Table of Contents

1.1 Disposal Instruction

Disposal Instruction (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".

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 læse nærmere 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".

REEE - 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, www.aopen.com.

1.2 A Thank-you Note Before You Get Start

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

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

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

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We regret not informing about any changes in usage standards and other related information. AOpen reserves the right of altering or modifying the content of this manual. In case of any mistakes or incorrect descriptions, which include those on the products, AOpen makes no guarantee or commitments.

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1.3 Features of This Manual

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

Note

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

Warning / Caution

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

Tip

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

1.4 Safety Information

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

Always unplug the power before you make any jumper setting.

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

Chapter 2 Introduction to This Motherboard

2.1 How does your motherboard look like?
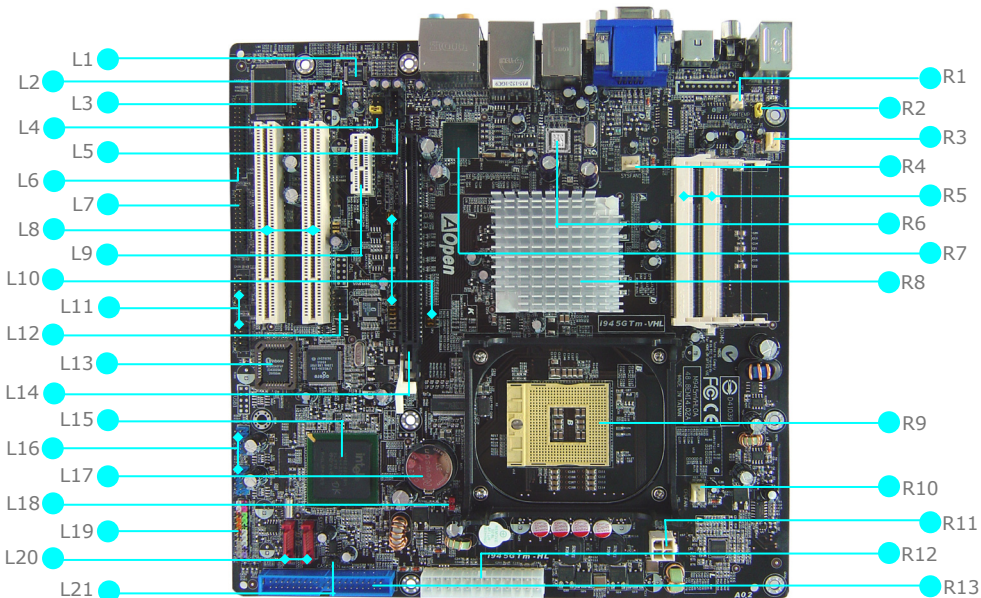
i945GTm-VHL Picture

L1. Onboard HD audio codec	R1. Power Temperature Connector
L2. S/PDIF Connector	R2. JP28 PS2 KB/Mouse Wakeup Jumper
L3. IRDA Connector	R3. Power FAN1 power connector
L4. Front Audio Connector	R4. System FAN1 power connector
L5. CD-IN Connector	R5. 200 Pins SODIMM x 2
L6. FDD Connector	R6. Marvell PCIe gigabit Lan Chip(i945GMm-HL)
L7. Printer Connector	R7. intel PCIe gigabit Lan(i945GTm-VHL)
L8. 32-bit PCI Expansion slot x 2	R8. intel 945GT/945GM north bridge
L9. PCI Express x1 Slot	R9. Socket 479 for Yonah Core Duo/Solo CPU
L10. PCI Express VGA card enable jumper	R10. CPU FAN power connector
L11. COM1+COM2 Connectors	R11. 4 pins CPU power connector
L12. IEEE 1394 Connector	R12. ATX power connector
L13. BIOS	R13. IDE connector
L14. PCI Express x 16 Graphic expansion slot	
L15. ICH7M/ICH7MRDH Southbridge	
L16. USB 2.0 connectors	L19. Front Panel connectors
L17. Battery	L20. Serial ATA Port x 2
L18. JP14 CMOS clear Jumper	L21. Case open connector

2.2 Specification

Here is the main function of your motherboard.

Models	i945GTm-VHL	I945GMm-HL
CPU	intel Yonah Core Duo/Core Solo CPU Socket 479 533/667MHz	
Chipset	intel 945GT/ICH7MDH	intel 945GM/ICH7M
Main Memory	Dual Channel DDRII SODIMM x 2, DDRII400/533 DIMM Type : 256/512MB & 1GB SODIMM Max Memory : 4GB	
Graphics	Integrated VGA Engine in Chipset PCI Express x 16 Graphic Slot	
IDE	Integrated ATA100 and Serial ATA Controller Max Disk: 144,000,000GB [by 48 bits LBA Spec.]	
LAN	intel Gigabit PCI Express LAN chip	Marvell Gigabit PCI Express LAN Chip
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 x16 Graphics Slot x 1 PCI Express x1 Slot x 1 PCI Slots x 3	
Back Panel I/O	USB Ports x 4, LAN Port x 1 VGA Port x 1, DVI Port x 1 Standard Video Port x 1 PS/2 Connector x 2 Analog S/PDIF audio connector x 1 Line_In x 1, Speaker_Out x 1, MIC_In x 1 Rear SUR x 1, Center/Subwoofer x 1, Side SUR x 1	
On Board Connector	Floppy Drive Connector x 1 IDE Channel: ATA100 x 1 Serial ATA Channel x 2 Front Panel x 1 Front Audio x 1 USB2.0 Connector x 4 CPU FAN x 1 System FAN x 1 Power FAN x 1 Power Temperature Connector x 1 Case Open Connector x 1 S/PDIF Connector x 1 CD_IN x 1 IrDA x 1 Printer Connector x 1 COM1 Connector x 1 COM2 Connector x 1 IEEE 1394 x 1	
BIOS	Award PnP 4Mb Flash ROM BIOS	
Board Size	244 mm x 244 mm	

2.3 Block Diagram

VGA Onboard

Standard Video

PCI Express x 16 Graphics Slot

DVI Connector

Socket 479 intel Yonah Core Duo/Solo CPU

Chrontel 7307

Intel 945GT/945GM Chipset

500MB/s

PCI Express x 1 Slot x 1

PCI Bus

32-bit PCI Slot x 2

533/667MHz System Bus

150MB/s

Serial ATA Port x 2

ATA 33/66/100

IDE Drives x 2

RealTek Azalia CODEC

DDRII SODIMM x 2

DDRII 400/533/667 RAM Up to 2GB

ICH7M/ ICH7MDH

Marvell/intel PCI Express Gigabit LAN Chip

LAN connect Component

Parallel Port

Floppy Disk Drive

Serial Port x2

Winbond Super I/O

Agere IEEE 1394 Controller

4Mbits Flash EEPROM

USB Port x 8

IEEE 1394 x 2

Chapter 3 Hardware Installation

3.1 Quick Installation Procedure

1. Installing CPU

2. Installing CPU Fan & System Fan

3. Installing Memory Module

4. Installing HD, CD-ROM and SATA Disk, etc

5. Connecting Front Panel Cable

6. Connecting ATX Power Cable

7. Installing PCI Express x 16 Graphics Cards & PCI Express x 1 Cards and PCI Cards

8. Installing Other Devices (USB, Front Audio, etc)

9. Connecting Back Panel Ports

10. Loading Default BIOS, Setting CPU Frequency

11. Installing Operating System (such as, Windows XP)

12. Installing Drivers & Utilities

3.2 Installation You Have to Know

Installing CPU

This socket supports uFCPGA package CPU, which is the latest Yonah Core Duo and Core Solo CPU package developed by Intel. Other forms of CPU package are impossible to be fitted in.

1. Unscrew the socket screw counter-clockwise.

2. Locate Pin 1 in the socket and look for a golden arrow on the CPU upper interface. Match Pin 1 and golden arrow. Then insert the CPU into the socket.

3. Lock the CPU socket screw clockwise to fasten CPU.
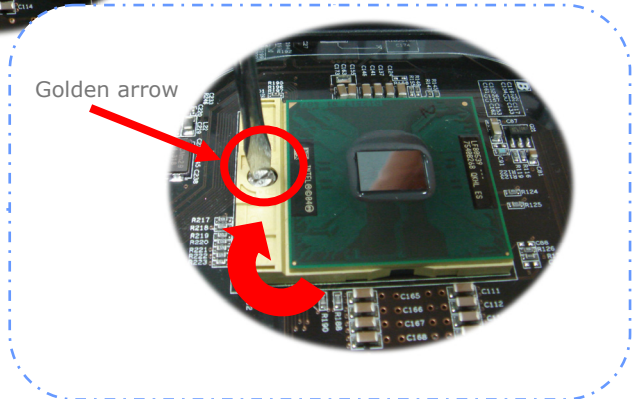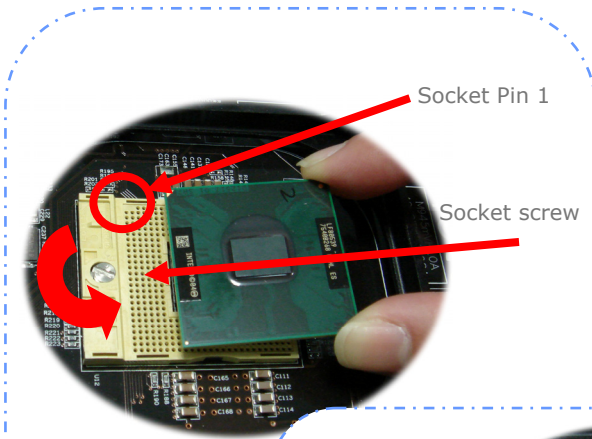
Installing CPU Cooler

This motherboard comes with a special CPU cooler desiged by AOpen, please follow the following steps to install CPU cooler.

1. Please apply thermal paste on the bottom of CPU cooler.

Thermal paste
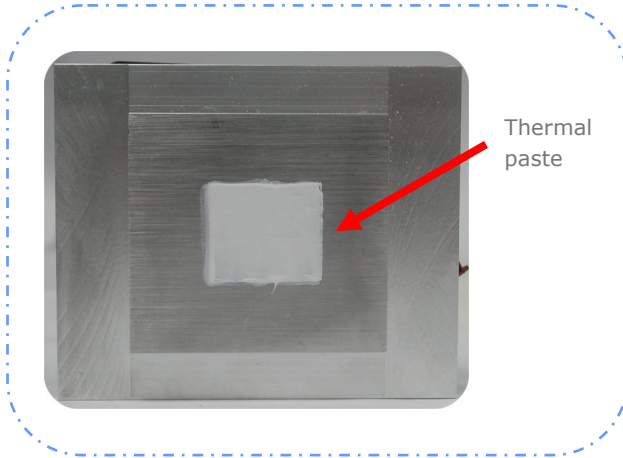
2. Gently put CPU cooler onto the CPU retention module.
3. Connect cooler's fan power cable onto CPUFAN connector.

CPUFAN Connector
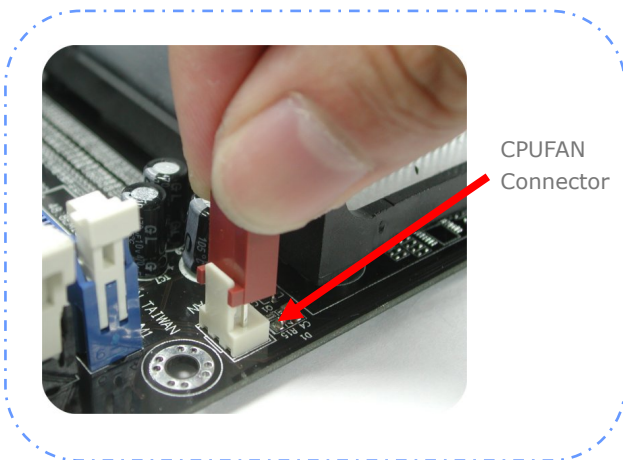
4. Install two cooler fixing sticks into CPU retention module.

