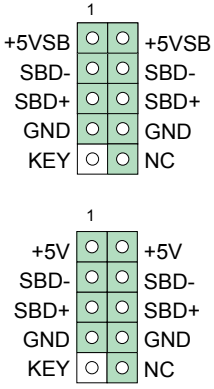
One of the strengths is the RealTek Gigabit LAN controller on board, this motherboard provides 10/100/1000Mbps Ethernet for office and home use. The Ethernet RJ45 connector is located above the USB connectors. The right hand side LED indicates link mode; it lights in yellow when linking to a network. 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), and will light in orange when transferring in Gigabit mode. To enable or disable this function, you simply adjust it through the BIOS. To enable the LAN wakeup function, you have to set the “Wake on PCI Card” to enable in the BIOS“Power Management Setup” section.



2.15 Connecting USB 2.0

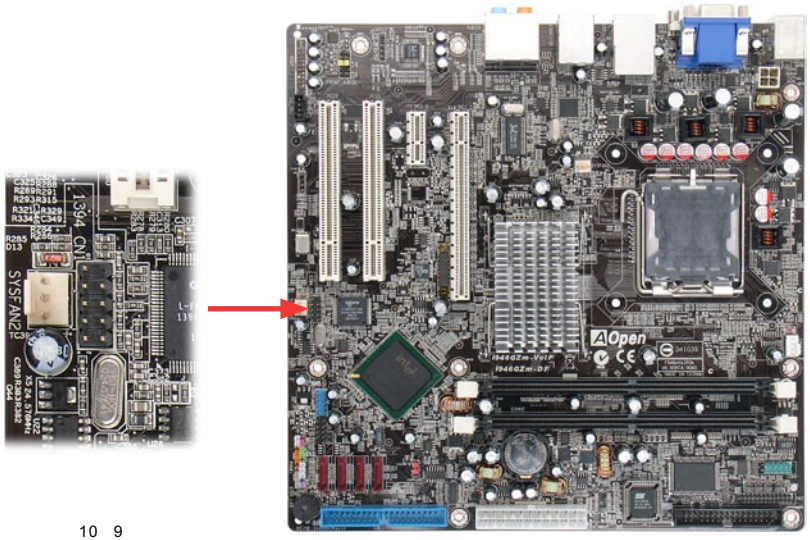
This motherboard provides eight USB 2.0 ports to connect USB devices such as mouse, keyboard, modem, printer, etc. There are four ports on the back panel. You can use proper cables to connect Front USB connector to USB modules or chassis front panel.

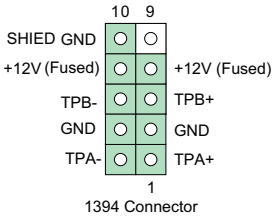




2.16 Connecting 1394

With an IEEE 1394 Chip on board (Agere 1394), data transfer rates up to 400Mb/s are achieved, which support devices that require high data transfer rate performance such as digital cameras, digital video devices/camcorders, scanners or other IEEE 1394 devices. Please use the appropriate cables to connect IEEE 1394 devices.

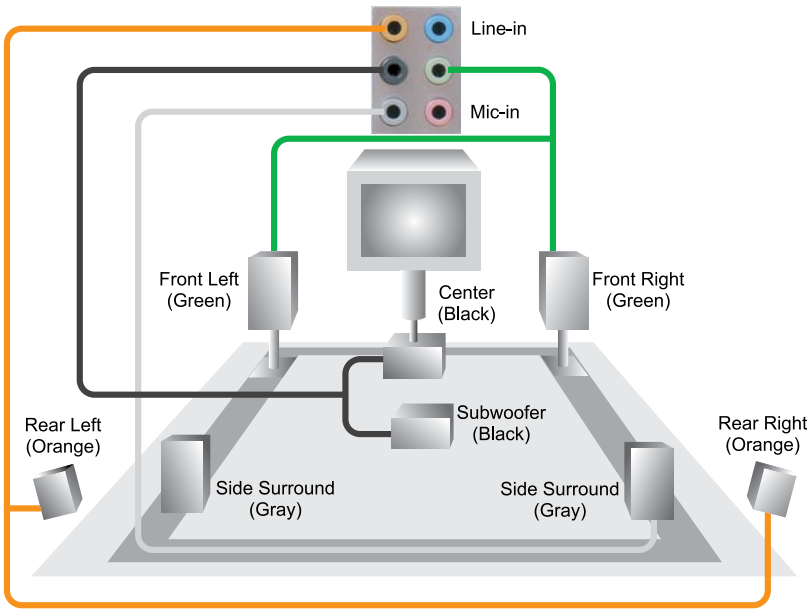




1394 Connector

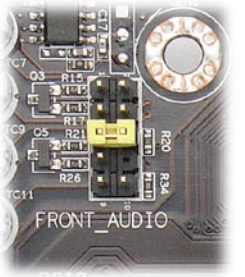
2.17 7.1 Channel Audio

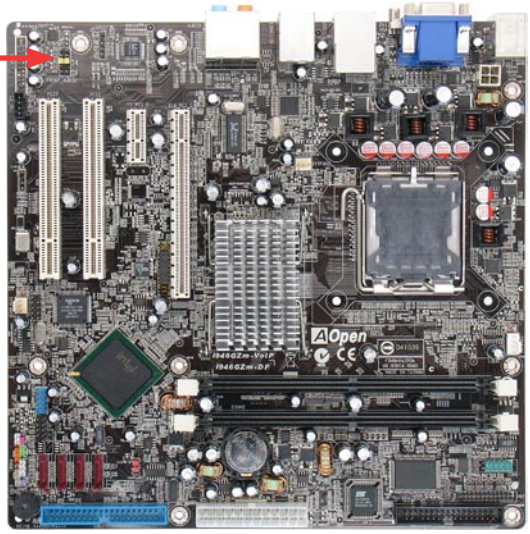
This motherboard comes with an Azalia (Realtek ALC888) codec, which supports the latest 7.1 Channel sound with high quality audio effects, bringing you an excellent audio experience. This motherboard provides 7.1 Channel ports as shown below. The diagram represents the standard location of all speakers for 7.1 Channel sound use. Please connect the plug of your front speakers to the green “Speaker out” port , rear surround speakers to orange port, side surround speakers to gray port and both of the center and subwoofer speakers to the black port on the back panel.

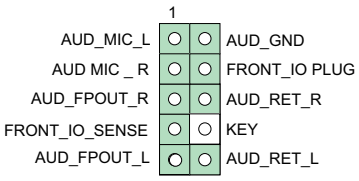


2.18 Connecting Front Audio

If the chassis is designed with an audio port on the front panel, you'll be able to connect onboard audio to the front panel through this connector. 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.



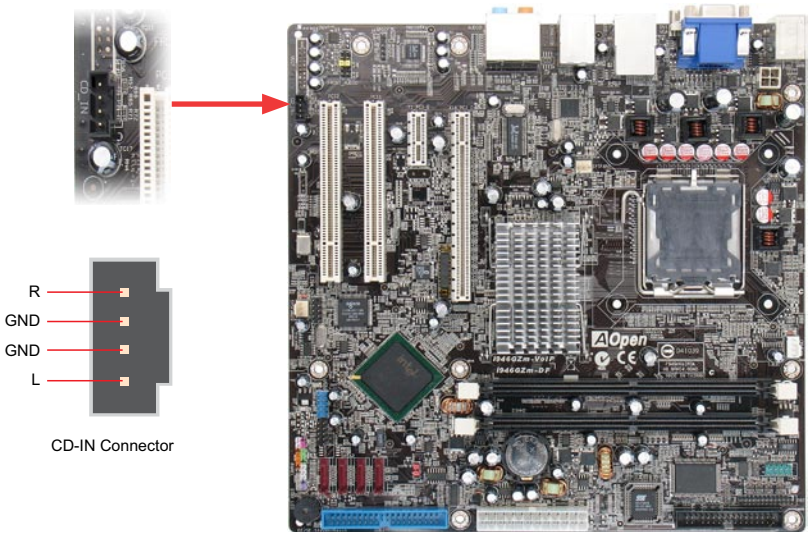




Front Audio Connector

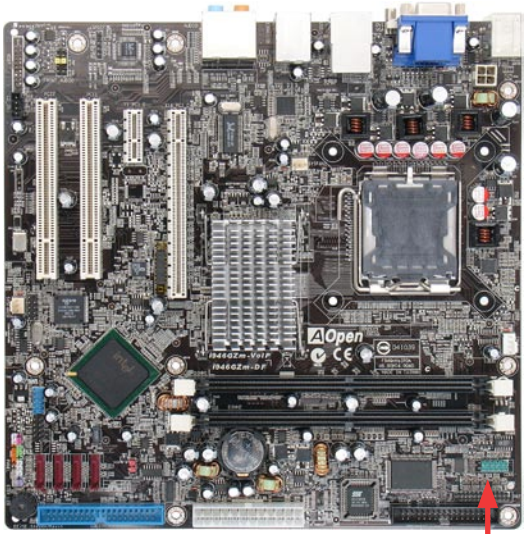
2.19 Connect CD_IN

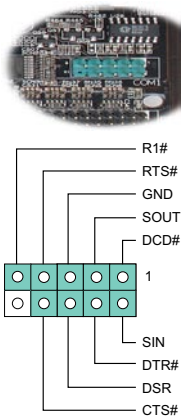
This connector is designed to connect a CD Audio cable from CDROM or DVD drive to onboard sound.