Fixing stick

🔖 **Note:** *Make sure that the sticks have hooked CPU retention module firmly.*
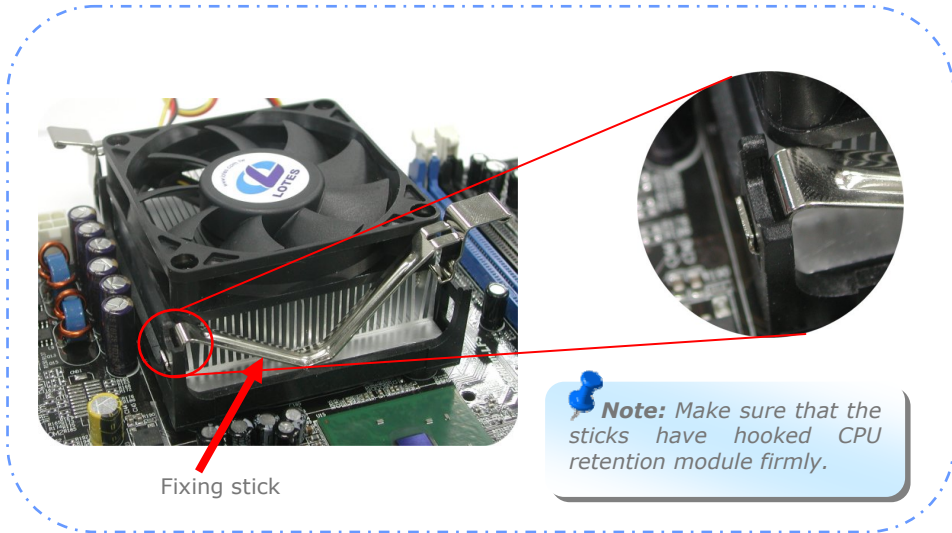
5. Push the iron plate of cooler fixing stick up a bit.
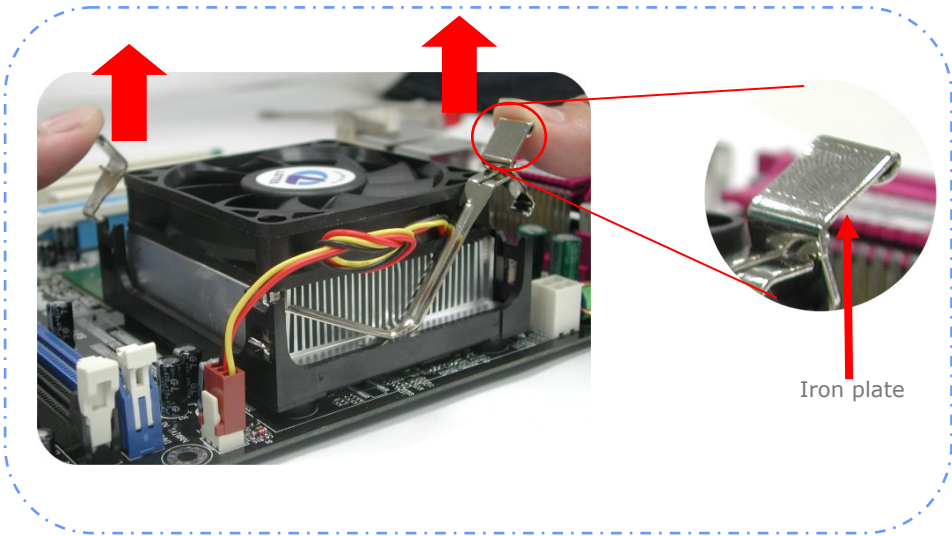
Iron plate

6. Then press iron plate downward till you hear a "clip" sound.
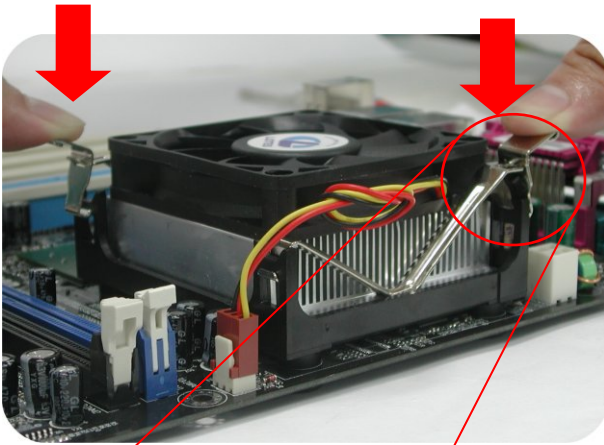
📌 *Note: Make sure that the iron plate have hooked CPU retention module firmly.*

Installing CPU and System Fans

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

GND
+12V
Sensor

POWER FAN Connector

GND
+12V
Sensor

System FAN Connector

GND
+12V
Sensor

CPU FAN Connector

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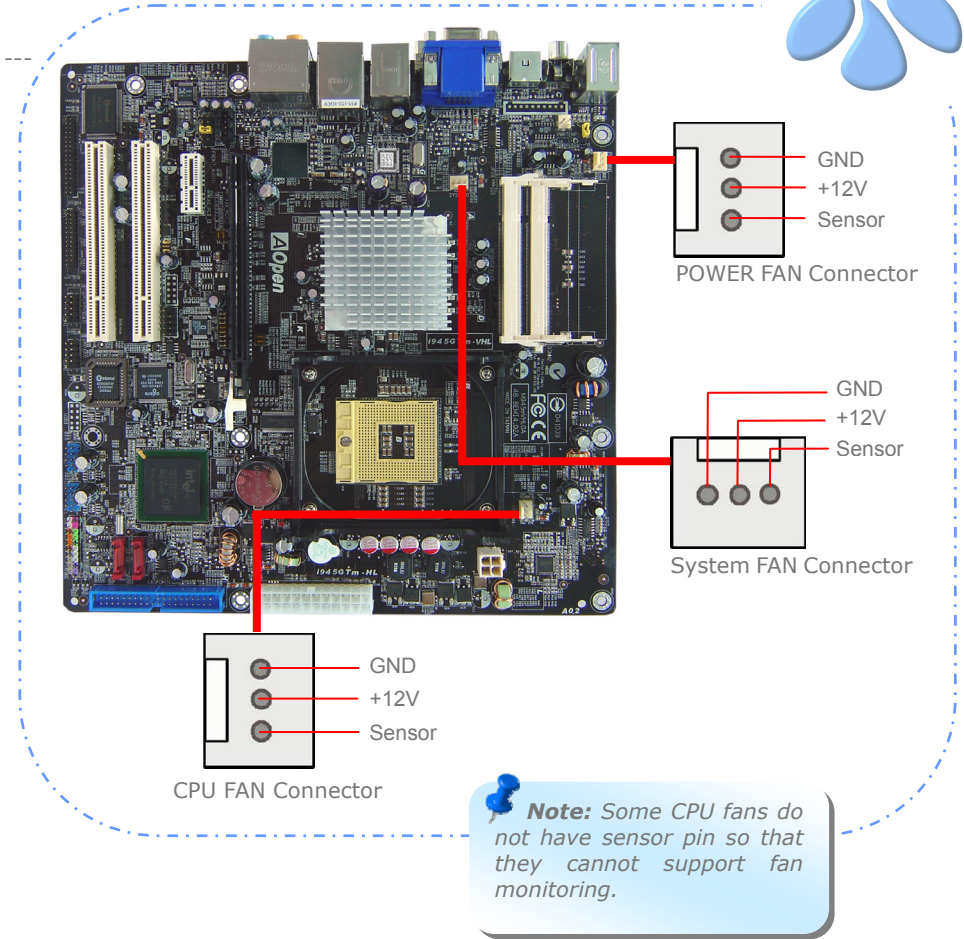
Installing Memory Modules

SODIMM slots are designed in high and low positions which are very easy to recognize. Insert the module straight down to the SODIMM slot with fingers and press down firmly until the SODIMM module is securely in place.
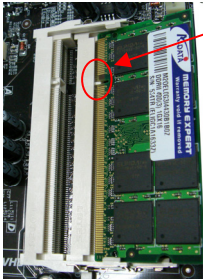
Key

1.
Please aim the key with SODIM memory module
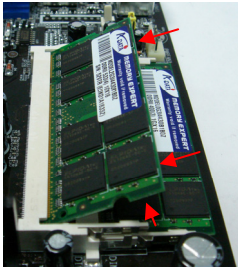
2.
Please have 30° angle around to plug and insert into the SOMDIMM slot
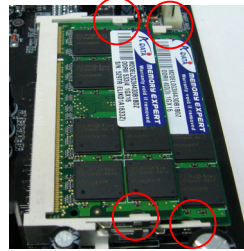
4.
Check the tabs are properly hold memory module

3.
Please press the Memory vertically to have "Clip" sound
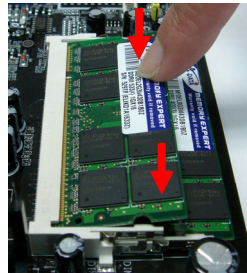
Note: The tabs of the SODIMM slot will clip to hold the module in place when the SODIMM module touches the slot's bottom.

Maximum The Performance of the Dual Channel

To obtain the highest performance of Dual Channel, the configuration of DIMM must meet the following conditions.

Matched DIMM configuration in each channel

● Same density (128MB~1GB)
As long as you insert memory modules of same density into Channel 1 (SODIMM1) and Channel 2 (SODIMM3), dual channel mode will be enabled.

Ex: if you insert 1GB memory module into DIMM1 and DIMM3, dual channel mode will be enabled when DIMM1 + DIMM3 = 1GB

● Same DRAM bus width (x8 or x16)

● Either single-sided or double-sided

> *Note:* *Using memory modules of different chip will cause system unstable.*

When dual channel mode is successfully enabled, the screen will show "Dual Channel Mode Enabled" while entering POST screens.

```
Phoenix - AwardBIOS v6.00PG
Copyright (C) 1984-2003, Phoenix Technologies, LTD.

i945GTm-VHL R1.00 Mar. 06. 2006 AOpen Inc.

Main Processor      : Intel(R) Pentium(R) M CPU    T2500    @ 2.00GHz(166x12), 2 CPUs
Memory Testing      : 1047552K
CPU Brand Name      : Intel(R) Pentium(R) M CPU    T2500    @ 2.00GHz

  Memory Frequency For DDR2 667
 (Dual Channel Mode Enabled)
IDE Channel 0 Master : Maxtor 6E040L0 NAR61590
IDE Channel 0 Slave  : None

IDE Channel 2 Master : None
IDE Channel 2 Slave  : None
```

Connecting IDE and Floppy Cables

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

Pin 1

FDD Connector

Pin 1

Primary
Slave (2nd)

Primary
Master (1st)

ATA 33/66/100 IDE Connector
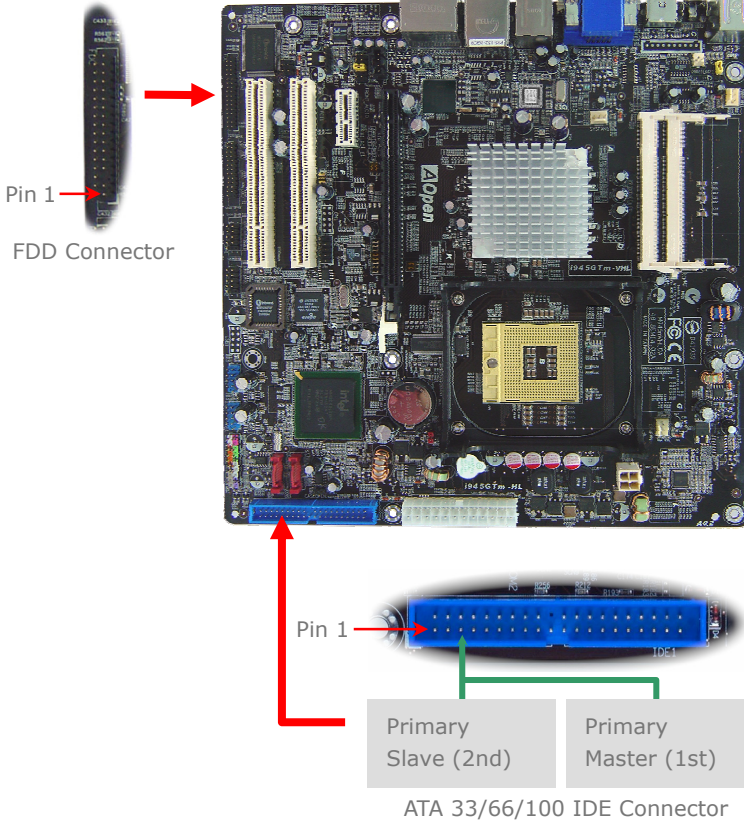
Connecting Front Panel Cable

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

Locate the power switch cable from your housing, which is a 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked SPWR.
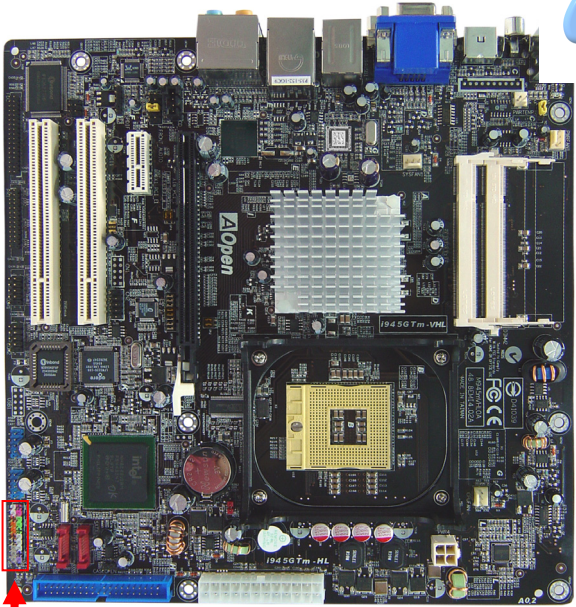
	1
NC	Power Switch
NC	GND
+5V	Power LED-
HDD LED	GND
HDD LED	Power LED+
+5V	NC
+5V	GND
GND	GND
NC	RESET
SPEAKER	GND

Front Panel Connector

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 20-pin connector.

+12V	
+12V	
Ground	
Ground	

COM		COM
COM		PS-ON
-5V		COM
+5V		-12V
+5V		+3.3V
COM		
+3.3V		
+12V		+3.3V
5VSB		+3.3V
PW-OK		COM
COM		+5V
+5V		COM
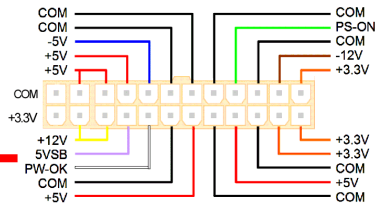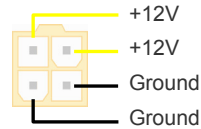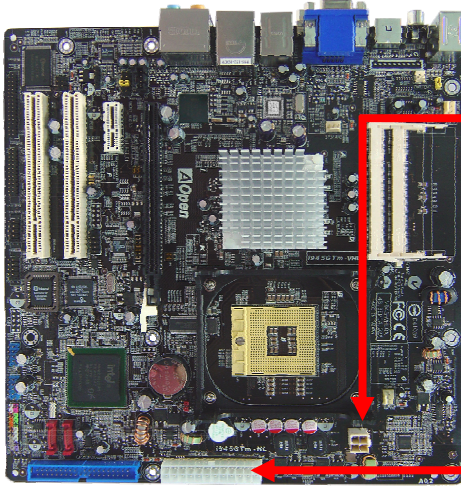
Note: *Please aim the power plug at the* **left side** *of the 24-pin ATX power connector when the foolproof design faces you as shown.*
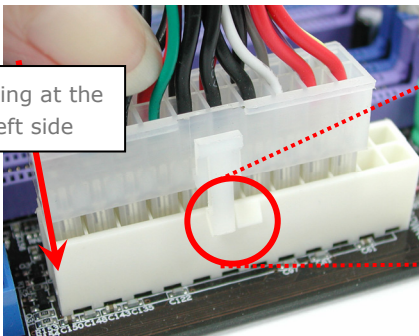
Aiming at the left side
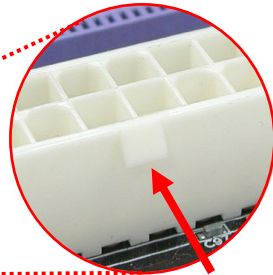
Foolproof

3.3 Other Installation for Your Reference

Setting CPU Frequency

Setting CPU Frequency

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

(Users do the overclocking at their own risk!!)

BIOS Setup > Frequency / Voltage Control > CPU Bus Frequency

Processor Number	Architecture	Clock Speed	Front Side Bus	Cache	Ratio
Core Duo T2700	65nm	2.33GHz	667MHz	2MB L2	14
Core Duo T2600	65nm	2.16GHz	667MHz	2MB L2	13
Core Duo T2500	65nm	2GHz	667MHz	2MB L2	12
Core Duo T2400	65nm	1.83GHz	667MHz	2MB L2	11
Core Duo T2300	65nm	1.66GHz	667MHz	2MB L2	10
Core Solo T1400	65nm	1.83GHz	667MHz	2MB L2	11
Core Solo T1300	65nm	1.66GHz	667MHz	2MB L2	10

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

Tip: When you fail to over-clock, you could:

1. *Clear CMOS (JP14) to restore the default setting.*
2. *After turning power on, press "Home" immediately until the screen appears.*

*Warning: Intel 945GT/945GM chipset supports maximum 667MHz (166MHz*4) system bus; higher clock setting may cause serious system damage.*

Connecting Serial ATA

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

SATA1

SATA2
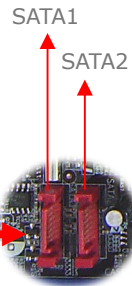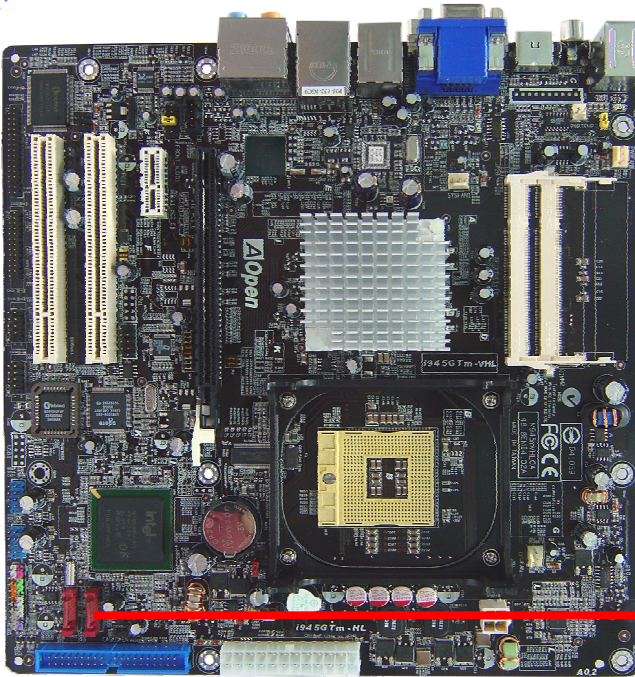
Adjusting your Hard Disk Setting

Except its original 1 set of parallel IDE, this motherboard supports the latest serial ATA hard disk. If you are unable to find your newly installed serial ATA hard disks on your operating system after having them installed, the problem may lie in the BIOS setting. You can simply adjust BIOS settings to have them work properly.

After installing your hard disks properly, you can directly go to BIOS setting screen for adjustment. Simply pressing **"Integrated Peripherals → OnChip IDE Device → On-Chip Serial ATA"** to choose your preferable mode. If you have no intention of changing its original setting, the default would be Auto.
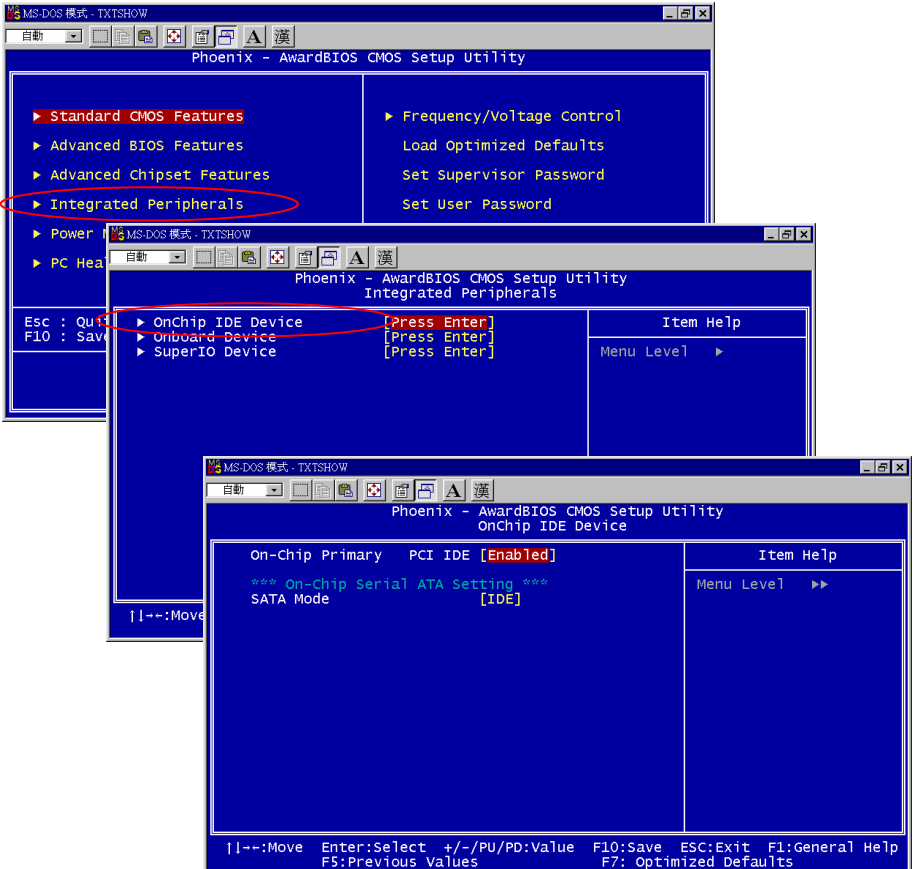
Connecting PCI express x16 Graphics Slot

This motherboard provides a PCI Express x 16 Graphics slot, a black slot having the latest PCI Express x 16 specification on motherboard. The PCI Express x 16 is a bus interface targeted for high-performance 3D graphic. Traditionally AGP used both rising and falling edge of the 66MHz clock for 8X AGP, and the data transfer rate could achieve 2.1GB/s. Now PCI Express x 16 is moving to higher data transfer rate, which is upgraded to 8.0GB/s (250MB/s x 16 x 2, it's 4.0GB/s per direction)..
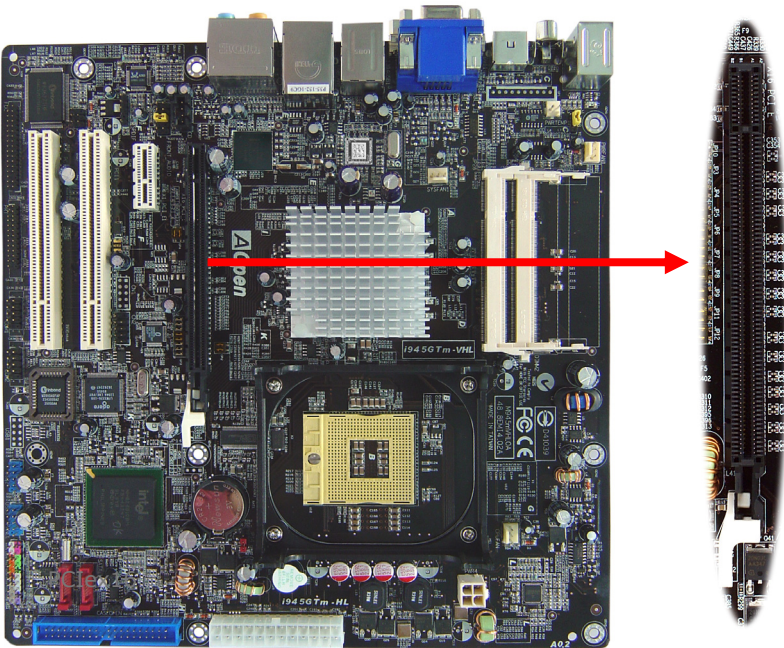
If user plugs a PCI Express x 16 Graphics, you must remove jumpers beside PCI Express x 16 Slot.

Plug PCI Express x16 graphic card, please remove jumpers below

Remove Jumpers
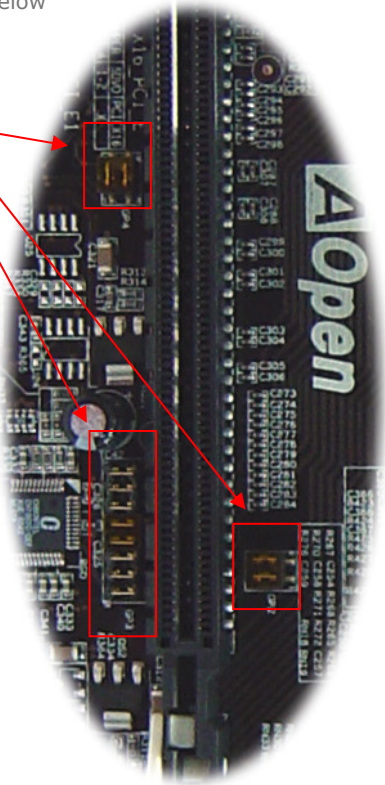
Warning: *If user doesn't remove jumper, it might make system unstable.*

Connecting PCI Express x 1 Slot

This motherboard provides one PCI Express x 1 slot, which is located between the PCI Express x 16 and traditional PCI slot. In order to go with the step of today's and tomorrow's processors, PCI Express x 1 provides higher I/O bandwidth. The transfer data rate could achieve 500MB/s concurrently (it's 250MB/s per direction), which is nearly 4 times faster than the traditional PCI. You could install any PCI Express x 1 device in these slots for your preference.

PCIex1
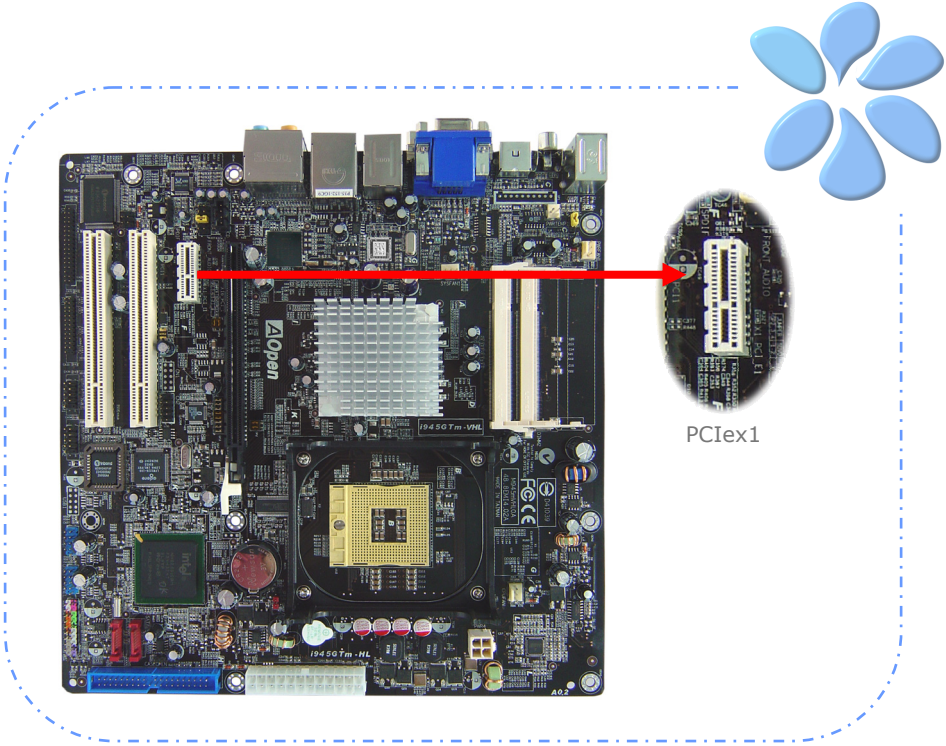
Connecting IrDA

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

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

Pin 1

```
        1
NC   [O O]  KEY
+5V  [O O]  GND
IR_TX[O O]  IR_RX
```
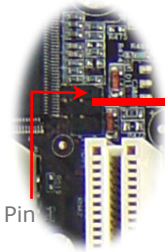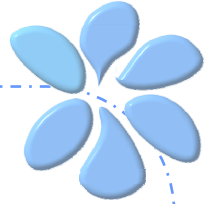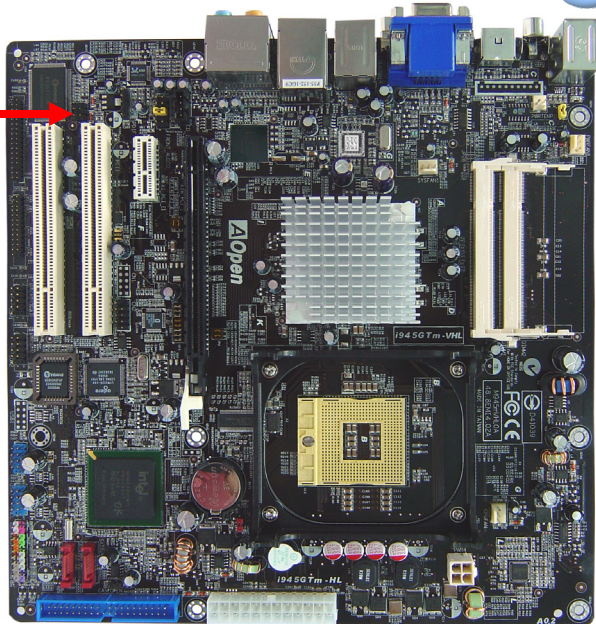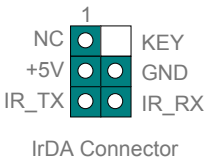
IrDA Connector