2.20 Connecting COM Port

i946GZm-DF provides two serial ports. i946GZm-DF has two serial ports on the motherboard. One is on the back panel, and the other is on the motherboard. With the proper cable, you can connect it to the back panel of chassis.

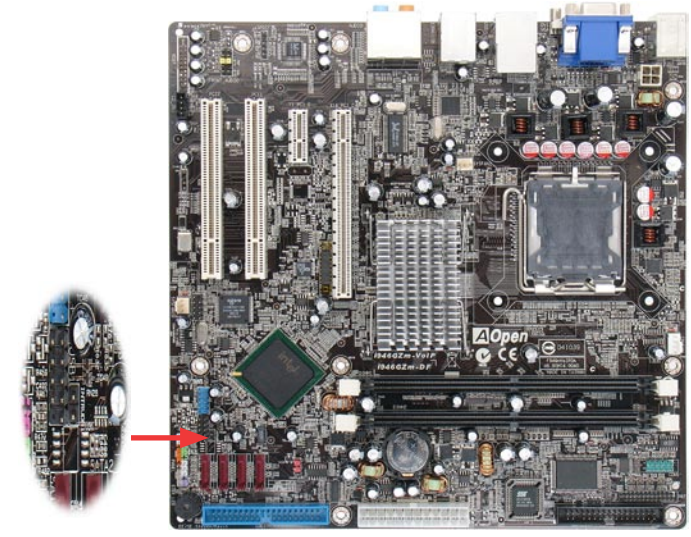




COM1 Connector

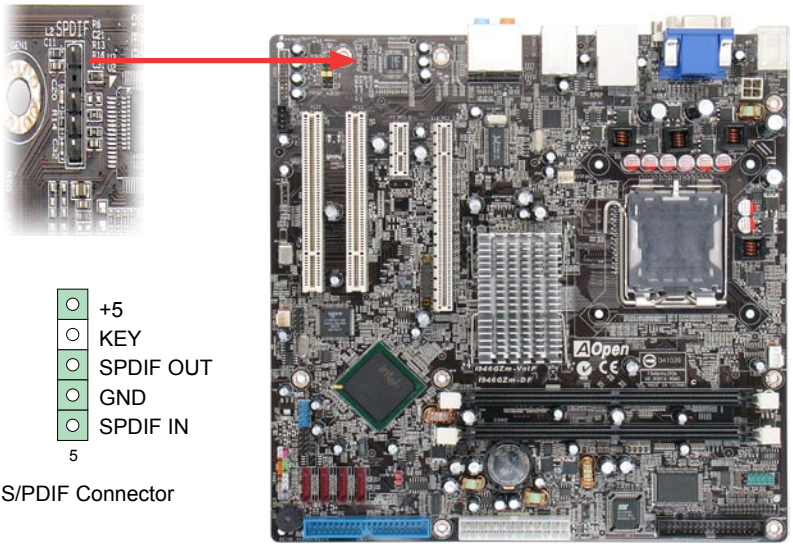
2.21 Connecting Case Open “Chassis Intrusion”

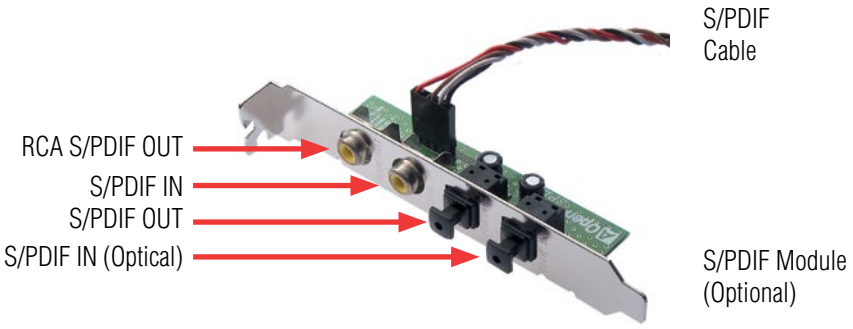
The “CASE OPEN” header provides a chassis intrusion-monitoring function. To make this function work, you have to enable it in the system BIOS, and connect this header to a sensor somewhere on the chassis. So, whenever the sensor is triggered by lights or by the opening of the chassis, the system will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



2.22 Connecting S/PDIF (Sony/Philips Digital Interface)

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



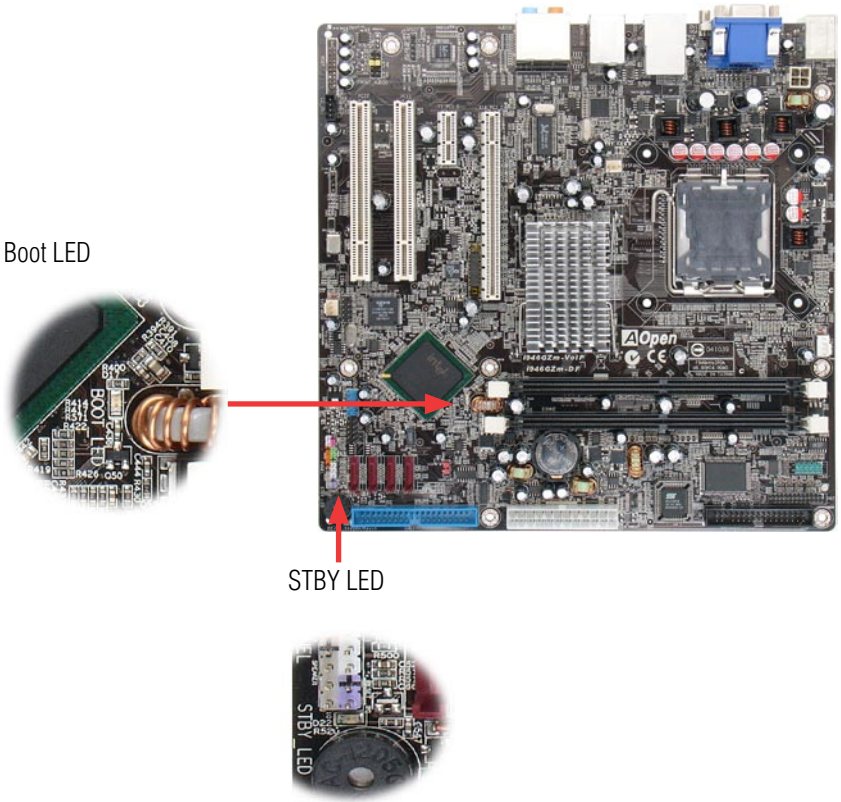


2.23 LED Indicator lights

LED indicators include Standby LED and BOOT LED that help provide system information.

The STBY LED will light up when power is provided to the motherboard, giving you a convenient check of the system power status in circumstances such as power on/off, stand-by mode and RAM power status during Suspend to RAM mode.

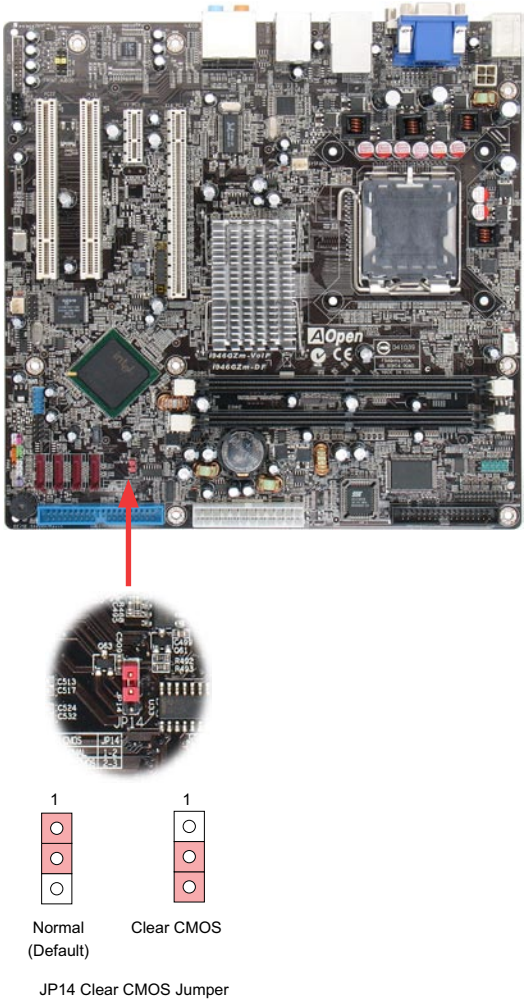
The BOOT LED will keep blinking when you power the system on and when your system is under POST (Power-On Self Test). After POST diagnoses everything and finishes booting, the LED will stay on, otherwise it will remain flashing to warn you that mistakes have occurred during POST.