10/100/1000Mbps LAN Supported

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

Speed LED (Left)
Green 100Mbps
Orange Gigabit mode

ACT LED (Right)
Yellow
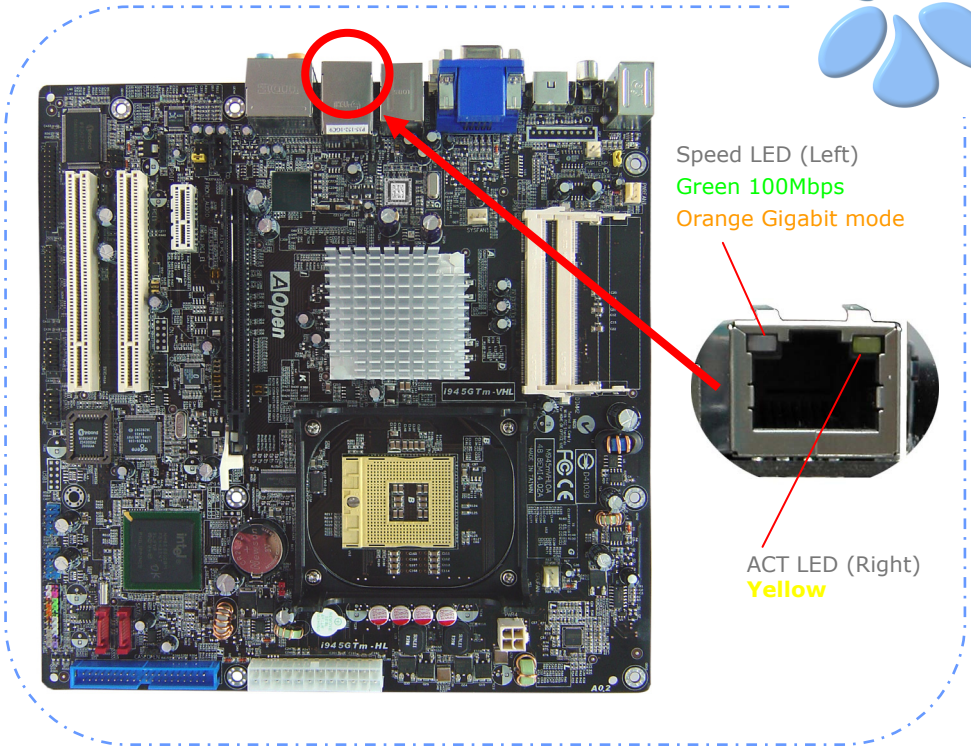
Connecting USB2.0

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

Pin 1 →

Pin 1 →

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

USB 2.0 Connector
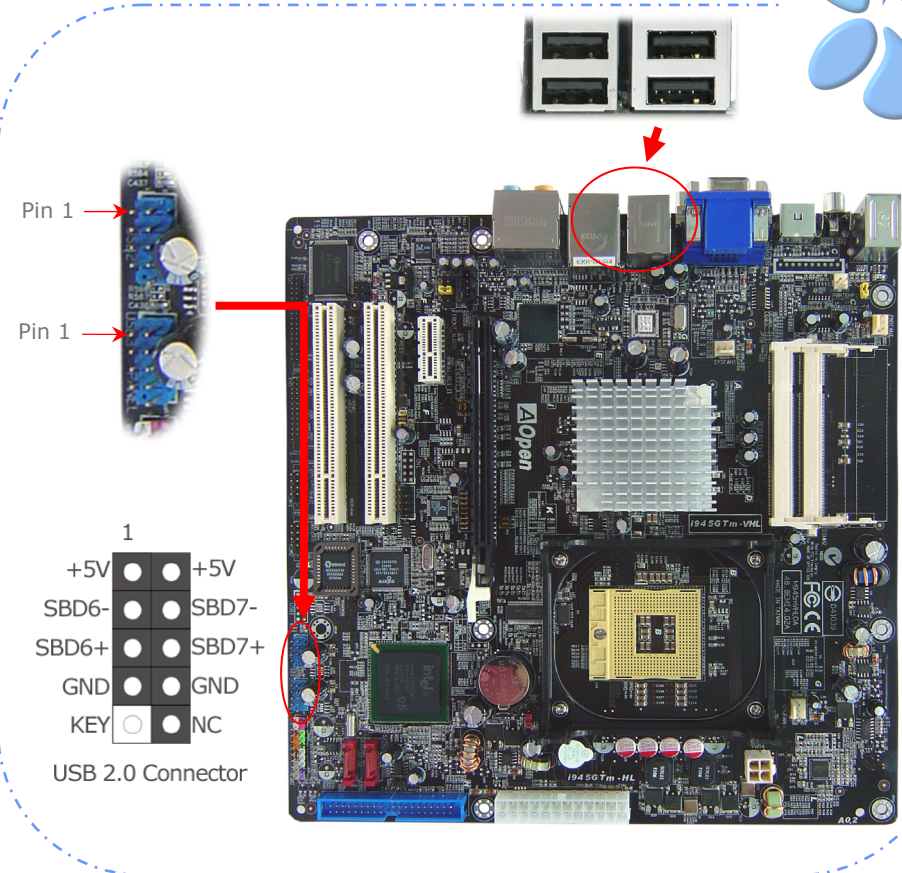
Connecting 1394

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

Pin1

SHIED GND	○	
+12V (Fused)		+12V (Fused)
TPB-		TPB+
GND		GND
TPA-		TPA+
2	1	

IEEE 1394 Connector
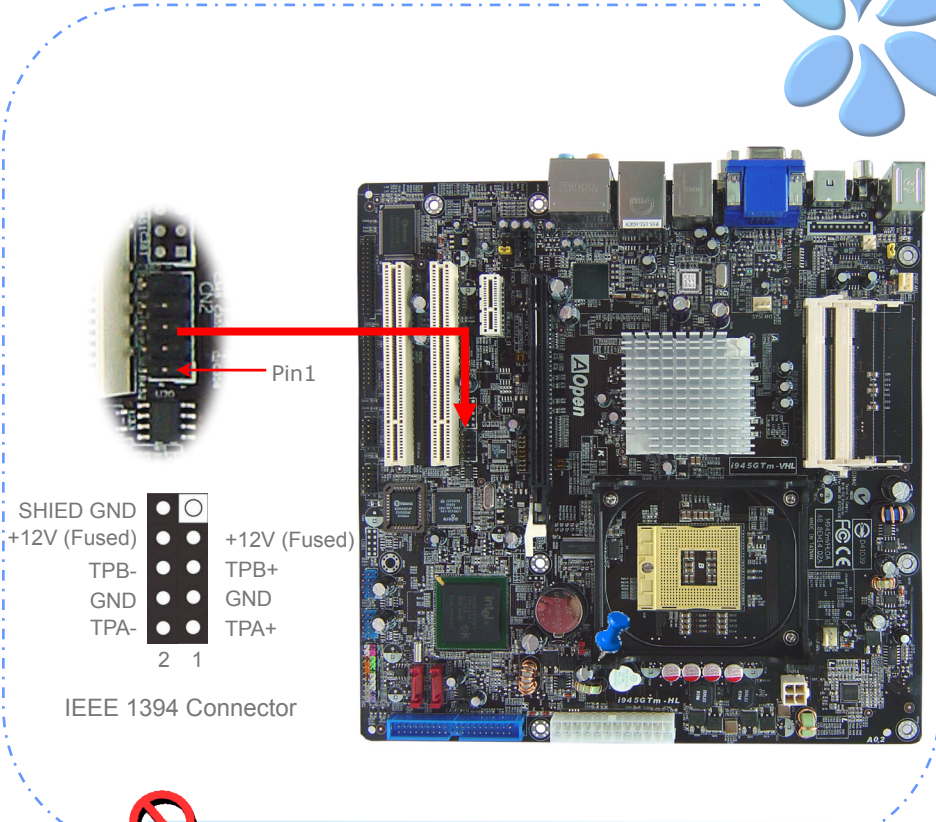
🚫 **Warning:** *12V Power Support 6W only.*

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

Super 7.1 Channel Audio Effect

This motherboard comes with an ALC882D CODEC, which supports the latest 7.1 Channel with high quality of audio effects, bringing you a brand new audio experience. This motherboard provides 7.1 Channel ports shown as below. Picture represents the standard location of all speakers in 7.1 Channel sound tracks. Please connect the plug of your front speakers to the green "Speaker out" port , rear surround speakers to orange port, side surround speakers to gray port and both of the center and subwoofer speakers to black port on the back panel.
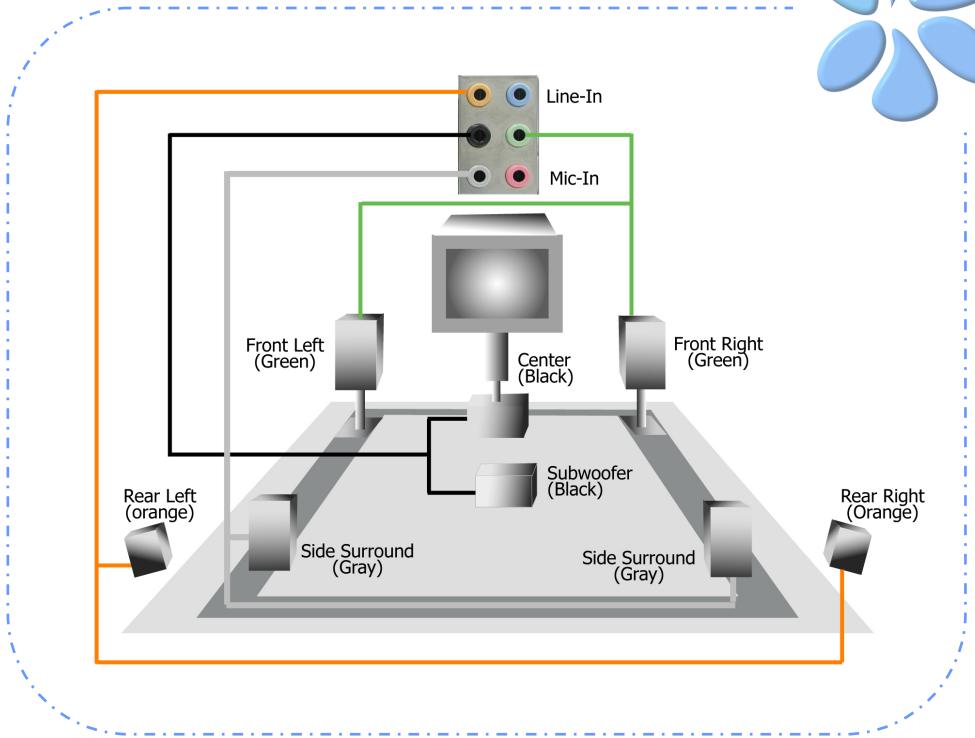
Connecting Front Audio

If the housing is designed with an audio port on the front panel, you'll be able to connect onboard audio to front panel through this connector. By the way, please remove the jumper cap from the Front Audio Connector before you connect the cable. Do not remove this yellow jumper cap if your housing doesn't have an audio port on the front panel.
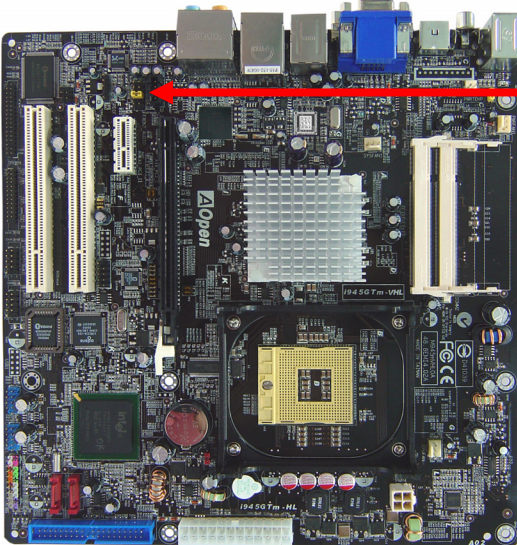
Pin1

AUD_MIC_L			AUD_GND
AUD_MIC_R			FRONT_IO Plug
AUD_FPOUT_R			AUD_RET_R
FRONT_IO_SENSE			KEY
AUD_FPOUT_L			AUD_RET_L

Front Audio Connector

Connecting CD_IN

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

L
GND
GND
R
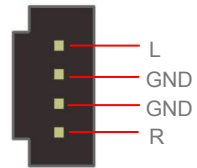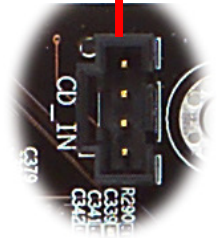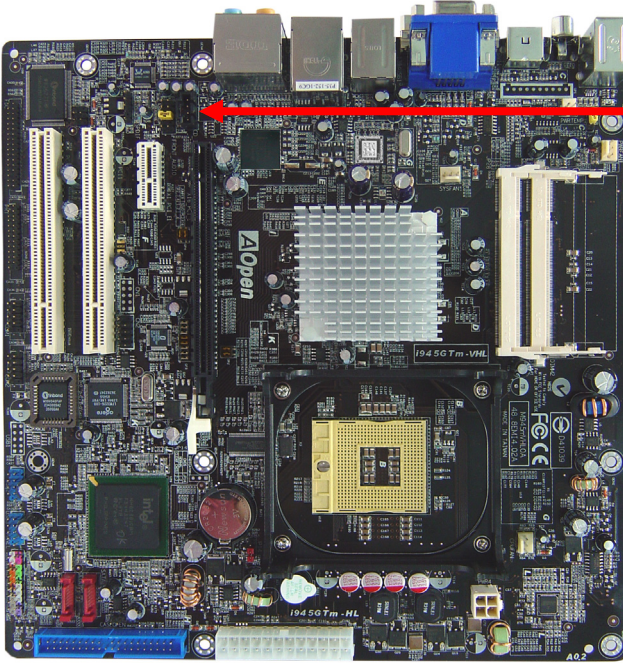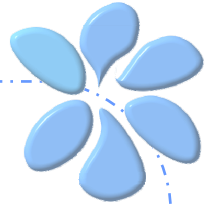
CD-IN Connector

Connecting COM1/COM2

This motherboard provides two serial ports. All of them are on the left of PCI32 slot. With proper cable, you can connect it to the back panel of chassis.

Pin 1 →

Pin 1 →

1		
DCD#	● ●	SIN
SOUT	● ●	DTR#
GND	● ●	DSR
RTS#	● ●	CTS#
R1#	● ○	
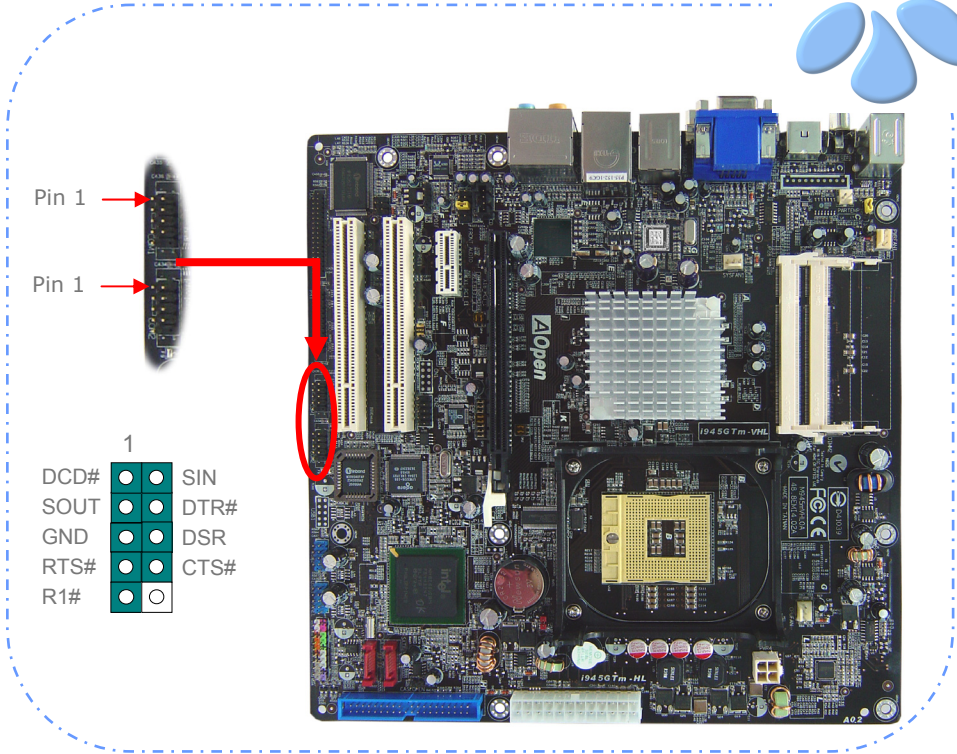
Connecting Case Open

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

Pin 1

1
Sensor ● ● GND

Chassis Intrusion
Connector
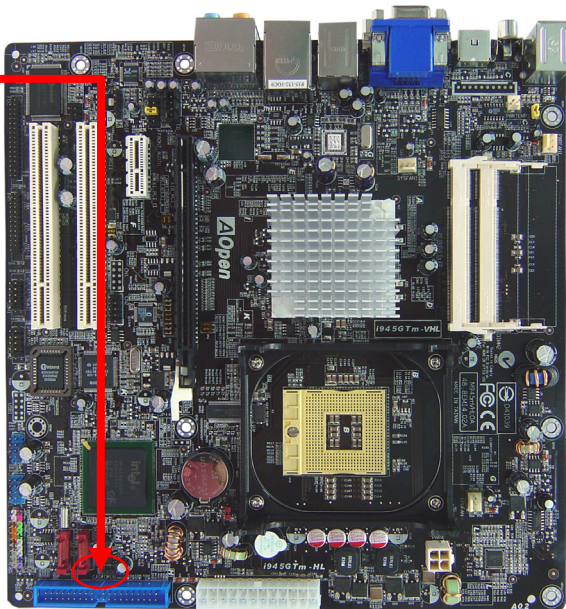
Connecting S/PDIF (Sony/Philips Digital Interface)

S/PDIF (Sony/Philips Digital Interface) is a newest audio transfer file format, which provides impressive audio quality through optical fiber and allows you to enjoy digital audio instead of analog audio. Through a specific converter, you can connect the S/PDIF connector to other end of the S/PDIF audio module, which bears S/PDIF digital input/output. However, you must have an 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.

Pin 1
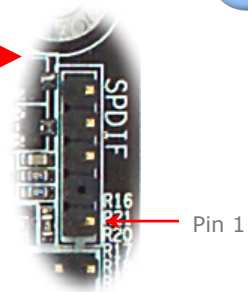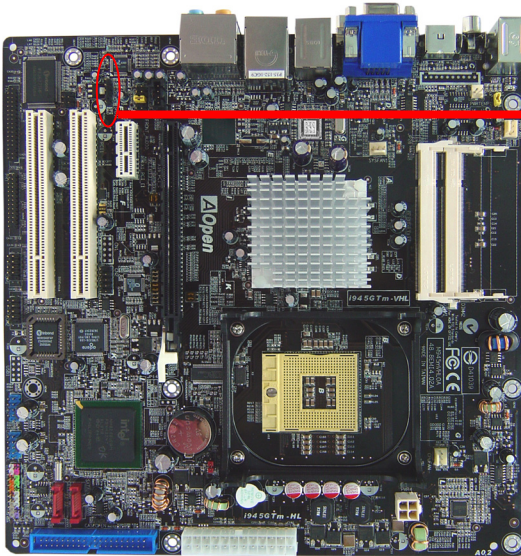
```
5
●  SPDIF IN
●  GND
●  SPDIF OUT
○  KEY
●  +5V
1
```

S/PDIF Connector

(RCA)
S/PDIF OUT
S/PDIF IN
S/PDIF OUT
S/PDIF IN
(Optical)

S/PDIF
Cable

S/PDIF Module
(User Upgrade Optional)
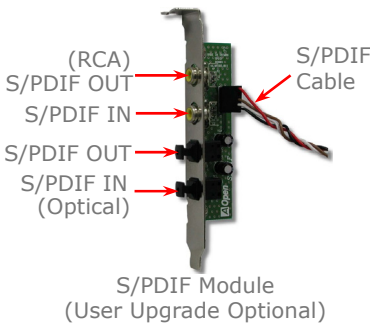
3.4 Jumper Settings

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

1
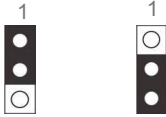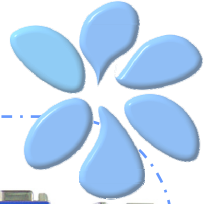
Disable
(Default)   Enable

JP28 PS2 KB/Mouse
Wakeup Jumper

Normal
(Default)   Clear CMOS

JP14 Clear CMOS Jumper

JP14 Clear CMOS Data
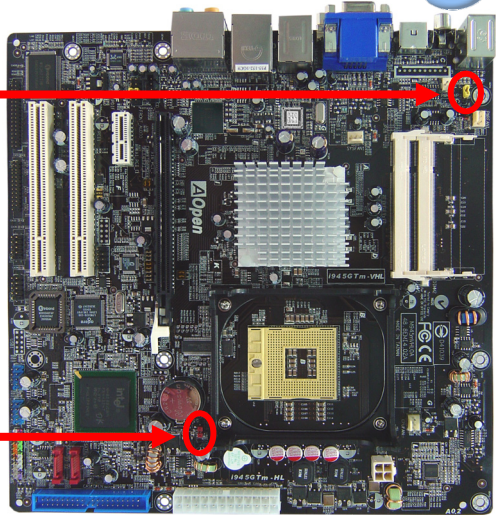
You can clear CMOS to restore system default setting. To clear the CMOS, follow the procedure below.

1. Turn off the system and unplug the AC power.

2. Remove ATX power cable from connector PWR2.

3. Locate JP14 and short pins 2-3 for a few seconds.

4. Return JP14 to its normal setting by shorting pin 1 & pin 2.

5. Connect ATX power cable back to connector PWR2.

Chapter 4 Special Features and Utilities

4.1 RAID (Redundant Array of Independent Disks)

With intel Southbridge ICH7MDH implemented, i945GTm-VHL provides RAID 0 and RAID 1 function for the Serial ATA hard disks.

Installation Raid driver under window installation

In order to make sure your system can recognize and operate Serial ATA RAID device smoothly, one have to install Raid Driver under window installation

When start installing windows, then press "F6" when prompted at the beginning of window setup

Press F6 if you need to install a third party SCSI or RAID

Press the "S" key to select "Specify Additional Device

Windows Setup
==============
Setup could not determine the type of one or more mass storage devices
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices(s):

    <none>

  * To specify additional SCSI adapters, CD-ROM drives, or special
    disk controllers for use with Windows, including those for
    which you have a device support disk from a mass storage device
    manufacturer, press S.

  * If you do not have any device support disks from a mass storage
    device manufacturer, or do not want to specify addtiional
    mass storage devices for use with Windows, press ENTER.

  S=Specify Additional Device   ENTER=Continue   F3=Exit

Please insert Raid Driver floppy Disk into Drive A:

After Raid driver floppy disk insert properly in drive A, please "ENTER" to continue.

Windows Setup
==============

                Please insert the disk labeled

      Manufacturer-supplied hardware support disk

                      into Drive A:

              * Press ENTER when ready.

  ENTER=Continue   ESC=Cancel   F3=Exit
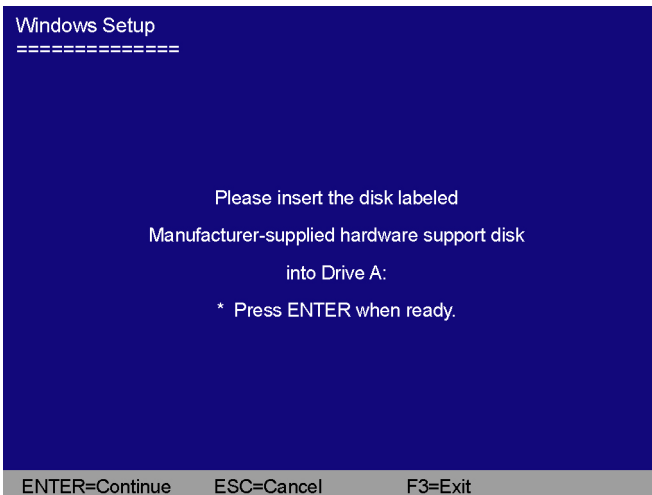
Please select "intel® 82801 GHM SATA RAID Controller (Mobile ICH7R/DH)"
Press "enter" after selection.

Windows Setup
==============
You have chosen to configure a SCSI Adapter for use with Windows,
using a device support disk provided by an adapter manufacturer.

Select the SCSI Adapter you want from the following list, or press ESC
to return to the previous screen.

Intel(R)   82801GHM SATA RAID Controller (Mobile ICH7MR/DH)
Intel(R)   82801GR/GH SATA RAID Controller (Disktop ICH7R/DH)
Intel(R)   82801GR/GH SATA AHCI Controller (Disktop ICH7R/DH)
Intel(R)   82801GBM SATA AHCI Controller (Mobile ICH7M)

ENTER=Select   F3=Exit

Please press "ENTER" to continue installation

Windows Setup
==============
Setup will load support for the following mass storage device(s):

   Intel(R) 82801GHM SATA RAID Controller (Mobile ICH7MR/DM)

 * To specify additional SCSI adapters, CD-ROM drives, or special
   disk controllers for use with Windows, including those for
   which you have a device support disk from a mass storage device
   manufacturer, press S.

 * If you do not have any device support disks from a mass storage
   device manufacturer, or do not want to specify additional
   mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit

4.2 Other Useful Features

With excellent design ability of R&D team, AOpen boasts for its various powerful and handy features that come with our product like follows.   You are welcomed to visit our technical website to learn more about those features. *http://english.aopen.com.tw/tech/techinside*
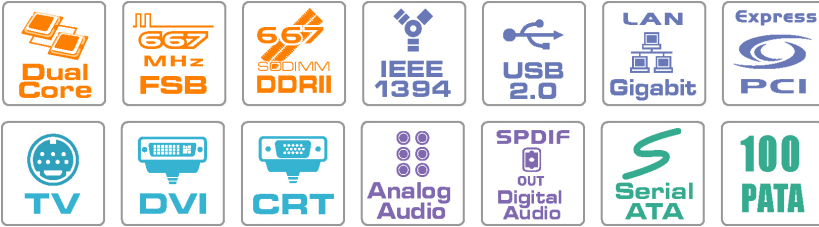
Chapter 5 Setting BIOS

5.1 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 bytes CMOS area (normally in the RTC chip or in the main chipset).