2.24 JP14 Clear CMOS Jumper

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

1. Turn off the system and unplug the AC power.
2. Remove the ATX power cable from Pin 1-2.
3. Locate JP14 and short pins 2-3 for a few seconds.
4. Return JP14 to its normal setting by connecting it to Pin 1-2 again.
5. Connect ATX power cable back to connector PWR3.



JP14 Clear CMOS Jumper

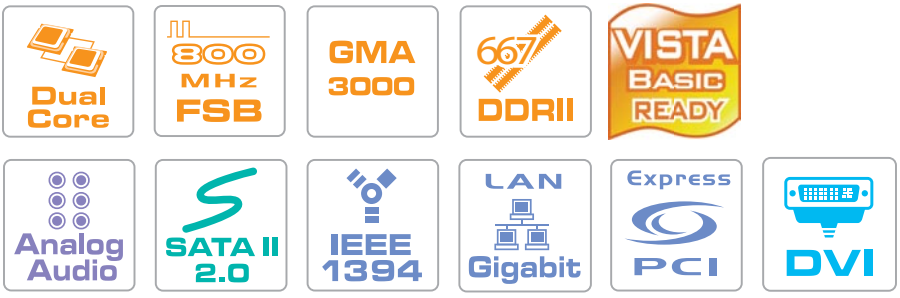
Chapter 3

Special features and Utlilities

Chapter 3 Special Features and Utilities

3.1 Other Useful Features

With an excellent design and R&D team, AOpen includes powerful and handy features that come with our products like the following. You are welcome to visit our technical website to learn more about these features. http://global.aopen.com.tw/tech/techinside



Chapter 4

Setting the BIOS

Chapter 4 Setting the BIOS

4.1 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 byte CMOS area (normally in the RTC chip or in the main chipset).

The Phoenix-Award BIOS™ that is 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 has optimized most BIOS settings of this motherboard. However, some default settings of the BIOS cannot fine-tune items that are controlled by chipset. Therefore, this chapter is intended to guide you and help you to configure some other settings.
To enter the 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.

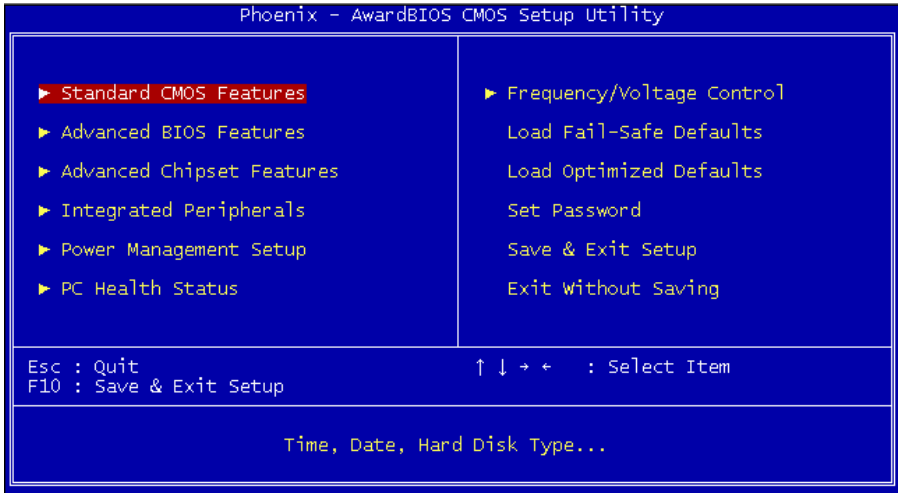
4.2 How to use the Phoenix-Award BIOS Setup Program

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 the keyboard in the Phoenix-Award™BIOS setup program.

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.

4.3 How to Enter the BIOS Setup

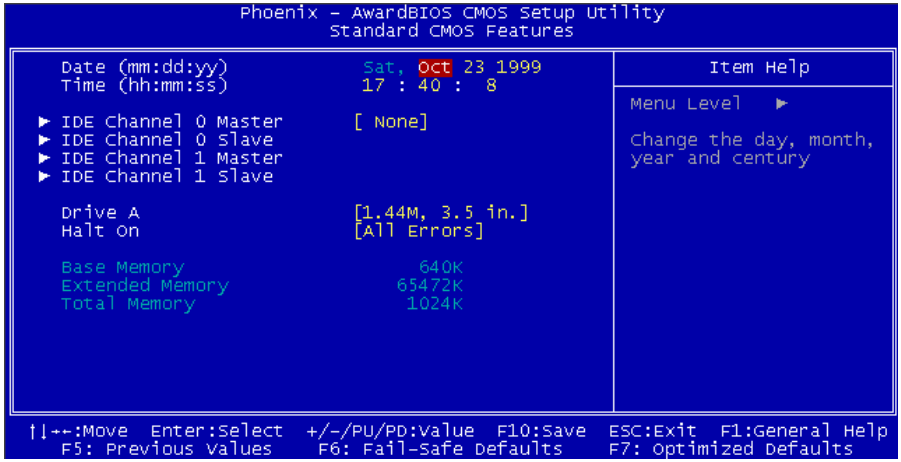
After finishing the jumper settings and connecting cables, you can power on and enter the BIOS Setup. Press <Del> during POST (Power-On Self Test) and choose "Load Fail-Safe Defaults" for recommended optimal performance.



Caution:	Please avoid of using "Load Optimized Defaults", unless you are certain your system components (CPU, SDRAM, HDD, etc.) have been proven acceptable for use.

4.4 Standard CMOS Features

The “Standard CMOS Setup” sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and <PgUp> or <PgDn> to select the value for each item.



Standard CMOS Features > Date

To set the date, highlight the Date parameter. Press <PgUp> or <PgDn> to set the current date. The date format is month, date, and year.

Standard CMOS Features > Time

To set the time, highlight the Time parameter. Press <PgUp> or <PgDn> to set the current time in hour, minute, and second format. The time is based on the 24 hour military clock.

Standard CMOS features > IDE Channel 0 Master
Standard CMOS features > IDE Channel 0 Slave
Standard CMOS features > IDE Channel 1 Master
Standard CMOS features > IDE Channel 1 Slave

This item lets you select the IDE hard disk parameters that your system supports. These parameters are Size, Number of Cylinder, Number of Head, Start Cylinder for Pre-compensation, Cylinder number of Head Landing Zone and Number of Sector per Track. The default setting is Auto, which enables BIOS to automatically detect the parameters of installed HDD (Hard Disk Drive) at POST (Power-On Self Test). If you prefer to enter HDD parameters manually, select Manual.

Standard CMOS Features > IDE Channel 0 Master > IDE HDD Auto-Detection

Press “Enter” to auto-detect parameters of HDD.

Standard CMOS Features > IDE Channel 0 Master > IDE Channel 0 Master (Slave)

Define the parameters of IDE devices in Channel 0 (Master or Slave).
Available options:

None: If there is no device, please select “None” for speeding boot up.
Auto: This will enable BIOS to auto-detect parameters of IDE device. (Default)
Manual: Allow users to define parameter of IDE device.

Standard CMOS Features > IDE Channel 0 Master > Access Mode

Set the using mode of HDD. Available options: CHS / LBA / Large / Auto (default). User can select the mode according to the label on HDD.

Cylinder: Enter cylinder number
Head: Enter head number
Precomp: Write precompensation
Landing Zone: Location of head
Sector: Sector number

Standard CMOS Features > Drive A

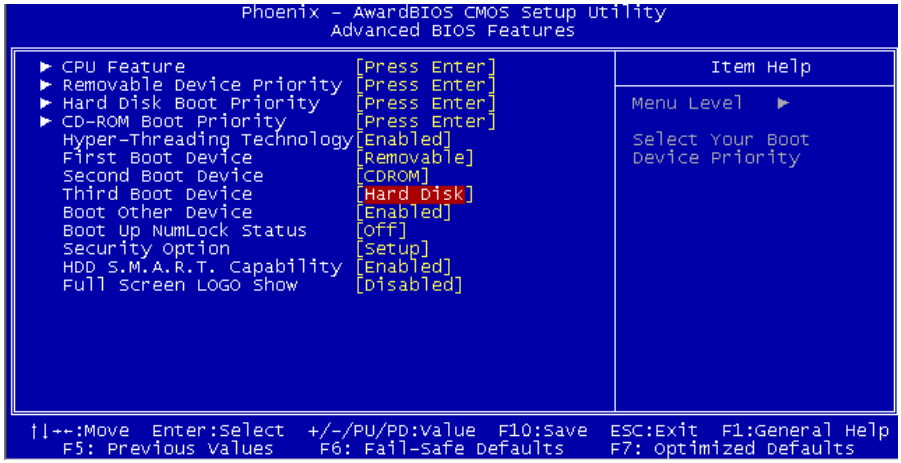
This item allows user to select the floppy drive type. Available items: None / 360KB 5.25” / 1.2MB 5.25” / 720KB 3.5” / 1.44MB 3.5” / 2.88MB 3.5”

Standard CMOS Features > HaltOn

This parameter enables you to stop the system in case of Power-On Self Test (POST) error. Available items: No errors / All errors / All, But Keyboard / All, But Diskette / All, But Disk/Key

4.5 Advanced BIOS Features

This screen appears when you select the option “Advanced BIOS Features” from the main menu.