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

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

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

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

5.2 How To Use Phoenix-Award™ BIOS Setup Program

Generally, you can use arrow keys to highlight items that you want to choose, press <Enter> key to select, and use <Page Up> and <Page Down> keys to change setting values. You can press <Esc> key to quit Phoenix-Award™ BIOS setup program. The following table provides details about how to use keyboard in the Phoenix-Award™BIOS setup program.

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.
F7	Load optimized setting value from CMOS.
F10	Save changed settings and exit setup program.

5.3 How To Enter BIOS Setup

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

44
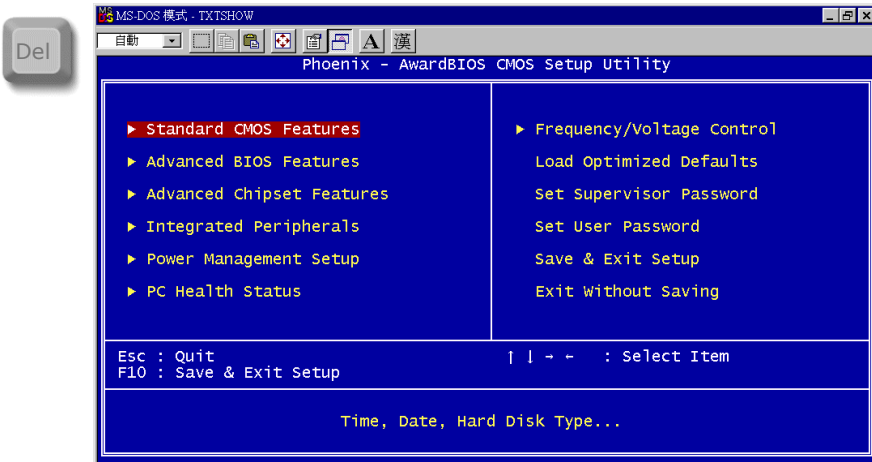
Standard CMOS Features

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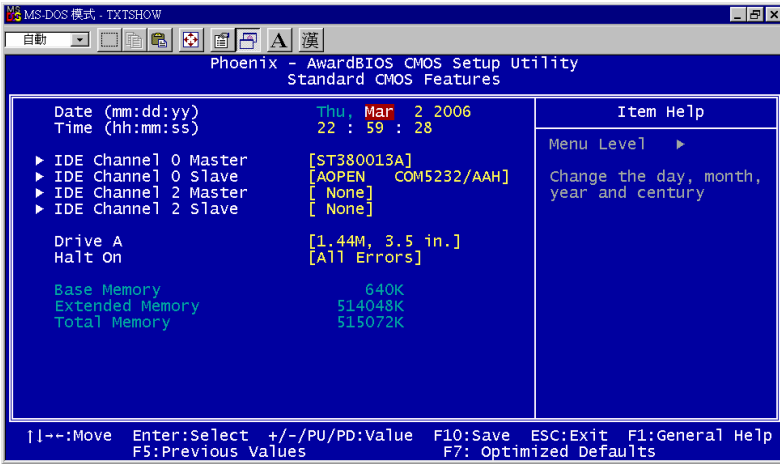
Standard CMOS Features > Date
To set the date, highlight the Date parameter. Press <PgUp> or <PgDn> to set the current date.   The date format is month, date, and year.

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 2 Master

Standard CMOS features > IDE Channel 2 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.

```
MS-DOS 模式 - TXTSHOW                                                    _ ☐ ✕
自動  ▼  ☐ 🗎 📋 🗗 📅 🖨 A 漢

              Phoenix - AwardBIOS CMOS Setup Utility
                        IDE Channel 0 Master

     IDE HDD Auto-Detection    [Press Enter]            Item Help

     IDE Channel 0 Master      [Auto]          Menu Level    ▶▶
     Access Mode               [Auto]
                                              To auto-detect the
     Capacity                       80 GB     HDD's size, head... on
                                              this channel
     Cylinder                       38309
     Head                              16
     Precomp                            0
     Landing Zone                   38308
     Sector                           255



    ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
              F5:Previous Values                F7: Optimized Defaults
```

IDE HDD Auto-Detection: Press "Enter" to auto-detect parameters of HDD
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:** enable BIOS to auto-detect parameters of IDE device. (Default)
● **Manual:** allow users to define parameter of IDE device.
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 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 control the system stops 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**

Advanced BIOS Features

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

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced BIOS Features
 ┌────────────────────────────────────────────┬─────────────────────┐
 │ ▶ CPU Feature              Press Enter       │    Item Help        │
 │ ▶ Removable Device Priority Press Enter      ├─────────────────────┤
 │ ▶ Hard Disk Boot Priority   Press Enter      │ Menu Level    ▶     │
 │ ▶ CD-ROM Boot Priority      Press Enter      │                     │
 │   First Bo t Device        CDROM             │ Press Enter to set CPU│
 │   Second Boot Device       Removable         │ Feature.            │
 │   Third Boot Device        Hard Disk         │                     │
 │   Boot Other Device        Enabled           │                     │
 │   Boot Up NumLock Status   Off               │                     │
 │   Security Option          Setup             │                     │
 │   HDD S.M.A.R.T. Capability Disabled         │                     │
 │   Show Logo On Screen      Vivid BIOS        │                     │
 │   Bypass Vivid BIOS        Disabled          │                     │
 │                                              │                     │
 ├──────────────────────────────────────────────┴─────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │      F2:Item Help F5:Previous Values F6:Setup Defaults F7:Turbo Defaults │
 └────────────────────────────────────────────────────────────────────┘
```

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 > First Boot Device

Advanced BIOS Features > Second Boot Device

Advanced BIOS Features > Third Boot Device
This parameter allows you to specify the system boot up search 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
- **Disabled:**

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 Chipset Features

The "Advanced Chipset Features" includes settings for the chipset dependent features. These features are related to system performance.

Advanced Chipset features > On-Chip Frame Buffer Size (1M and 8M optional)

Advanced Chipset features > DVMT mode
This item allows user to control the on-chip frame buffer size, fixed memory size, DVMT.(Mode: Fixed,DVMT,Both)

Advanced Chipset features > DVMT/FIXED Memory Size (64MB/128M/224MB)

Integrated Peripherals

This submenu appears if you select the option "Integrated Peripherals" from the main menu. This option allows you to configure the I/O features.
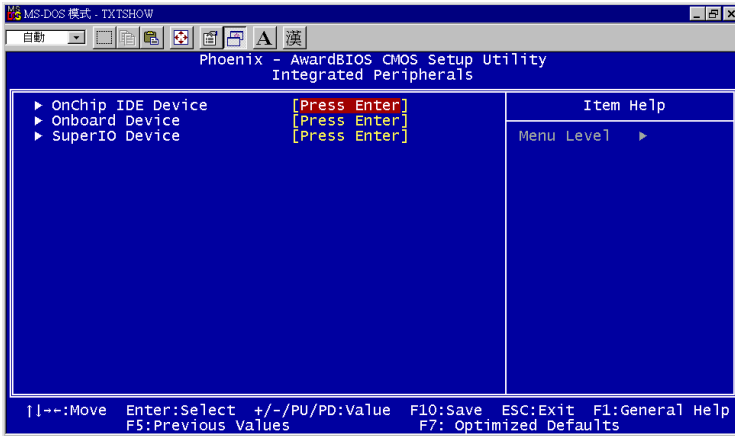
Integrated peripherals > OnChip IDE Device

Integrated peripherals > OnChip IDE Device > On-Chip Primary PCI IDE
This item allows you to select work mode on PATA .
Available options:
- **Disabled:** Disabled PATA Controller
- **Enabled:** Enable PATA Controller
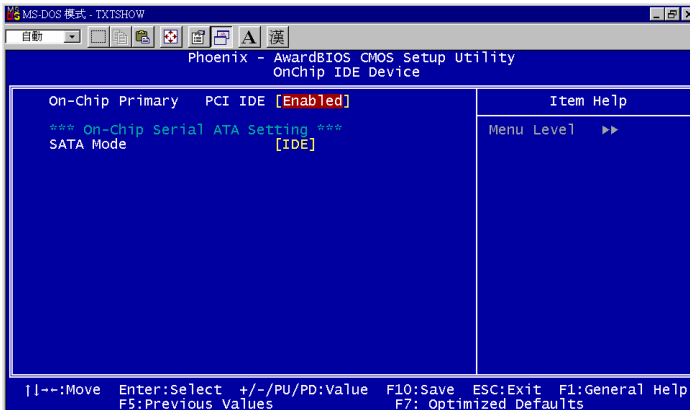
Integrated peripherals > OnChip IDE Device > SATA Mode
This item allow you to select working mode on SATA
- **IDE:** SATA working as PATA IDE
- **AHCI:** SATA working as AHCI(Support hot plug function)
- **Raid:** SATA working as RAID also support hot play
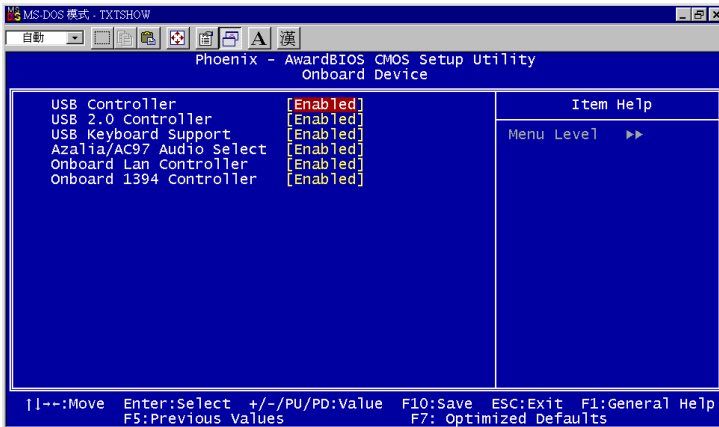
Integrated peripherals > Onboard Device

Integrated peripherals > Onboard Device > USB Controller

Integrated Peripherals > Onboard Device > USB 2.0 Controller

Integrated Peripherals > Onboard Device > USB keyboard Controller

Integrated Peripherals > Onboard Device > Azalia/AC97 Audio Select

Integrated Peripherals > Onboard Device > Onboard Lan Controller

Integrated Peripherals > Onboard Device > Onboard 1394 Controller

These items allow you to select working or non working.
Available options:

- **Disabled:** Disabled onboard selected device
- **Enabled:** Enable on board selected device

```
 MS-DOS 模式 - TXTSHOW                                        _ B X
 自動                                  漢
                Phoenix - AwardBIOS CMOS Setup Utility
                           SuperIO Device
   POWER ON Function      [BUTTON ONLY]          Item Help
 x KB Power ON Password    Enter
 x Hot Key Power ON        Ctrl-F1        Menu Level    ▶▶
   Onboard Serial Port 1  [Auto]
   Onboard Serial Port 2  [Disabled]
 x UART Mode Select        Normal
 x RxD , TxD Active        Hi,Lo
 x IR Transmission Delay   Enabled
 x UR2 Duplex Mode         Half
   Use IR Pins            [IR-Rx2Tx2]
   Onboard Parallel Port  [Disabled]
 x Parallel Port Mode      ECP
 x EPP Mode Select         EPP1.7
 x ECP Mode Use DMA        3
   AC PWR Auto Recovery   [Off]

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
              F5:Previous Values           F7: Optimized Defaults
```

Integrated peripherals > SuperIO Device

This item allows you to set SuperIO device.

> **Power ON Function:** This item is used to select Wake on Keyboard/Mouse mode.
> - **Password:** Disable the function of power button and let the system can only be powered on through the preset keys (like a password).
> - **Hot Key:** If selecting this option, you also need to specify the hot key from "Hot Key Power On" item.
> - **Any Key:** This function allows you wake up the system by clicking any key.
> - **Button Only:** Disable Wake on KB/MS function. You can boot up your system by power button only.

> 📌 *Note:*
> ◆ *Whenever you change this item, it will only take effect after you restart the system and successfully boot the Windows or DOS.*
> ◆ *Wake on Mouse function applies to PS/2 mouse only.*
> ◆ *If you set a password but forget it, please clear CMOS.*
> *If you want to use Wake on Mouse function in DOS, it is necessary to install the DOS driver of the mouse.*

KB Power ON Password: You can specify 1-5 keys as a password.

Hot Key Power On: If you select "Hot Key" option in "Power On Function" Item, you need to specify a hot key here.

Onboard FDC Controller: Setting this parameter to **"Enabled"** allowing 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.

Onboard Serial Port 1: This item allows you to assign address and interrupt for the board serial port.   The default is **"Auto"**.

Onboard Serial Port 2: This item allows you to assign address and interrupt for the board serial port. The default is **"Auto"**.

UART Mode Select: This item is configurable only if the "Onboard Serial Port 2" is enabled. This allows you to specify the mode of serial port2. Available options:

- **Normal**: Sets serial port 2 to operate in normal mode. This is the default setting.
- **IrDA (SIR):** This setting allows infrared serial communication at a maximum baud rate of 115.2K baud.
- **ASKIR:** This setting allows infrared serial communication at a maximum baud rate of 57.6K baud.

RXD, TXD Active: This item is used to select RxD (Receive Data) and TxD (Transmit Data) mode for UART, for instance, IR device, modem, etc. Normally, we suggest you keep the default setting. Please see the documentation that comes with your device. Available options: **Hi, Hi** / **Hi, Lo**

IR Transmission Delay: If **"Enabled"** is selected, there will be a 4 character delay when SIR is changed from TX mode to RX mode.

Onboard Parallel Port: This item controls the onboard parallel port address and interrupt. Available options: **3BC/IRQ7**, **3BC/IRQ7**, **3BC/IRQ7**, **Disabled**

Parallel Port Mode: This item lets you set the parallel port mode. The mode options are SPP (Standard and Bidirection Parallel Port), EPP (Enhanced Parallel Port) and ECP (Extended Parallel Port). Available options:

- **SPP (Standard and Bidirection Paralell Port): SPP** is the IBM AT and PS/2 compatible mode.
- **EPP (Enhanced Parallel Port): EPP** enhances the parallel port throughput by directly writing/reading data to/from parallel port without latch.
- **ECP (Extend Parallel Port): ECP** supports DMA and RLE (Run Length Encoded) compression and decompression.
- **ECP + EPP**

EPP Mode Select: This item lets you select EPP mode protocol.
Available options: **EPP 1.7**, **EPP 1.9**

ECP Mode Use DMA: This item lets you set the DMA channel of ECP mode.
Available options: **3**, **1**

AC Power Auto Recovery: A traditional ATX system should remain at power off stage when AC power resumes from power failure. This design is inconvenient for a network server or workstation, without an UPS, that needs to keep power-on. This item is used to solve this problem. Selecting On enabling system to automatically power-on after AC power resumes; in the other hand, the system will remain power-off if you select Off. If Former-Sts (former status) option is selected, the system will power-on or power-off based on the original state. Available options: **Former-Sts**, **On**, **Off**

Power Management Setup

The Power Management Setup screen enables you to control the motherboard green features. See the following screen.
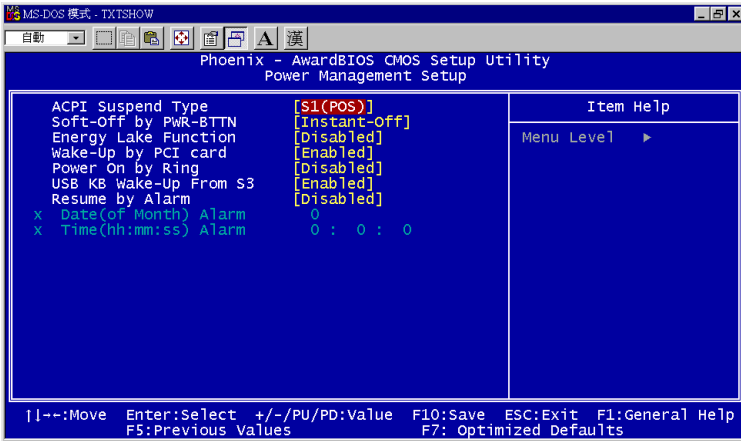
Power Management > ACPI Suspend Type
This function allows you to select suspend types. S1 is Power On Suspend and S3 is Suspend to RAM. Available Options: **S1**, **S3**, **S1 & S3**

Power Management > Soft-off by PWR-BTTN
This is a specification of ACPI and supported by hardware. When Delay 4 sec. is selected, the soft power switch on the front panel can be used to control power On, Suspend and Off. If the switch is pressed for less than 4 seconds during power On, the system will go into Suspend mode. If the switch is pressed for longer than 4 seconds, the system will be turned Off. The default setting is Instant-Off. If Instant-Off is selected the soft power switch is only used to control On and Off, so there is no need to press it for 4 seconds, and there is no Suspend.
Available Options: **Delay 4 sec.**, **Instant-Off**

Power Management > Energy Lake Function
This is a function of Energy Lake Function supports
Available options: **Disabled**, **Enabled**

Power Management > Wake On 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: **Disabled**, **Enabled**

Power Management > Power On by Ring
This option lets you specify enable or disable Wake On Modem Ring function.
Available options: **Disabled**, **Enabled**

Power Management > USB KB wake-up From S3
The USB KB wake-up from S3 support USB Keyboard wake up under S3 mode
Available options: **Disabled, Enabled**

Power Management > Resume by Alarm
This function can provide alarm to resume system immediately.
Available options: **Disabled, Enabled**

Power Management > Date (of Month) Alarm
This item is displayed when you enable the Wake On RTC Timer option. Here you
can specify what date you want to wake up the system. For Example, setting to 15
will wake up the system on the 15th day of every month.

> *Tip: Setting this item to 0 will wake up the
> system on the specified time (which can be set in
> the Wake On RTC Timer) every day.*

Power Management > Time (hh:mm:ss) Alarm
This item is displayed when you enable the Wake On RTC Timer option. Here you
can specify what time you want to wake up the system.

PC Health Status

The PC Health Status can bring PC important safety parameters for detect Health of your system.

```
MS-DOS 模式 - TXTSHOW                                          _ □ ×
 自動      □ 📋 📋 ✛ 📄 📑 A 漢
              Phoenix - AwardBIOS CMOS Setup Utility
                        PC Health Status
   CPU Smart Fan            [Disabled]          │   Item Help
   System Temperature         35°C/  95°F       │
   CPU Temperature            46°C/ 114°F        │  Menu Level  ▶
   CPU Fan                   1939 RPM            │
   Vcore                      1.24V             │
   VCC  (V)                   5.07V             │
   VBAT (V)                   3.18V             │
   5VSB (V)                   5.13V             │