Advanced BIOS Features > CPU Feature

Can select delay time periods to enable thermal monitoring, TM2 Bus Ratio/VID, Virtualization, Disable bit

Advanced BIOS Features > Removable Device Priority
Advanced BIOS Features > Hard Disk Boot Priority
Advanced BIOS Features > CD-ROM Boot Priority

This parameter allows you to specify the system boot up search sequence.

Advanced BIOS Features > Hyper-Threading Technology

Provides thread-level parallelism on each processor, resulting in more efficient use of processor resources, higher processing throughput, and improved performance for multithreaded software. Available options: Disabled, Enabled

Advanced BIOS Features > First Boot Device
Advanced BIOS Features > Second Boot Device
Advanced BIOS Features > Third Boot Device

Allows you to specify the system boot sequence.
Available options:
Removable: Floppy, USB, ZIP…etc
Hard Disk: Hard Disk Drives
CD-ROM: CD-ROM, DVD-ROM…etc
LAN: LAN Card with boot ROM

Advanced BIOS Features > Boot Other Device
This parameter allows you to specify other boot devices not listed above.

Advanced BIOS Features > Boot Up Numlock Status
Set this parameter to “On” to enable the numeric function of the numeric keypad.
Set this parameter to “Off” to disabling the numeric function allows you to use the numeric keypad for cursor control.
Available options: Disabled, Enabled

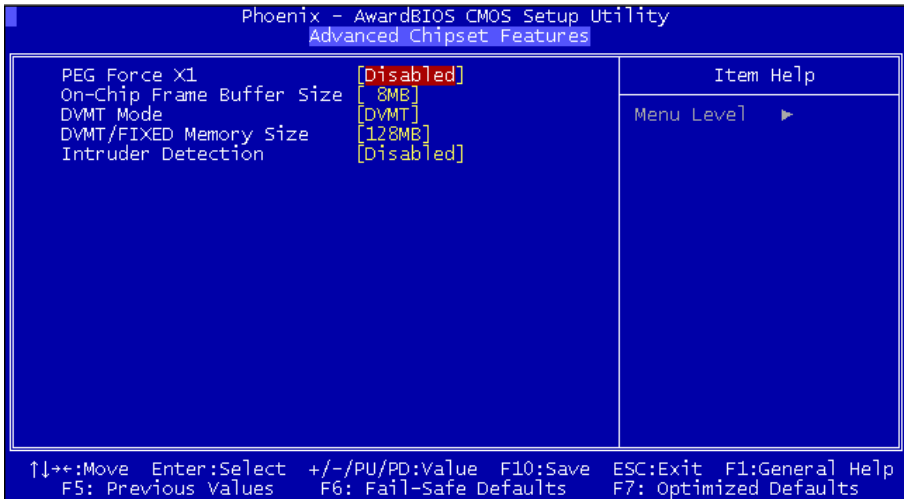
Advanced BIOS Features > Security Option
The “System” option limits access to both the System boot and BIOS setup. A prompt asking you to enter your password appears on the screen every time you boot the system.
The “Setup” option limits access only to BIOS setup. To disable the security option, select Password Setting from the main menu, don’t type anything and just press <Enter>.

Advanced BIOS Features > HDD S.M.A.R.T Capability
This item allows user to enable S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for HDD. This function could predict the possibility of HDD failure.
The default is “Disable.”
Available options: Disabled, Enabled

Advanced BIOS Features > Full Screen Logo Show
This item allows user to select to show or hide “Full Screen logos” or “Vivid BIOS logos”.
Available options: Disabled, Enabled

4.6 Advanced Chipset Features

The “Advanced Chipset Features” include settings for the chipset dependent features. These features are related to system performance.



Advanced Chipset features > PEG Force X1

Used to set (PCI Express Graphics) Forces the x16 slot to function as a x1 slot.
Available options: Disabled (Default), Enabled.

Advanced Chipset features > On-Chip Frame Buffer size

Available options: 1MB or 8MB (Default)

Advanced Chipset features > DVMT Mode

This object is used to set DVMT mode.
Available options: Fixed or DVMT (Default)

Advanced Chipset features > DVMT/Fixed Memory Size

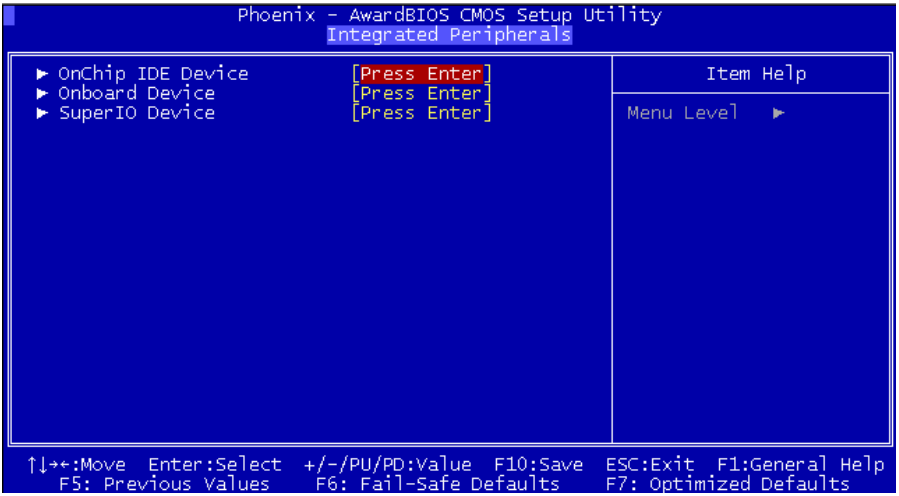
This object is used to set DVMT/Fixed memory size.
Available options: 128MB (Default) or 256MB or MAX.

Advanced Chipset features > Intruder Detection

This item allow user to detect the housing is opened or not. It works only when the housing is designed with CASE OPEN cable and connected to the motherboard.
Available options: Disabled (Default), Enabled.

4.7 Integrated Peripherals > Onchip IDE Device

This submenu appears if you select the option “Integrated Peripherals” from the main menu. This option allows you to configure the I/O features.



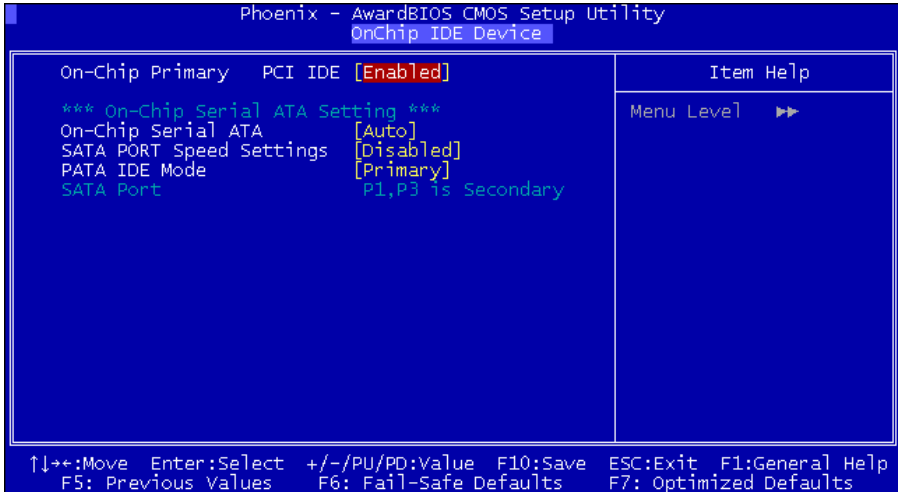
Integrated Peripherals > OnChip IDE Device > Primary PCI IDE
Enabled: Enables the first onboard IDE channel. (Default)
Disabled: Disables the first onboard IDE channel.

Integrated Peripherals > OnChip IDE Device > On-Chip SATA Mode
Disabled: Disable this function.
Auto: BIOS will auto detect (Default)
Combined Mode: You can use up to 4 HDDs on the motherboard; 2 for SATA and the other for PATA.
Enhanced Mode: The motherboard allows up to 6 HDDs to be used; 4 SATA HDDs plus 2 PATA HDDs.
SATA Only Mode: , SATA will be simulated to PATA mode. Support a maximum of 4 SATA devices. PATA devices will be ignored.