 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values               F7: Optimized Defaults
```
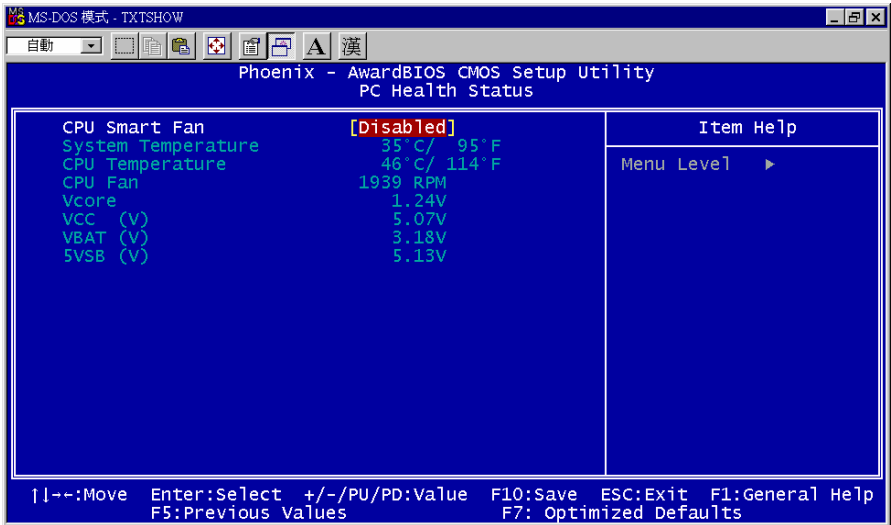
PC Health Status > CPU Smart Fan
The CPU smart fan can detect CPU temperature and adjust fan speed automatically. That can ensure you to have silent & best working environment for system. Suggestion: Enabled it.
Available options: **Disabled**, **Enabled**

PC Health Status > System Temperature
PC Health Status > CPU Temperature
PC Health Status > CPU Fan
PC Health Status > Vcore
PC Health Status > VCC (V)
PC Health Status > VBAT (V)
PC Health Status > SVSB (V)

PC health status bring you on the system temperature, CPU temperature, CP Fan speed, Vcore, VCC, VBAT, SVSB – these important system parameters for you to check the health status of your system.

Frequency/Voltage Control

This submenu allows you to configure the CPU and memory clock.
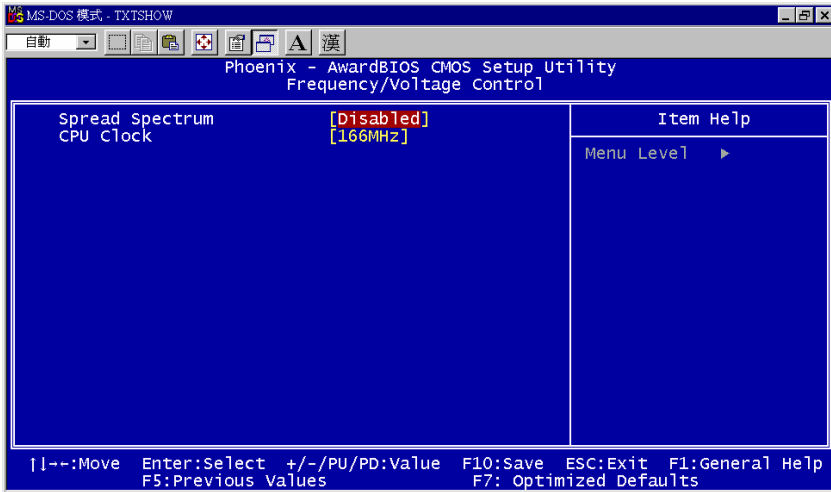
Frequency/Voltage Control > Spread Spectrum
This item is used to set the value of clock Spread Spectrum. BIOS will determine the adjustable value according to the CPU installed, not all items will be showed. Available options: **Disabled, Enabled**

Frequency/Voltage Control > CPU Clock
This item shows the CPU Clock of status. You can adjust the clock according it. Available options: 166MHz-190Mhz

Tip: When you fail to overclock, you could:
Clear CMOS (JP14) to restore the default setting.
After turning power on, press "Home" immediately until the screen appears.

Load Optimized Defaults

The "Load Optimized Defaults" option loads BIOS default settings.
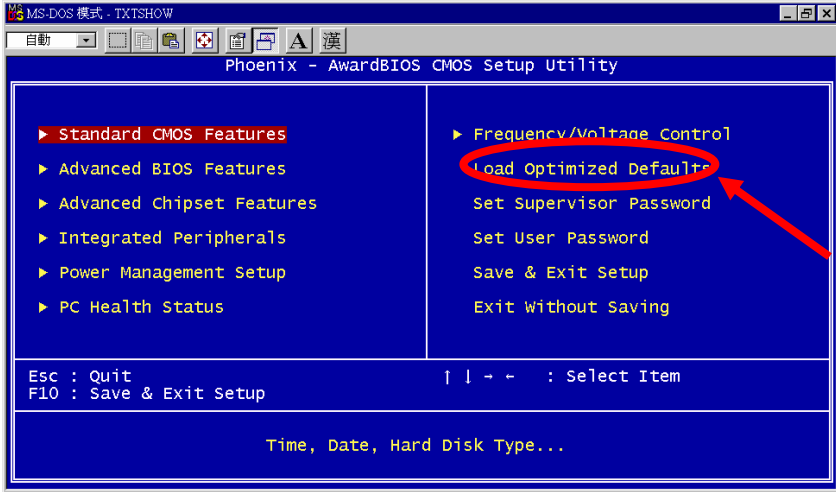
Set Supervisor Password

Supervisor 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. The item are supervisor level, that can be allow modification all kind of item on BIOS inside.

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.
3. At the next prompt, re-type your password and press again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press "**Enter**" when being prompted to enter the password. The screen displays a message confirming that the password has been disabled.

Set User Password

User Password can authorize users check only. It cannot modify the BIOS setting inside.   The item just allow take a look defult value on BIOS inside.

To set a password:

4.   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.
5.   After typing the password, press.
6.   At the next prompt, re-type your password and press again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press "**Enter**" when being prompted to enter the password. The screen displays a message confirming that the password has been disabled.

Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.

Exit without Saving

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.

5.4 BIOS Upgrade under Windows environment

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

In the meanwhile, in order to provide a much more user-friendly operating environment, AOpen EzWinFlash is natively designed to have multi-language function to provide easier way for user in changing BIOS setting.
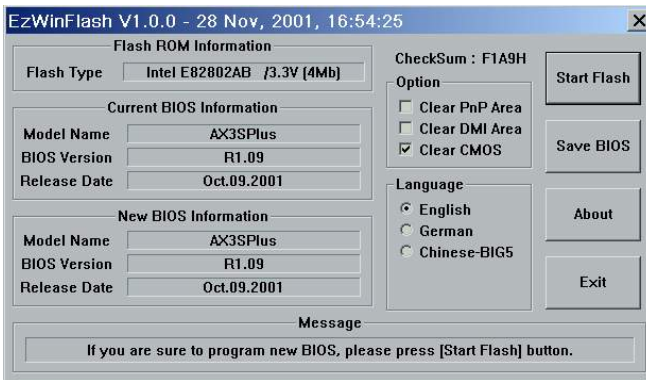
*Caution: You are taking a risk of BIOS flash failure when you update your system. If your motherboard is working stable, and there are no major bugs to be fixed by a latter BIOS revision, we recommend that you **DO NOT** upgrade your BIOS. If you intent on upgrade **PLEASE MAKE SURE** you get the right BIOS revision for your motherboard model so as to avoid any possible failure.*

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

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

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

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

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

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

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

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

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

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

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

Chapter 6 Installing Drivers

EzInstall

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

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

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

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

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

Click to install online manual

Install driver

Install utility

Browse CD Contents

Readme

Exit CD

A Open

Welcome

Install User manual

Thank you for choosing AOpen i915GMm-HFS

Contact us

AOpen Inc.
http://www.aopen.com.tw
TEL: +886-2-3789-5888
FAX +886-2-3789-5899

AOpen America Inc.
http://english.aopen.com.tw
TEL: +1-510-489-8928
FAX: +1-510-489-1998

AOpen Computer B.V.
http://www.aopen.nl
TEL: +31-73-645-9516
FAX: +31-73-645-9604

AOpen Computer GmbH.
http://www.aopen.com.de
TEL: +49-1805-559191
FAX: +49-2102-157799

AOpen Japan Inc.
http://www.aopen.co.jp
TEL: +81-048-290-1800
FAX: +81-048-290-1820

AOpen International Co., Ltd.
http://www.aopen.com.cn
TEL: +86-21-6225-8622
FAX: +86-21-6225-7926

AOpen branches information

Ez Install

6.1 Installing Drivers

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

Press the icon will prompt the "**Install Driver**" page. You may also press "**Back**" to return to the Main page.
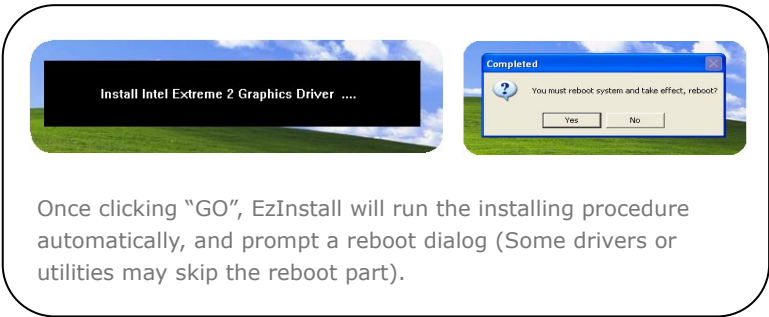
Once clicking "GO", EzInstall will run the installing procedure automatically, and prompt a reboot dialog (Some drivers or utilities may skip the reboot part).

After installed the driver successfully, the system configuration of your system can be checked through the Window Device Manager. There should not have any warning sign on each red frame below. That means your driver work successful now.
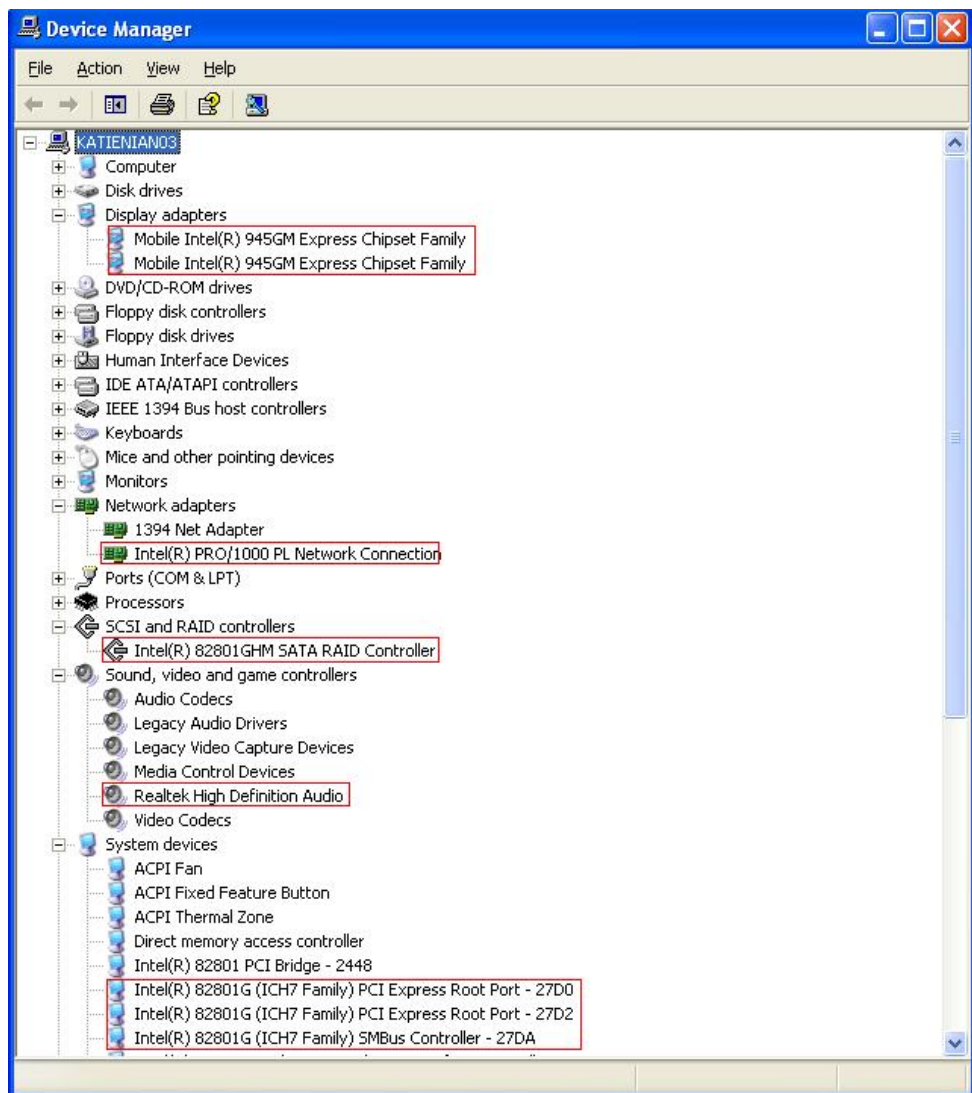
6.2 Installing Utilities

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

Press the icon will prompt the **"Install Utilities"** page for your selection. You may also press **"Back"** to get back to the Main page.
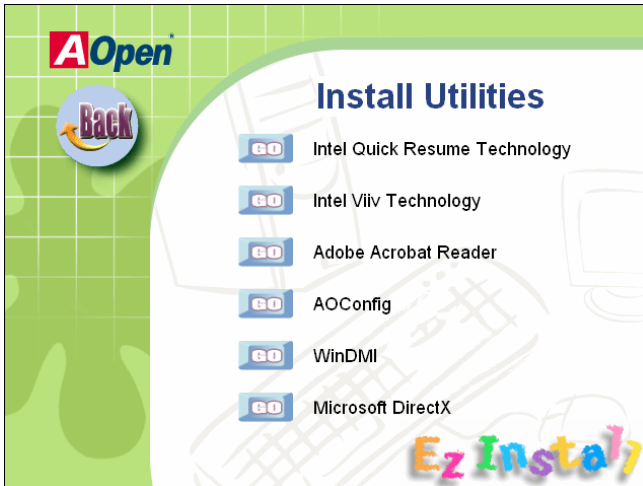
6.3 Display output behavior

AOpen provides newest innovation with high definition display output. Below diagram will show the way of display output.

D-SUB · **S-Video** · **YPbPr** · **DVI** · **1080i 720P HDTV**

CRT · **TV/SDTV** · **TV/HDTV** · **LCD with DVI Connector**
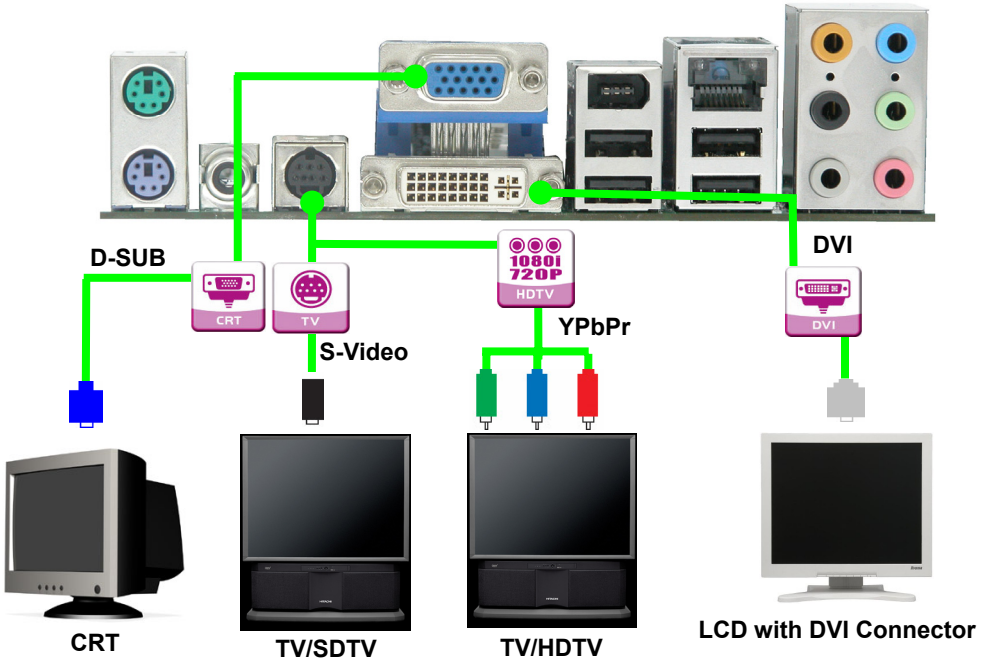
FAQ

(1) Intel Drive just supports "Dual Monitor Mode" and "Single Monitor Mode".
(2) When running in Dual Monitor mode and playing Media Player, there is only an output device can work. If want to support both output devices, please change "Dual Monitor Mode" to "Extended Mode"
(3) Because both of YPbPr and D connector are from the same signal, select either one to output will get the better quality.
(4) If you pull out the primary device under Dual Monitor Mode and reboot, the secondary device's screen will be dark. You can use hotkey to set the primary device.

Hot Key List	Output Device as Primary
Ctrl + Alt + F1	D-SUB
Ctrl + Alt + F2	TV (set as primary)
Ctrl + Alt + F4	DVI

(5) When plug Geforce FX5200 PCI VGA card, the system will be crashed. It results from Intel Driver will conflict with this card.

Display output behavior

Output Mode	During POST VGA initial		
Output Connector	D-SUB	DVI	YpbPr / S-Video
Output Device / Combination	CRT	LCD	TV 1
D-SUB	On	N/A	N/A
DVI	N/A	On	N/A
YPbPr / S-Video	N/A	N/A	On
D-SUB+DVI	On	On	N/A
D-SUB+YPbPr / S-Video	On	N/A	OFF
D-SUB+DVI+YPbPr / S-Video	On	On	OFF
DVI+YPbPr / S-Video	N/A	On	OFF

Output Mode	Windows Platform		
Output Connector	D-SUB	DVI	YpbPr / S-Video
Output Device / Combination	CRT	LCD	TV 1
D-SUB	On	N/A	N/A
DVI	N/A	On	N/A
YPbPr / S-Video	N/A	N/A	On
D-SUB+DVI	On	On	N/A
D-SUB+YPbPr / S-Video	On	N/A	On
D-SUB+DVI+YPbPr / S-Video	On	On	On
DVI+YPbPr / S-Video	N/A	On	On

Note:
(1) Dual Monitor only support two devices to output. The "On" mean it can work with
    another one.

Chapter 7 Troubleshooting

TroubleShooting

```
Start
```

Turn off the power and unplug the AC power cable, then remove all of the add-on cards and cables including VGA, IDE, FDD, COM1, COM2, printer and other external devices.

Clear CMOS and then plug the ATX Power cord. (For P4 system, please connect the 4-pin (+12V) cord before ATX cord is connected.

Install VGA card*1, connect monitor and keyboard.

Yes → Turn on the power and check if the power supply, power fan and CPU fan work properly.

No → Perhaps your memory is not compatible with the system, or either your VGA card*2 or monitor is out of order.

Yes → Check if there is display

No → The problem maybe caused by power supply/motherboard failure. Please contact your reseller or your distributor for repairing.

Press Del to enter BIOS setup, and choose "Load Setup Default". (For AMD user, please make sure you set the right CPU frequency in BIOS) Save the changes you make in BIOS and reboot the system.

Yes → Turn off the system again and re-connect the IDE cable. Check if the system can reboot successfully.

No → The problem maybe caused by the IDE cables or HDD itself.

Reinstall operating system such as Windows 2000 or Windows XP.

```
End
```

*1 The VGA card is not necessary to be installed if your monitor is connected to the onboard VGA port.
*2 If you connect to the onboard VGA port and no screen displays, then your onboard VGA device might have problem.

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Chapter 8 Technical Support

Dear Customer,

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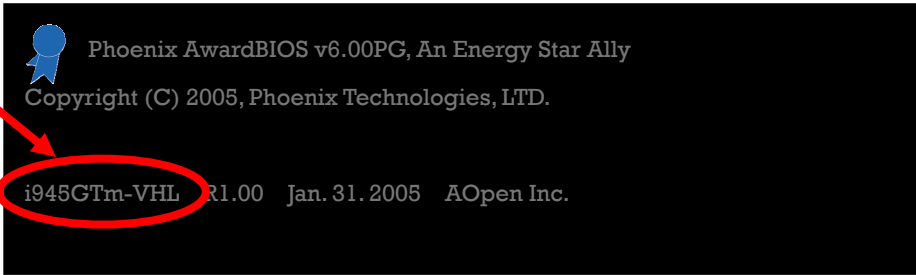
Thanks very much for your understanding!

AOpen Technical Supporting Team

Europe
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

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

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

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

```
Phoenix AwardBIOS v6.00PG, An Energy Star Ally
Copyright (C) 2005, Phoenix Technologies, LTD.


i945GTm-VHL   R1.00   Jan. 31. 2005   AOpen Inc.
```

i945GTm-VHL is model name of motherboard; R1.00 is BIOS version

Register Your Motherboard

Thanks for choosing AOpen product, please register this motherboard at http://club.aopen.com.tw/productreg/ to become a Gold member of Club AOpen, and to ensure high service quality and priority from AOpen. You will also have a chance to play slot machine game to win prize from AOpen. Please prepare the following information before you start: Model Name, Part Number (P/N), Serial Number (S/N) and Purchase Date. The Part Number and Serial number are printed on bar code label. You can find this bar code label on the outside packing or on component side of PCB. For example:

91881102019 1949378KN73

Part No.   Serial No.

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

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

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

Test Report: We recommend you to choose board/card/ device from the compatibility test reports for assembling your PC. It may prevent incompatibility problems.
http://english.aopen.com.tw/tech/report/default.htm

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

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

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

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

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