Integrated Peripherals > OnChip IDE Device > SATA Port Speed Settings
No Speed negotiation restrictions (Default)
Force GEN I: Limit speed negotiation to Generation 1 communication rate (1.5Gb/sec).
Force GEN II: Limit speed negotiation to Generation 2 communication rate (3.0Gb/sec)

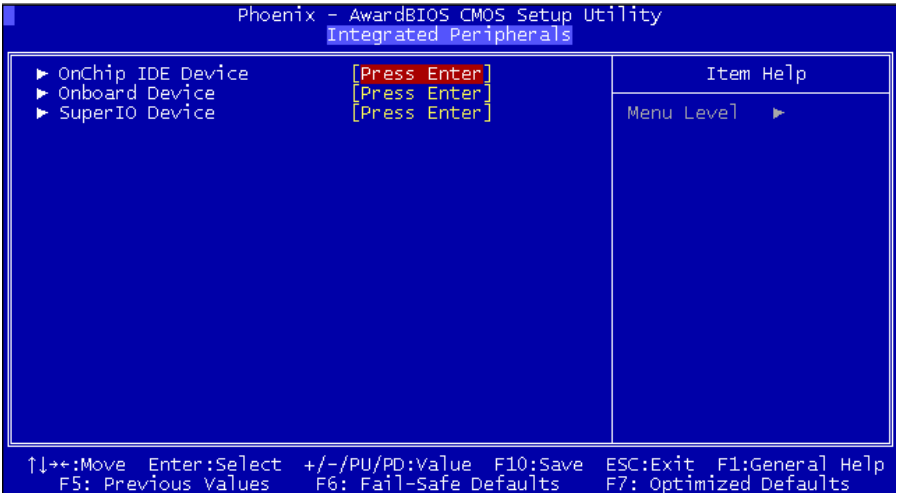
Integrated Peripherals > OnChip IDE Device > PATA IDE Mode

Primary: Set PATA IDE device to be primary channel. (Default)
Secondary: Set PATA IDE device to be secondary channel.



4.8 Integrated Peripherals > Onboard Device

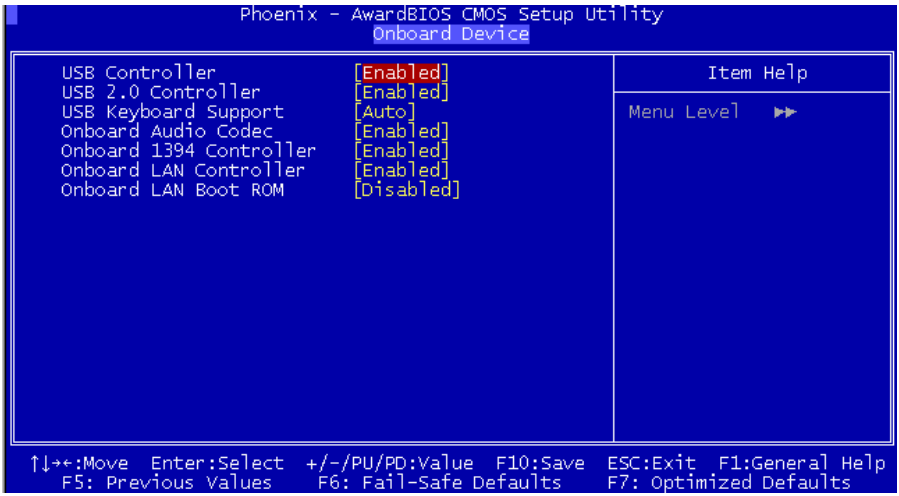
This submenu appears if you select the option “Integrated Peripherals” from the main menu. This option allows you to configure the I/O features.



Integrated Peripherals > Onboard Device

Integrated Peripherals > Onboard Device > USB Controller

This item lets you enable or disable the USB controller.
Available options: Disabled, Enabled (Default)



Integrated Peripherals > Onboard Device > USB 2.0 Controller
This item lets you enable or disable the USB 2.0 controller.
Available options: Disabled, Enabled (Default)

Integrated Peripherals > Onboard Device > USB Keyboard Support
This item lets you enable or disable or set to Auto the USB keyboard driver within the onboard BIOS. The keyboard driver simulates legacy keyboard command and let you use USB keyboard during POST or after boot if you do not have USB driver in the operating system.
Available options: Disabled, Enabled, Auto (Default)

Integrated Peripherals > Onboard Device > Azalia Onboard Audio Codec Select
This item is used to enable or disable the onboard audio codec.
Available options: Disabled, Enabled (Default)

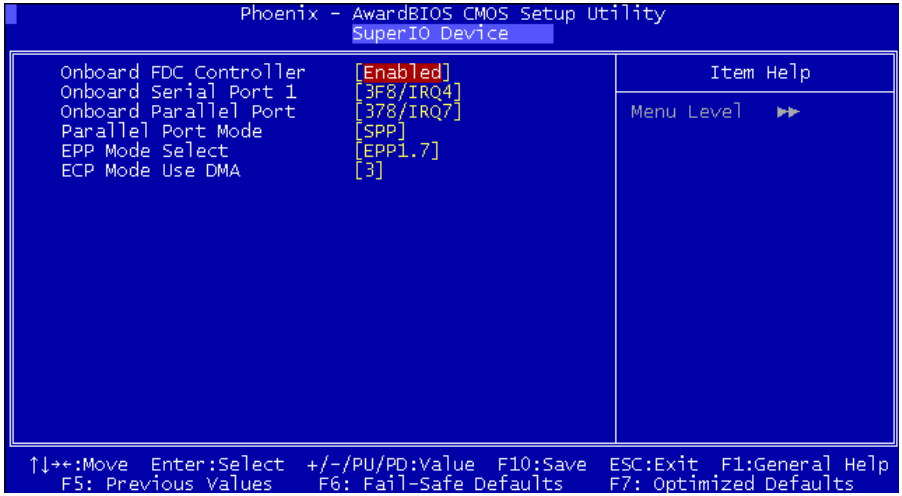
Integrated Peripherals > Onboard Device > Onboard 1394 Control
This item lets you enable or disable onboard 1394.
Available options: Disabled, Enabled (Default)

Integrated Peripherals > Onboard Device > Onboard LAN Controller
This item lets you enable or disable onboard LAN.
Available options: Disabled, Enabled (Default).

Integrated Peripherals > Onboard Device > Onboard LAN Boot ROM
This function decide whether to invoke the boot ROM of the onboard LAN chip.
Available options: Disabled (Default), Enabled.

4.9 Integrated Peripherals > SuperIO Device

This item allows you to set SuperIO device.



Integrated Peripherals > SuperIO Device > Onboard FDC Controller

Setting this parameter to "Enabled" allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to Disabled if you want to use a separate controller card.
Available options: Disabled, Enabled (Default)

Integrated Peripherals > SuperIO Device > Onboard Serial Port 1

This item allows you to assign an address and interrupt for the board serial port.
Available options:
Disabled Disable onboard Serial port 1.
3F8/IRQ4 Enable onboard Serial port 1 and address is 3F8/IRQ4. (Default)
2F8/IRQ3 Enable onboard Serial port 1 and address is 2F8/IRQ3.
3E8/IRQ4 Enable onboard Serial port 1 and address is 3E8/IRQ4.
2E8/IRQ3 Enable onboard Serial port 1 and address is 2E8/IRQ3.
Auto BIOS will automatically setup the port 1 address.

Integrated Peripherals > SuperIO Device > Onboard Parallel Port

This item allows you to enable or disable onboard LPT port.
Available options:
Disabled Disable onboard LPT port.
378/IRQ7 Enable onboard LPT port and address is 378/IRQ7. (Default)
278/IRQ5 Enable onboard LPT port and address is 278/IRQ5.
3BC/IRQ7 Enable onboard LPT port and address is 3BC/IRQ7.

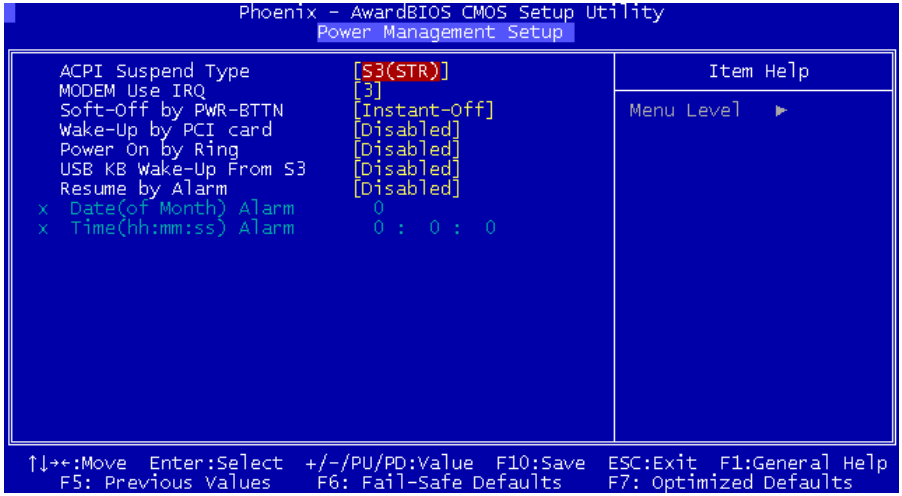
Integrated Peripherals > SuperIO Device > Parallel Port Mode
This item allows you to choose how the LPT port is used.
Available options:
SPP Using the onboard LPT port as Standard Parallel Port. (Default value)
EPP Using the onboard LPT port as Enhanced Parallel Port.
ECP Using the onboard LPT port as Extended Capabilities Port.
ECP+EPP Using the onboard LPT port as ECP & EPP mode.
Normal:

Integrated Peripherals > SuperIO Device > EPP Mode Select
Available options: EPP1.9, EPP1.7 (Default)

Integrated Peripherals > SuperIO Device > ECP Mode Use DMA
Available options: 1, 3 (Default)

4.10 Power Management Setup

The Power Management Setup screen enables you to control the motherboard green features.



Power Management > ACPI Suspend Type

This function allows you to select suspend types. S1 is Power On Suspend and S3 is Suspend to RAM.
Available Options: S1, S3 (Default), S1 & S3

Power Management > Modem Use IRQ

Available Options: NA, 3 (Default), 4, 5, 7, 9, 10, 11

Power Management > Soft-Off by PWR-BTTN

Available Options: Instant off (Default), Delay by 4 Sec.

Power Management > Wake-up by PCI Card

This is a function of PCI specification 2.2. PCI bus supports standby current to PCI card and PCI card can wakeup system if it detects certain activity.
Available options: Disable (Default), Enable

Power Management > Power On by Ring

Available Options: Enable, Disable (Default)

Power Management > USB KB Wake-Up From S3

Available Options: Enable, Disable (Default)

Power Management > Resume by Alarm

The Wake Up Timer is more like an alarm, which wakes up and powers on your system at a predefined time for a specific application. It can be set to wake up everyday or on a specific date within a month. The date/time is accurate to within a second.
Available Options: Enable, Disable (Default)

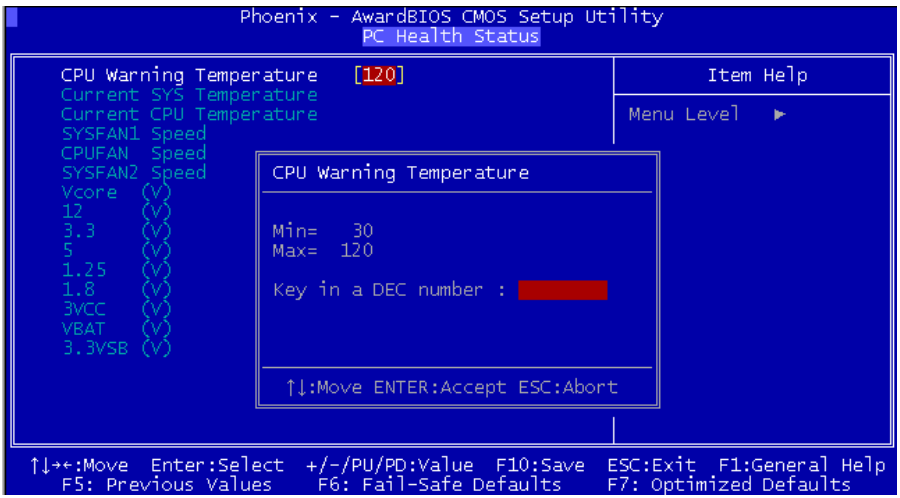
This option lets you enable or disable the RTC Wake Up function.
Available options: By Date, By Week, Disabled

4.11 PC Health Status

This submenu allows you to configure the CPU and memory clock.

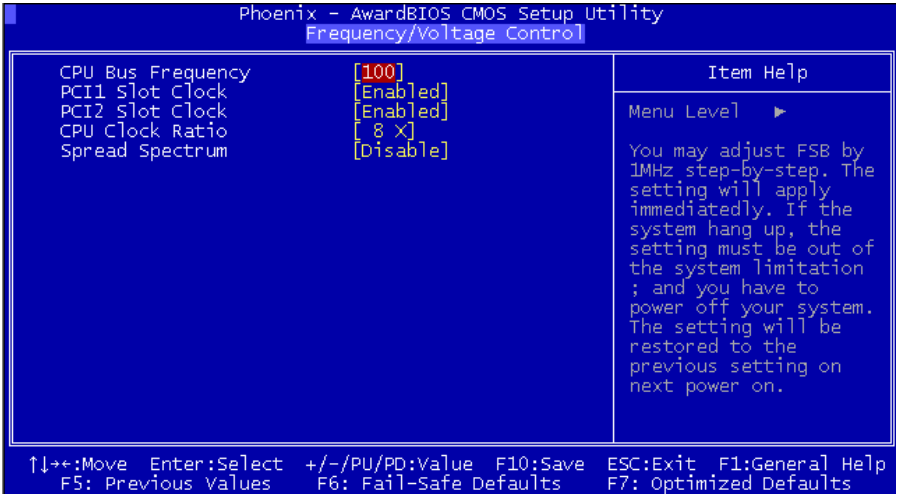
PC Health Status > CPU Warning Temperature

This item allows users to adjust CPU Vcore voltage, the BIOS will determine the adjustable value according to the CPU installed.
Available Options: Min 30, Max 120.



4.12 Frequency/Voltage Control

This submenu allows you to configure the CPU and memory clock.



Frequency/Voltage Control > CPU Bus Frequency

This item allows users to adjust CPU Front Side Bus by 1MHz increments. If the system hangs, the setting might be out of the system limitations. power off the system and the setting will be restored to the previous setting on restart.
Available Options: Min 100, Max 400.

Frequency/Voltage Control > PCI1 Slot Clock

Available Options: Enabled (Default), Disabled.

Frequency/Voltage Control > PCI2 Slot Clock

Available Options: Enabled (Default), Disabled.

Frequency/Voltage Control > CPU Clock Ratio

Available Options: Min 8, Max 50

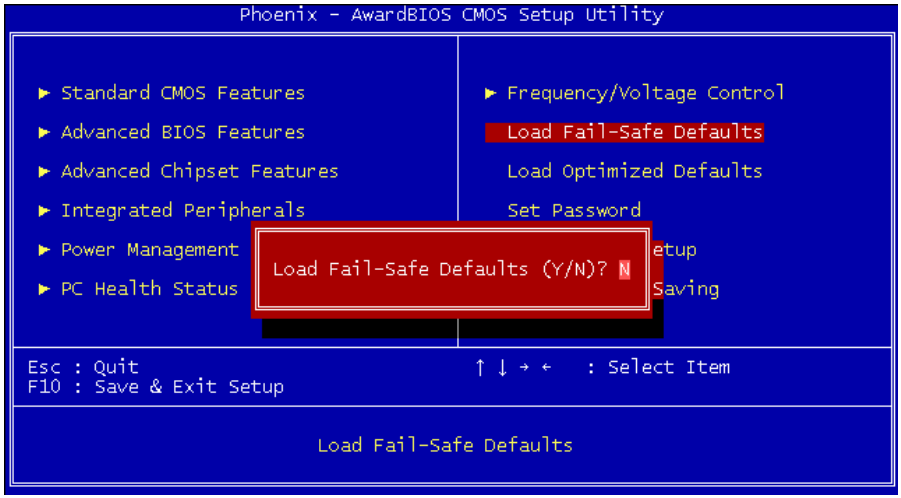
Frequency/Voltage Control > Spread Spectrum

Available Options: Disabled (Default), -0.35%, -0.50%, -0.75%, -1.00%

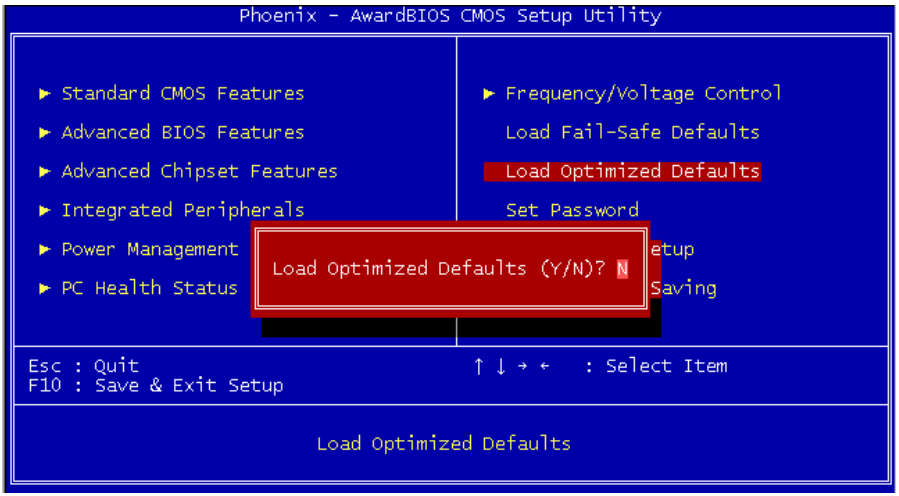
Tip:	When you fail to overclock, use clear CMOS (JP14) to restore the default setting. Then, press “Home” key immediately after you power on the system.

4.13 Load Fail-Safe/Optimized Defaults Settings

The “Load Fail-Safe Defaults” loads the minimum system parameters that are most appropriate to start the system. This is sometimes used after the system has had a serious error and for troubleshooting.

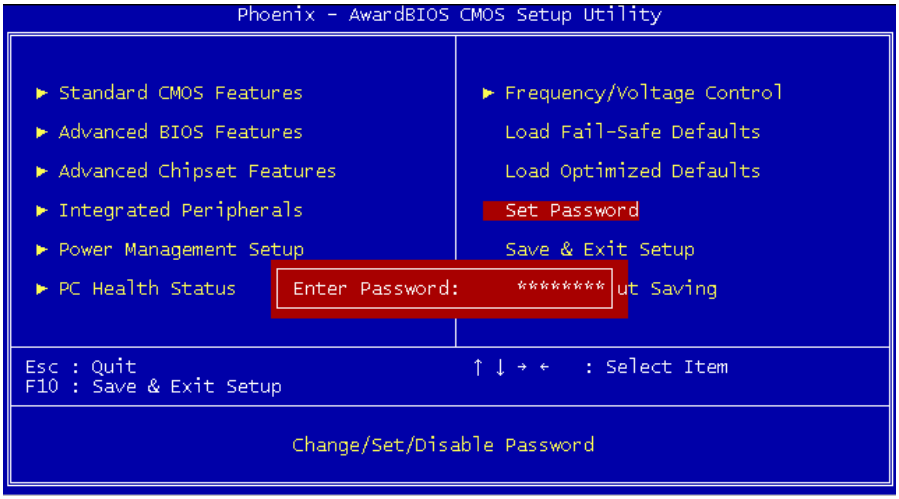


The “Load Optimized Defaults” is used to load the factory defaults for BIOS and Chipset features that are detected by the system.



4.14 Set Supervisor Password

A Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.



To set a password:

1. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. When you type the characters, they appear as asterisks on the password screen box.
2. After typing the password, press the “Enter” key.
3. At the next prompt, re-type your password and press the “Enter” key again to confirm the new password. After the password was typed-in, the screen automatically reverts to the main screen. To disable the password, press “Enter” when being prompted to input the password. The screen displays a message confirming that the password has been disabled.

Set User Password

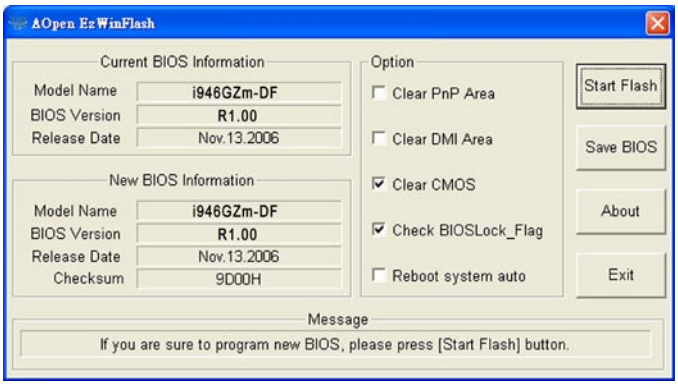
Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.

4.15 Save to CMOS and Exit

A Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.

4.16 BIOS Upgrade under Windows Environment

With outstanding R&D ability of AOpen, we now bring you the EzWinFlash BIOS wizard. With an eye on convenience for users, EzWinFlash combines the BIOS binary code and flash module together, so the only thing you have to do is just click on the utility and downloaded from web and let it help you complete the flash process automatically. EzWinFlash detects your motherboard and checks the BIOS version to prevent your system from any possible failure. Moreover, EzWinFlash takes into consideration any Windows platform you might be using, no matter if you're using Windows 95/98, 98SE/ME, NT4.0/2000, Windows XP or Windows Vista.
In order to provide a much more user-friendly operating environment, AOpen EzWinFlash is natively designed to have multi-language function to make it easier way for users to change the 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/)

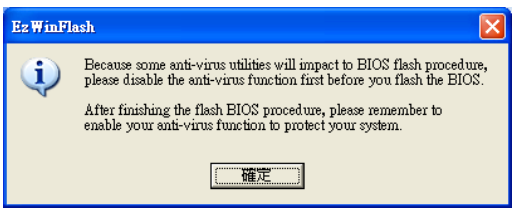
Unzip the downloaded BIOS package (ex: WSGMAXII102.ZIP) with WinZip (http://www.winzip.com) in Windows environment.

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 got the 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 works normally again.

Chapter 5

Installing Drivers and Utilities

Chapter 5 Installing Drivers and Utilities

5.1 Driver Install Utility

You may think that installing drivers and utilities would be a repeated task of going through these installation wizards and step-by-step. You will be surprised how using EzInstall makes it so easy. Without wizards or steps, all you have to do is to do is click and then it's done. Click and it is done. EzInstall makes installation easy and even foolproof!
After putting in the CD, you will be prompted with the AOpen welcome page and our branch information.
First, click on the install driver ICON on the left side for necessary drivers.
Second, click on the install utility ICON on the left side for preferred utilities.
You may also browse CD contents, and Readme to get more information, or just exit the CD installation.

Install Driver

Install Utility

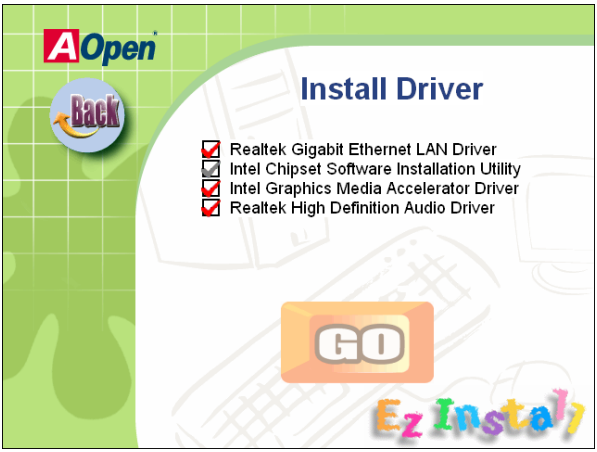
Browse CD Contents

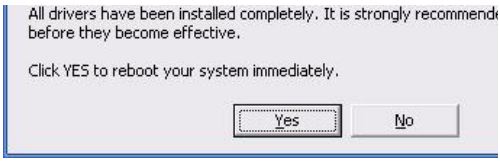
Read me

Exit CD

5.1 Other useful Features

Press the Icon to go to the "Install Driver" page. You may press "Back" to return to the main page.





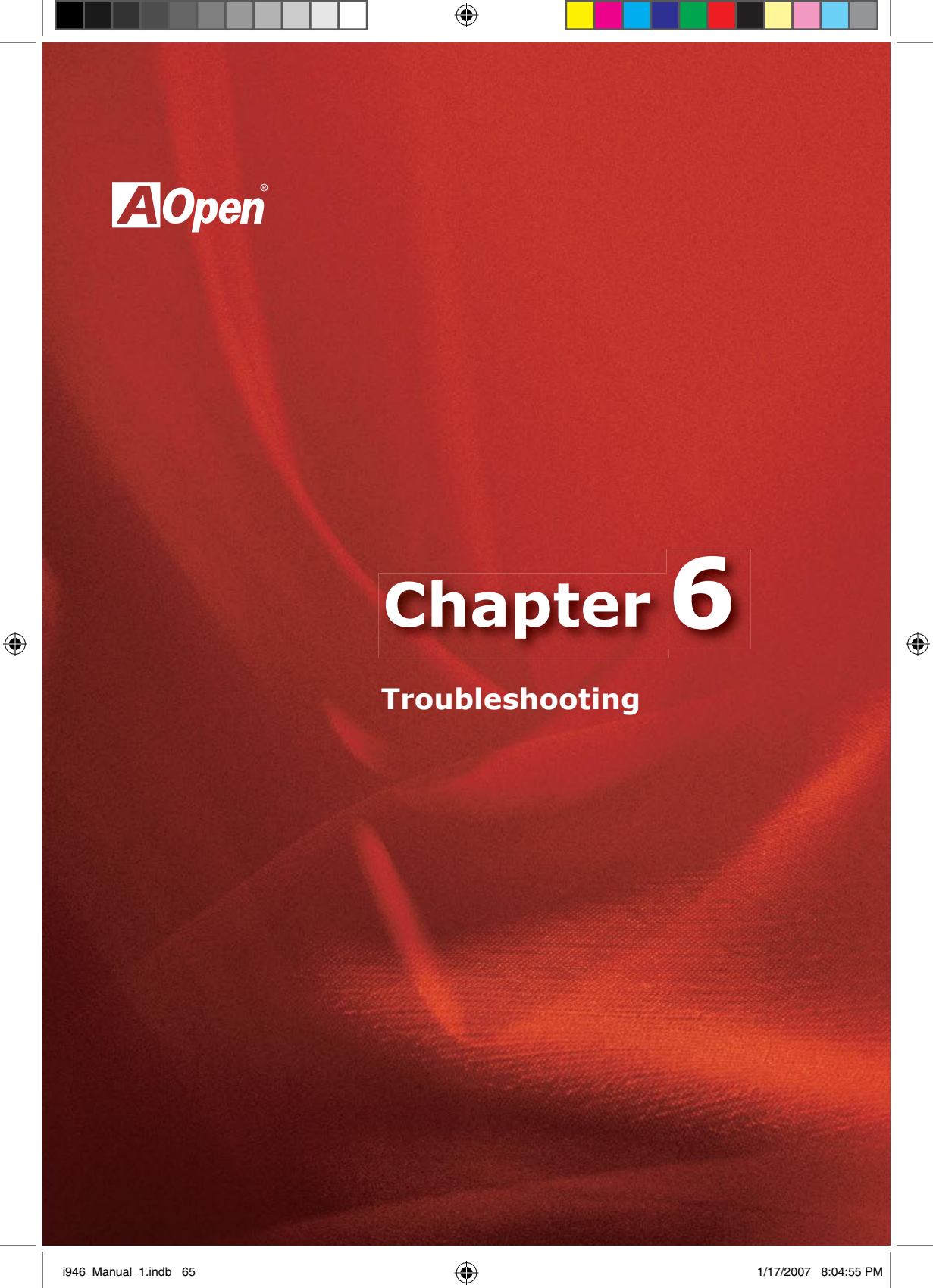
Once clicking "GO", EzInstall will run the installing procedure automatically, and prompt a reboot dialog (Some drivers or utilities may skip the reboot part).

Note:	Due to the limitation of Intel chipsets driver, Windows 2000 is needed to be updated to service pack 4 for installing the audio driver correctly.

5.2 Useful Utilities

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

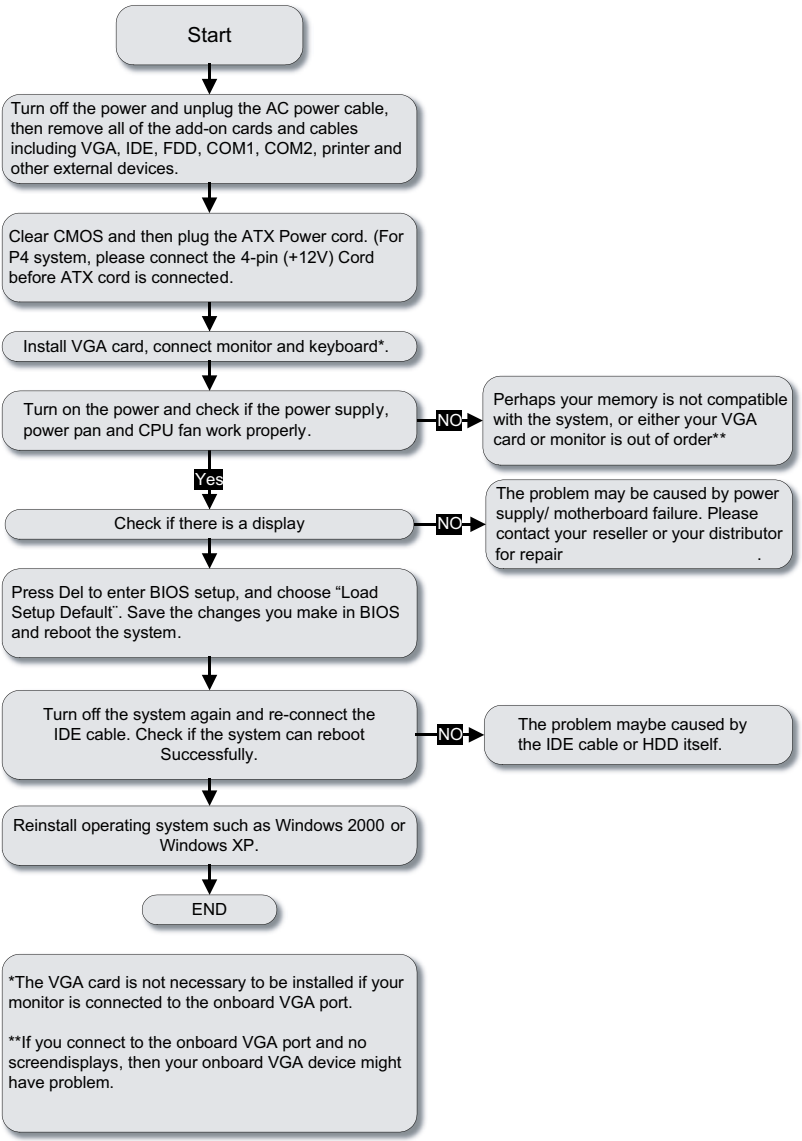
Press the icon to go to the "Install Utilities" page for your selection. You may also press "Back" to get back to the Main page.



Chapter 6 Troubleshooting

6.1 Troubleshooting Steps

You are welcome to visit our technical website to learn more about these features. http://global.aopen.com.tw/tech/techinside.



Chapter 7

Technical Support and Contact Information

Chapter 7 Technical Support and Contact

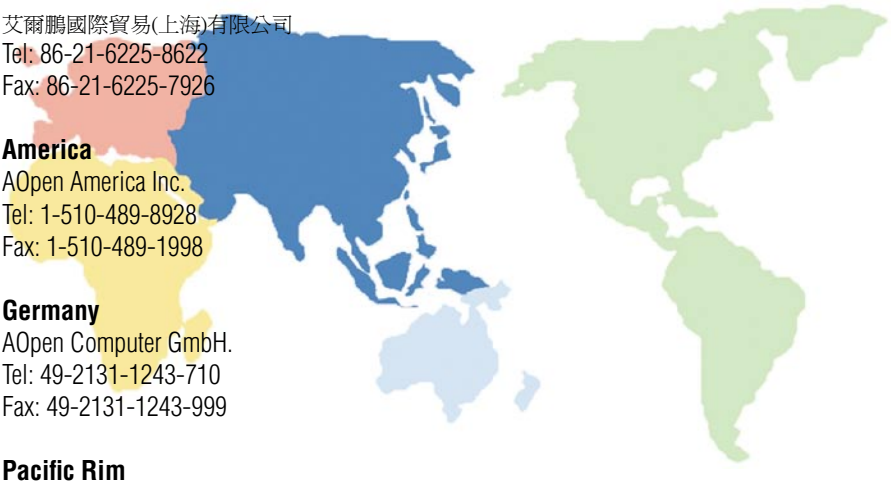
Dear Customer,

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, we recommend you to follow the procedures below and seek help from our branches according to the region you purchased the product. With your help, we can then continue to provide efficient and high quality service to every customer. Thank very much for your understanding!

AOpen Technical Support Team Global Locations

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

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



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

Germany
AOpen Computer GmbH.
Tel: 49-2131-1243-710
Fax: 49-2131-1243-999

Pacific Rim
AOpen Inc.
Tel: 886-2-7710-1195
Fax: 886-2-7710-1187

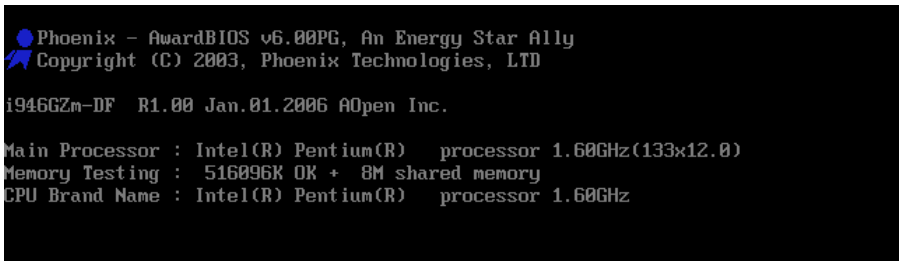
Japan
AOpen Japan Inc.
Tel: 81-048-288-0988
Fax: 81-048-288-0955

Europe Email:	Support@AOpen.NL
Pacific Rim:	http://www.aopen.com.tw
China:	http://www.aopen.com.cn/tech/default.htm
Germany:	http://www.aopencom.de/tech/default.htm
America:	http://usa.aopen.com
Japan:	http://aopen.jp/tech/index.html

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: i946GZm-DF is model name of motherboard; R1.00 is BIOS version

Register Your Motherboard



Thanks for choosing this 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 a slot machine game to win a 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 the bar code label. You can find this bar code label on the outside packing or on the component side of the PCB. For example:

P/N: 9188110201 is part number, S/N: 91949378KN73 is the 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

AOpen Technical Support

Online Manuals: To download a manual, please log on and then select your preferred language. Under "Type¨ directly, 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://global.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 selecting language, you may get the latest updated BIOS/ utility and drivers that you need under "Type¨ directly. In most cases, newer versions of drivers and BIOS have solved earlier bugs, or compatibility problems.
http://download.aopen.com.tw/downloads

eForum: AOpen eForums is provided to discuss our products with other users, in which your problem probably has been discussed before or is answered. After log on, you may select your preferred language under "Multi-language".
http://club.aopen.com.tw/forum

Contact Us: Please prepare details of your system configuration and error symptom before contacting us. The part number, serial number and BIOS version and 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.

Index

Notes: