

GA-G1975X

Intel® Pentium® Processor Extreme Edition

Intel® Pentium® D / Pentium® 4 LGA775 Processor Motherboard

User's Manual

Rev. 1005

12ME-G1975X-1005R



* The WEEE marking on the product indicates this product must not be disposed of with user's other household waste and must be handed over to a designated collection point for the recycling of waste electrical and electronic equipment!!



* The WEEE marking applies only in European Union's member states.

Declaration of Conformity

G.B.T. Technology Trading GmbH
Vollstreckungsimporteur
(full importer)

Ausschlagweg 41, 1F 20337 Hamburg, Germany

declare that the product
(description of the apparatus, system, installation to which it refers)

Motherboard

GA-G1975X

(reference to the specification under which conformity is declared)
in accordance with 89/336 EEC-EMC Directive

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> EN 55011 | Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) high frequency equipment | <input checked="" type="checkbox"/> EN 61000-3-2 | Disturbances in supply systems caused by harmonics |
| <input type="checkbox"/> EN 55013 | Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment | <input checked="" type="checkbox"/> EN 61000-3-3 | Disturbances in supply systems caused by harmonics in electrical installations* |
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(EC conformity marking)

Manufacturer/importer

Signature: Jimmy Huang

(Stamp)

Date: Dec. 16, 2005

Name: Timmy Huang

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)



Responsible Party Name: G.B.T. INC. (U.S.A.)

Address: 17358 Railroad Street

City of Industry, CA 91748

Phone/Fax No: (818) 854-9338 / (818) 854-9339

hereby declares that the product

Product Name: Motherboard

Model Number: GA-G1975X

Conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107(a) and Section 15.109

(a), Class B Digital Device

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful and (2) this device must accept any interference received, including that may cause undesired operation.

Representative Person's Name: ERIC LU

Signature: Eric Lu

Date: Dec. 16, 2005

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Product Manual Classification

In order to assist in the use of this product, Gigabyte has categorized the user manual in the following:

- For quick installation, please refer to the "Hardware Installation Guide" included with the product.
- For detailed product information and specifications, please carefully read the "Product User Manual".
- For detailed information related to Gigabyte's unique features, please go to "Technology Guide" section on Gigabyte's website to read or download the information you need.

For more product details, please click onto Gigabyte's website at www.gigabyte.com.tw

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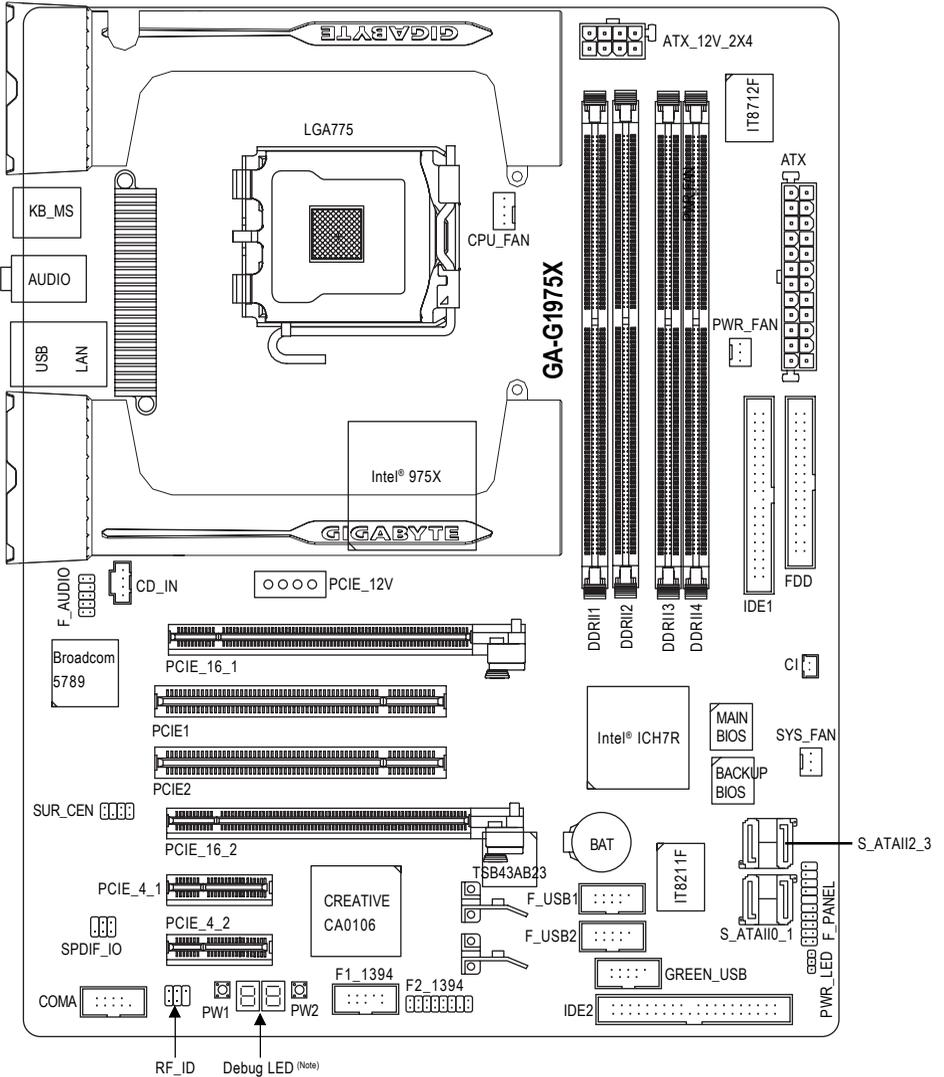
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Item Checklist

- IDE Cable x 2 & FDD Cable x 1
- Serial ATAII Cable x 4
- Serial ATA Power Cable x 2
- SATA + Serial ATA Power Cable x 1
- 2 Ports USB 2.0 Cable x 2
- 8-Channel Audio Combo kit x 1
- 2 Ports USB 2.0 + 2 Ports 1394 Cable x 1
- I/O Shield
- DGBR2 Card bracket
- External Serial ATA Card
- DGBR2 Card

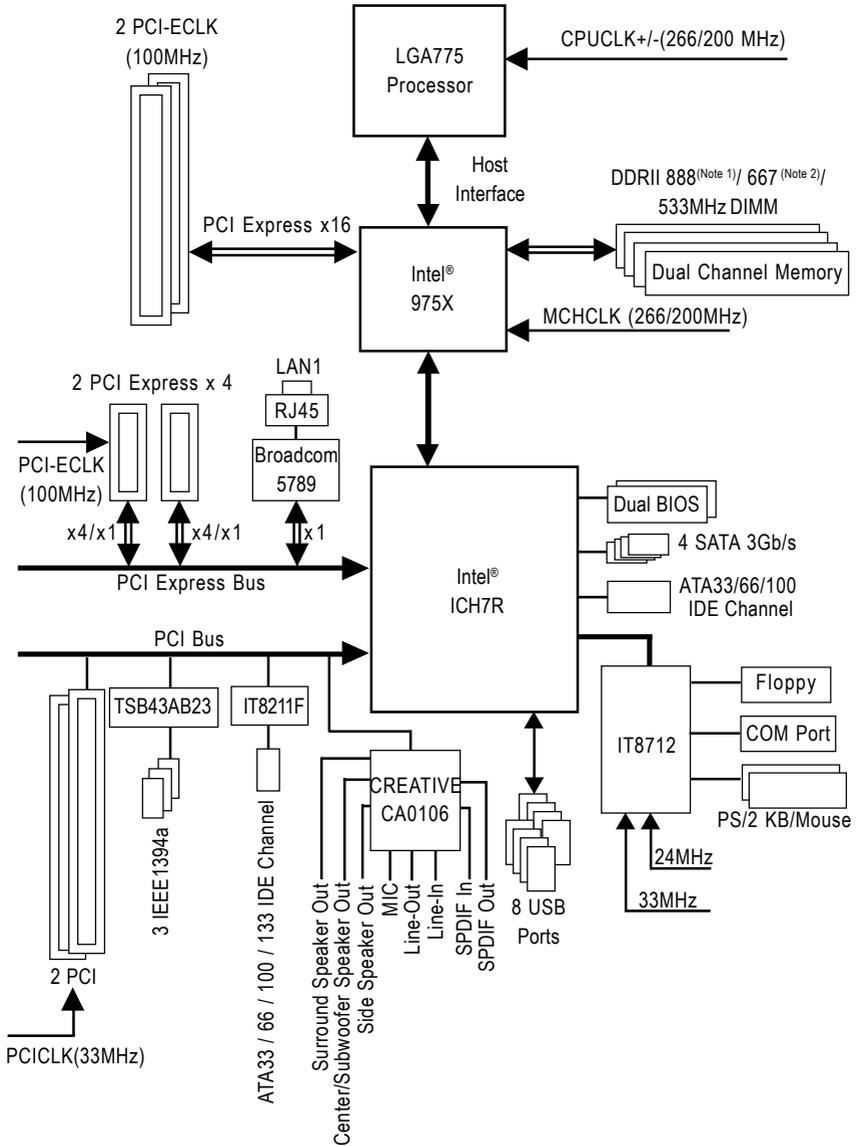
* The items listed above are for reference only, and are subject to change without notice.

GA-G1975X Motherboard Layout



(Note) For error code information, please refer to page 104.

Block Diagram



(Note 1) DDR II memory can be overclocked to 888MHz (must be used with a 1066MHz FSB processor) through overlocking in BIOS. Go to GIGABYTE's website for more information about the supported DDR II memory modules for this feature.

(Note 2) To use a DDR II 667 memory module on the motherboard, you must install an 800/1066MHz FSB processor.

Chapter 1 Hardware Installation

1-1 Considerations Prior to Installation

Preparing Your Computer

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Thus, prior to installation, please follow the instructions below:

1. Please turn off the computer and unplug its power cord.
2. When handling the motherboard, avoid touching any metal leads or connectors.
3. It is best to wear an electrostatic discharge (ESD) cuff when handling electronic components (CPU, RAM).
4. Prior to installing the electronic components, please have these items on top of an antistatic pad or within a electrostatic shielding container.
5. Please verify that the power supply is switched off before unplugging the power supply connector from the motherboard.

Installation Notices

1. Prior to installation, please do not remove the stickers on the motherboard. These stickers are required for warranty validation.
2. Prior to the installation of the motherboard or any hardware, please first carefully read the information in the provided manual.
3. Before using the product, please verify that all cables and power connectors are connected.
4. To prevent damage to the motherboard, please do not allow screws to come in contact with the motherboard circuit or its components.
5. Please make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
6. Please do not place the computer system on an uneven surface.
7. Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
8. If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

Instances of Non-Warranty

1. Damage due to natural disaster, accident or human cause.
2. Damage as a result of violating the conditions recommended in the user manual.
3. Damage due to improper installation.
4. Damage due to use of uncertified components.
5. Damage due to use exceeding the permitted parameters.
6. Product determined to be an unofficial Gigabyte product.

1-2 Feature Summary

CPU	<ul style="list-style-type: none"> ◆ Supports LGA775 Intel® Pentium® Processor Extreme Edition/ Pentium® D / Pentium® 4 ^(Note 1) ◆ L2 cache varies with CPU
Front Side Bus	<ul style="list-style-type: none"> ◆ Supports 1066/800MHz FSB
Chipset	<ul style="list-style-type: none"> ◆ Northbridge: Intel® 975X Express Chipset ◆ Southbridge: Intel® ICH7R
LAN	<ul style="list-style-type: none"> ◆ Onboard Broadcom 5789 chip (10/100/1000 Mbit)
Audio	<ul style="list-style-type: none"> ◆ Onboard CREATIVE CA0106 chip ◆ Supports 2 / 4 / 5.1 / 6.1/ 7.1 channel audio^(Note 2) ◆ Supports SPDIF In/Out connection
IEEE 1394	<ul style="list-style-type: none"> ◆ Onboard TI 1394a chip ◆ 3 IEEE1394a ports
Storage	<ul style="list-style-type: none"> ◆ ICH7R Southbridge <ul style="list-style-type: none"> - 1 FDD connector, allowing connection of 2 FDD devices - 1 IDE connector (IDE1) with UDMA 33/ATA 66/ATA 100 support, allowing connection of 2 IDE devices - 4 SATA 3Gb/s connectors (SATAII0_1, SATAII2_3), allowing connection of 4 SATA devices - Supports data striping (RAID 0), mirroring (RAID 1) or striping + mirroring (RAID 0+1) or RAID 5 for Serial ATA ◆ Onboard IT8211F chipset <ul style="list-style-type: none"> - 1 IDE connector (IDE2) (UDMA 33/ATA 66/ATA 100/ATA 133), support, allowing connection of 2 IDE devices - Supports ATAPI mode for HDD - Supports IDE bus master operation
O.S Support	<ul style="list-style-type: none"> ◆ Microsoft Windows 2000/XP
Memory	<ul style="list-style-type: none"> ◆ 4 DDR II DIMM memory slots (supports up to 8GB memory) ◆ Supports dual channel DDR II 888 ^(Note 3)/667 ^(Note 4)/533 unbuffered DIMMs ◆ Supports 1.8V DDR II DIMMs ◆ Supports ECC/non-ECC type DRAM
Expansion Slots	<ul style="list-style-type: none"> ◆ 2 PCI Express x 16 slot ◆ 2 PCI Express x 4 slots ◆ 2 PCI slots

Internal Connectors	<ul style="list-style-type: none"> ◆ 1 24-pin ATX power connector ◆ 1 8-pin ATX 12V power connector ◆ 1 4-pin PCIE 12V power connector ◆ 1 floppy connector ◆ 2 IDE connectors ◆ 4 SATA 3Gb/s connectors ◆ 1 CPU fan connector ◆ 1 system fan connector ◆ 1 power fan connector ◆ 1 front panel connector ◆ 1 front audio connector ◆ 1 CD In connector ◆ 1 COMA connector ◆ 3 USB 2.0/1.1 connectors for additional 6 ports by cables ◆ 2 IEEE1394a connectors for additional 3 ports by cables ◆ 1 RF_ID connector ◆ 1 SUR_CEN connector ◆ 1 SPDIF In/Out connector ◆ 1 power LED connector
Rear Panel I/O	<ul style="list-style-type: none"> ◆ 1 PS/2 keyboard port ◆ 1 PS/2 mouse port ◆ 1 RJ 45 port ◆ 2 USB 2.0/1.1 ports ◆ 3 audio jacks (Line In / Line Out / MIC In)
I/O Control	<ul style="list-style-type: none"> ◆ IT8712 chip
Hardware Monitor	<ul style="list-style-type: none"> ◆ System voltage detection ◆ CPU temperature detection ◆ CPU / System / Power fan speed detection ◆ CPU warning temperature ◆ CPU / System / Power fan failure warning ◆ CPU smart fan control
BIOS	<ul style="list-style-type: none"> ◆ 2 4M bit flash ROM ◆ Use of licensed AWARD BIOS ◆ Supports DualBIOS/Multilanguage BIOS
Additional Features	<ul style="list-style-type: none"> ◆ Supports @BIOS ◆ Supports Download Center ◆ Supports Q-Flash ◆ Supports EasyTune ^(Note 5) ◆ Supports Xpress Install ◆ Supports Xpress Recovery2 ◆ Supports Xpress Rescue
Bundle Software	<ul style="list-style-type: none"> ◆ Norton Internet Security (OEM revision)

Overclocking	<ul style="list-style-type: none">◆ Over Voltage via BIOS (CPU/ DDR II/ PCI-E/ FSB)<ul style="list-style-type: none">- CPU Over Voltage : Adjustable CPU voltage at 0.05V (Adjustable range from 1.7500V to 1.0625V)- DIMM Over Voltage : Adjustable DIMM voltage at 0.1V (Adjustable range from +0.1V to +0.7V)- PCI-E Over Voltage : Adjustable DIMM voltage at 0.1V (Adjustable range from +0.1V to +0.7V)- FSB Over Voltage : Adjustable FSB voltage at 0.05V (Adjustable range from +0.05V to +0.35V)◆ Over Clock via BIOS (CPU/ DDR II/ PCI-E)<ul style="list-style-type: none">- PCI Express x16 Frequency : Allows 1MHz increment from 90MHz to 150MHz.- Adjustable FSB/DDRII frequencies.
Form Factor	<ul style="list-style-type: none">◆ ATX form factor; 30.5cm x 24.4cm

(Note 1) For further CPU support information, please go to GIGABYTE's website.

(Note 2) 4~7.1 channel audio configuration requires the use of Audio Combo Kit.

(Note 3) DDR II memory can be overclocked to 888MHz (must be used with an 1066MHz FSB processor) through overclocking in BIOS. Go to GIGABYTE's website for more information about the supported DDR II memory modules for this feature.

(Note 4) To use a DDR II 667 memory module on the motherboard, you must install an 800/1066MHz FSB processor.

(Note 5) EasyTune functions may vary depending on different motherboards.

1-3 Installation of the CPU and Heatsink



CAUTION

Before installing the CPU, please comply with the following conditions:

1. Please make sure that the motherboard supports the CPU.
2. Please take note of the one indented corner of the CPU. If you install the CPU in the wrong direction, the CPU will not insert properly. If this occurs, please change the insert direction of the CPU.
3. Please add an even layer of heat sink paste between the CPU and heatsink.
4. Please make sure the heatsink is installed on the CPU prior to system use, otherwise overheating and permanent damage of the CPU may occur.
5. Please set the CPU host frequency in accordance with the processor specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the required standards for the peripherals. If you wish to set the frequency beyond the proper specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.



NOTE

HT functionality requirement content :

Enabling the functionality of Hyper-Threading Technology for your computer system requires all of the following platform components:

- CPU: An Intel® Pentium 4 Processor with HT Technology
- Chipset: An Intel® Chipset that supports HT Technology
- BIOS: A BIOS that supports HT Technology and has it enabled
- OS: An operation system that has optimizations for HT Technology

1-3-1 Installation of the CPU

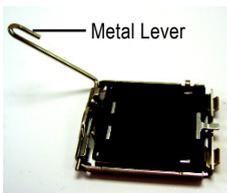


Fig. 1
Gently lift the metal lever located on the CPU socket to the upright position.

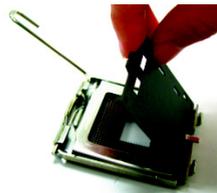


Fig. 2
Remove the plastic covering on the CPU socket.

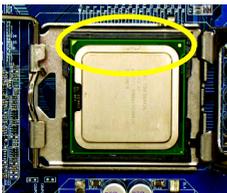


Fig. 3
Notice the small gold colored triangle located on the edge of the CPU socket. Align the indented corner of the



Fig. 4
Once the CPU is properly inserted, please replace the load plate and push the metal lever back into its original position.

CPU with the triangle and gently insert the CPU into position. (Grasping the CPU firmly between your thumb and forefinger, carefully place it into the socket in a straight and downwards motion. Avoid twisting or bending motions that might cause damage to the CPU during installation.)

1-3-2 Installation of the Heatsink



Fig. 1
Please apply an even layer of heatsink paste on the surface of the installed CPU.

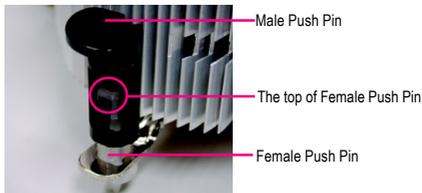


Fig. 2
(Turning the push pin along the direction of arrow is to remove the heatsink, on the contrary, is to install.) Please note the direction of arrow sign on the male push pin doesn't face inwards before installation. (This instruction is only for Intel boxed fan)

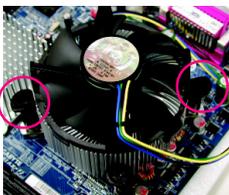


Fig. 3
Place the heatsink atop the CPU and make sure the push pins aim to the pin hole on the motherboard. Pressing down the push pins diagonally.

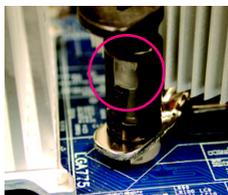


Fig. 4
Please make sure the Male and Female push pin are joined closely. (for detailed installation instructions, please refer to the heatsink installation section of the user manual)

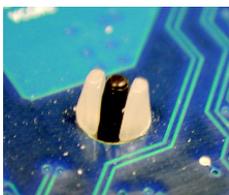


Fig. 5
Please check the back of motherboard after installing. If the push pin is inserted as the picture, the installation is complete.



Fig. 6
Finally, please attach the power connector of the heatsink to the CPU fan header located on the motherboard.



The heatsink may adhere to the CPU as a result of hardening of the heatsink paste. To prevent such an occurrence, it is suggested that either thermal tape rather than heat sink paste be used for heat dissipation or using extreme care when removing the heatsink.

1-4 Installation of Memory



Before installing the memory modules, please comply with the following conditions:

1. Please make sure that the memory used is supported by the motherboard. It is recommended that memory of similar capacity, specifications and brand be used.
2. Before installing or removing memory modules, please make sure that the computer power is switched off to prevent hardware damage.
3. Memory modules have a foolproof insertion design. A memory module can be installed in only one direction. If you are unable to insert the module, please switch the direction.

The motherboard supports DDR II memory modules, whereby BIOS will automatically detect memory capacity and specifications. Memory modules are designed so that they can be inserted only in one direction. The memory capacity used can differ with each slot.

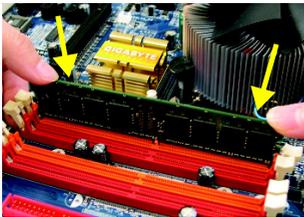
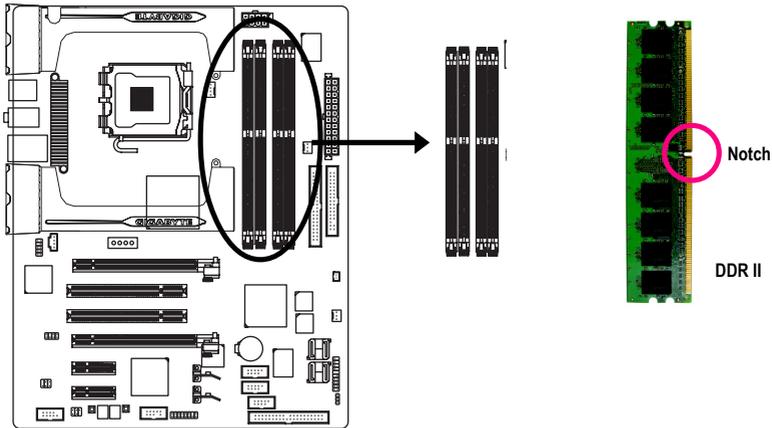


Fig.1

The DIMM socket has a notch, so the DIMM memory module can only fit in one direction. Insert the DIMM memory module vertically into the DIMM socket. Then push it down.

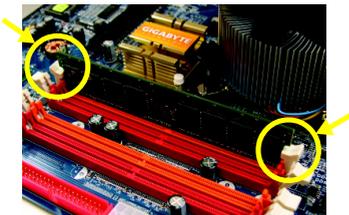


Fig.2

Close the plastic clip at both edges of the DIMM sockets to lock the DIMM module.

Reverse the installation steps when you wish to remove the DIMM module.



Dual Channel Memory Configuration

The GA-G1975X supports the Dual Channel Technology. After operating the Dual Channel Technology, the bandwidth of Memory Bus will add double. GA-G1975X includes 4 DIMM sockets, and each Channel has two DIMM

sockets as following:

▶▶ Channel A : DDR II 1, DDR II 2

▶▶ Channel B : DDR II 3, DDR II 4

If you want to operate the Dual Channel Technology, please note the following explanations due to the limitation of Intel chipset specifications.

1. Dual Channel mode will not be enabled if only one DDR II memory module is installed.
2. To enable Dual Channel mode with two or four memory modules (it is recommended to use memory modules of identical brand, size, chips, and speed), you must install them into DIMM sockets of the same color.

The following is a Dual Channel Memory configuration table: (DS: Double Side, SS: Single Side)

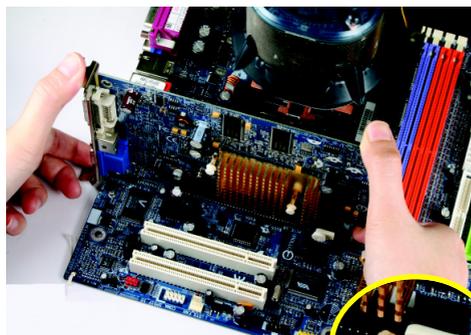
	DDR II 1	DDR II 2	DDR II 3	DDR II 4
2 memory modules	DS/SS	X	DS/SS	X
	X	DS/SS	X	DS/SS
4 memory modules	DS/SS	DS/SS	DS/SS	DS/SS

1-5 Installation of Expansion Cards

You can install your expansion card by following the steps outlined below:

1. Read the related expansion card's instruction document before install the expansion card into the computer.
2. Remove your computer's chassis cover, screws and slot bracket from the computer.
3. Press the expansion card firmly into expansion slot in motherboard.
4. Be sure the metal contacts on the card are indeed seated in the slot.
5. Replace the screw to secure the slot bracket of the expansion card.
6. Replace your computer's chassis cover.
7. Power on the computer, if necessary, setup BIOS utility of expansion card from BIOS.
8. Install related driver from the operating system.

Installing a PCI Express x 16 expansion card:



CAUTION

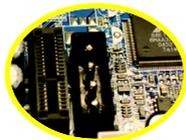
Please carefully pull out the small white-drawable bar at the end of the PCI Express x 16 slot when you try to install/uninstall the VGA card. Please align the VGA card to the onboard PCI Express x 16 slot and press firmly down on the slot. Make sure your VGA card is locked by the small white-drawable bar.



To release an installed card, users can also press the latch on the opposite side of the drawable bar as the picture to the left shows.



NOTE



The PCIE_12V power connector supplies extra power to the PCIe x 16 slots. Connect this connector depending on your system requirements.

1-6 Configuring a Multi-Graphics Cards System

1-6-1 Configuring a Multi View System

This function is supported only on Windows XP operating system.

With Multi View technology from GIGABYTE, Dual Graphic enabled motherboards offer multiple display support on up to eight separate monitors. This improves the capabilities and productivity of the user by allowing them to spread multiple windows over eight monitors and view them simultaneously.



Multiple display support for increasing productivity



Multiple display support for immersive video

Before you begin--



The exact power requirement will depend on your overall system configurations. You need a power supply that can provide sufficient and stable power to your system and the two graphics cards. We recommend a power supply that supplies 400W (or above) and 25A (or above) +12V current.

If you wish to enable the Multi View function, install two or three similar graphics cards into the PCIE_16_1, PCIE_16_2, PCIE_4_1, PCIE_4_2 slots^(Note). (It is recommended to use graphics cards of identical brand and chips. For example: GIGABYTE GV-NX66T128D).

If you want to set up a single or dual graphics card system, we recommend installing the graphics card(s) on the PCIE_16 slot(s) to ensure better display performance.

(Note) In order to enable the Dual Graphic function correctly, you have to install at least one graphics card into the PCIE_16 slot.

1-6-2 Configuring an ATI CrossFire™ System

To enable CrossFire™ technology on the motherboard, you need one ATI CrossFire™ Edition graphics card (master) and one standard CrossFire™-ready ATI RADEON graphics card (slave).

Before you begin--

I. Power Requirements:

Before installation, assure that the power supply you use is able to provide sufficient power to fully support an CrossFire configuration and other components in your system. We recommend a power supply that provides at least 20A 12V current. Please note that the exact power requirements will depend on your overall system configurations.

II. Supported Operating Systems:

Only Windows XP operating system is currently supported by the ATI CrossFire™ technology.

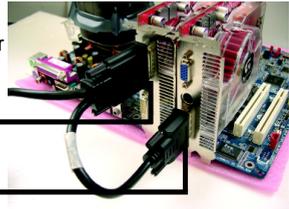
Enabling CrossFire Mode--

Connecting Two Graphics Cards:

Step 1: Observe the steps in "1-4-5 Installation of Expansion Cards" on page 17 and install the master graphics card (ATI CrossFire Edition) in the PCIE_16_1 slot and the slave graphics card (ATI standard CrossFire-ready) in the PCIE_16_2 slot.



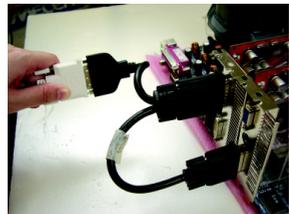
Step 2: Attach the CrossFire cable (included with the CrossFire Edition graphics card) to the DMS connector of the master card and to the DVI connector of the slave card.



DMS Connector
(Master Card)

DVI-Connector
(Slave card)

Step 3: Connect your LCD monitor to the CrossFire cable or connect your VGA monitor via an adapter.

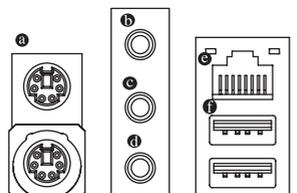


Graphics Card Driver Setting:

Step 1: After installing graphics card driver in operating system, access the ATI CATALYST Control Center. From the ATI CATALYST Control Center, enter the CrossFire menu and assure to select the **Enable CrossFire** checkbox to complete the configuration.



1-7 I/O Back Panel Introduction



Ⓐ PS/2 Keyboard and PS/2 Mouse Connector

To install a PS/2 port keyboard and mouse, plug the mouse to the upper port (green) and the keyboard to the lower port (purple).

Ⓑ Line In

Devices like CD-ROM, walkman etc. can be connected to Line In jack.

Line Out

Ⓒ Connect the stereo speakers, earphone or front surround speakers to this connector.

Ⓓ MIC In

Microphone can be connected to MIC In jack.

Ⓔ LAN Port

The provided Internet connection is Gigabit Ethernet (PCI Express Gigabit), providing data transfer speeds of 10/100/1000Mbps.

USB Port

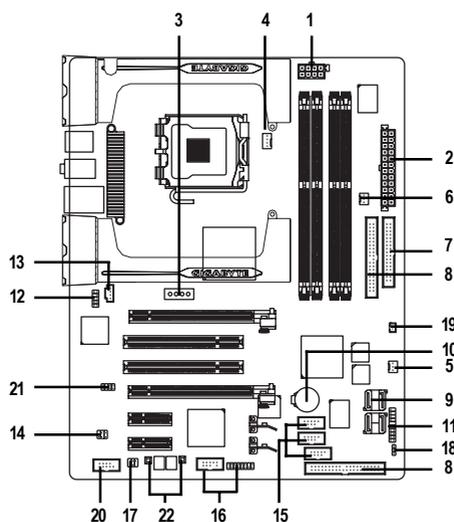
Ⓕ Before you connect your device(s) into USB connector(s), please make sure your device(s) such as USB keyboard, mouse, scanner, zip, speaker...etc. have a standard USB interface. Also make sure your OS supports USB controller. If your OS does not support USB controller, please contact OS vendor for possible patch or driver upgrade. For more information please contact your OS or device(s) vendors.



NOTE

You can use audio software to configure 2-/4-/5.1-/6.1-/7.1-channel audio functioning.

1-8 Connectors Introduction



1) ATX_12V_2X4	12) F_AUDIO
2) ATX (Power Connector)	13) CD_IN
3) PCIE_12V	14) SPDIF_IO
4) CPU_FAN	15) F_USB1 / F_USB2 / GREEN_USB
5) SYS_FAN	16) F1_1394 / F2_1394
6) PWR_FAN	17) RF_ID
7) FDD	18) PWR_LED
8) IDE1 / IDE2	19) CI
9) SATAII0_1 / SATAII2_3	20) COMA
10) BATTERY	21) SUR_GEN
11) F_PANEL	22) PW1 / PW2

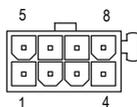
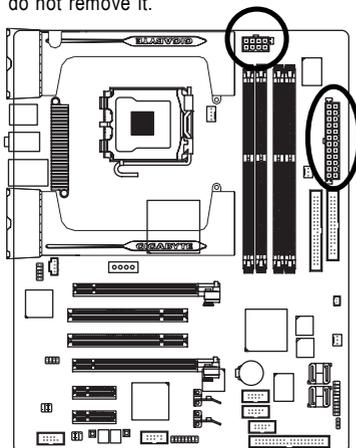
1/2) ATX_12V_2X4/ATX (Power Connector)

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, please make sure that all components and devices are properly installed. Align the power connector with its proper location on the motherboard and connect tightly.

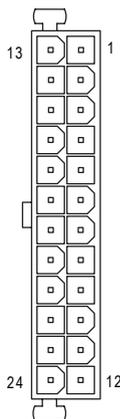
The ATX 12V (2x4) power connector mainly supplies power to the CPU. If the ATX 12V (2x4) power connector is not connected, the system will not start. If you wish to install a power supply that provides ATX 12V (2x2) power connector, please connect the ATX 12V power connector to the Pin 3, 4, 7, 8 of the onboard ATX_12V_2X4 power connector according to the pin definitions.

Important Use of a power supply providing an ATX 12V (2x4) power connector is recommended by processor manufacturer when using Intel Pentium D Extreme Edition processor.

Caution! Please use a power supply that is able to handle the system voltage requirements. It is recommended that a power supply that can withstand high power consumption be used (400W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable system or a system that is unable to start. If you use a power supply that provides a 24-pin ATX or 2x4 pin ATX 12V power connector, please remove the small cover on the power connector on the motherboard before plugging in the power cord ; otherwise, please do not remove it.



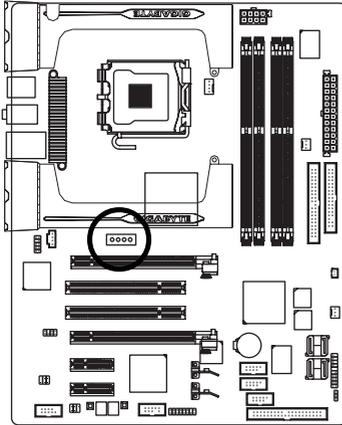
Pin No.	Definition
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V



Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON(soft On/Off)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5V SB(stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V(Only for 24-pin ATX)	23	+5V (Only for 24-pin ATX)
12	3.3V(Only for 24-pin ATX)	24	GND(Only for 24-pin ATX)

3) PCIE_12V (Power Connector)

The PCIE_12V power connector supplies extra power to the PCIe x 16 slot. Connect this connector depending on your system requirements.



Pin No.	Definition
1	NC
2	GND
3	GND
4	+12V

4/5/6) CPU_FAN / SYS_FAN / PWR_FAN (Cooler Fan Power Connector)

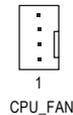
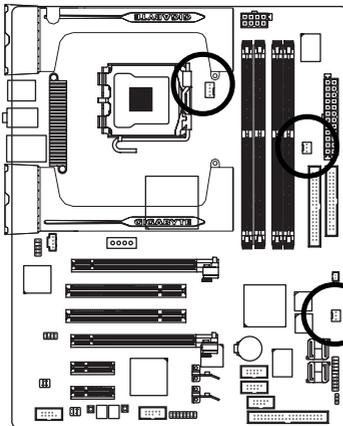
The cooler fan power connector supplies a +12V power voltage via a 3-pin/4-pin (only for CPU_FAN) power connector and possesses a foolproof connection design.

Most coolers are designed with color-coded power connector wires. A red power connector wire indicates a positive connection and requires a +12V power voltage. The black connector wire is the ground wire (GND).

Please remember to connect the power to the cooler to prevent system overheating and failure.

Caution!

Please remember to connect the power to the CPU fan to prevent CPU overheating and failure.



1
CPU_FAN

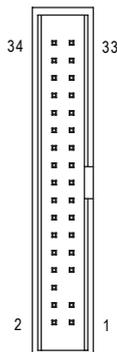
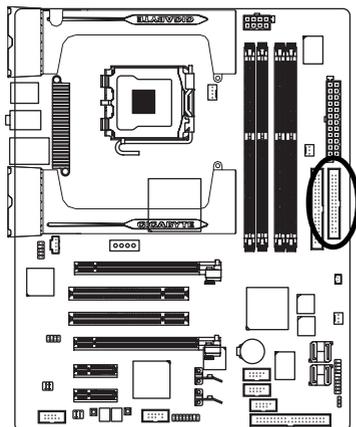


1
SYS_FAN / PWR_FAN

Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control (Only for CPU_FAN)

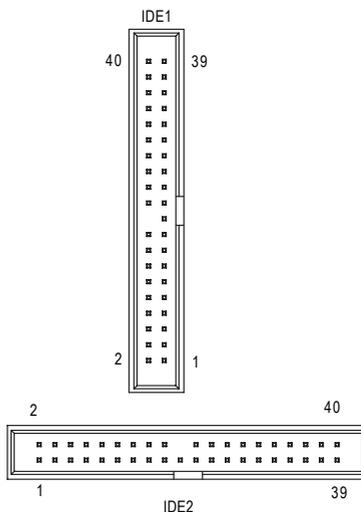
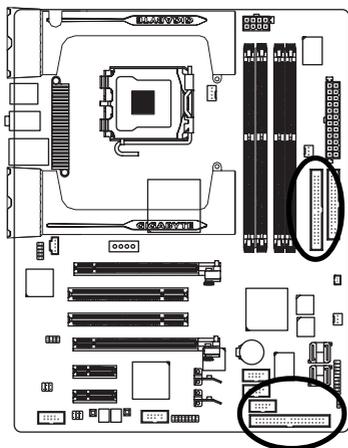
7) FDD (Floppy Connector)

The FDD connector is used to connect the FDD cable while the other end of the cable connects to the FDD drive. The types of FDD drives supported are: 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB. Please connect the red power connector wire to the pin1 position.



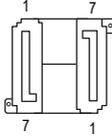
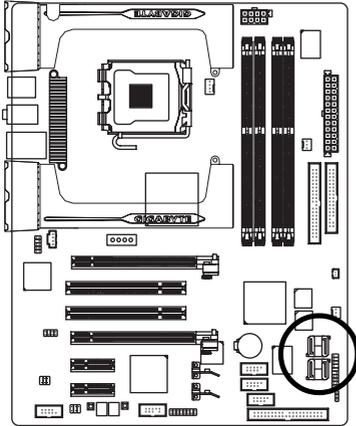
8) IDE1 / IDE2 (IDE Connector)

An IDE device connects to the computer via an IDE connector. One IDE connector can connect to one IDE cable, and the single IDE cable can then connect to two IDE devices (hard drive or optical drive). If you wish to connect two IDE devices, please set the jumper on one IDE device as Master and the other as Slave (for information on settings, please refer to the instructions located on the IDE device). To ensure that an IDE CD-ROM drive can work properly, please attach it to the IDE 1 connector.



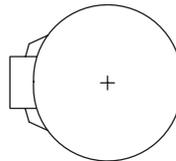
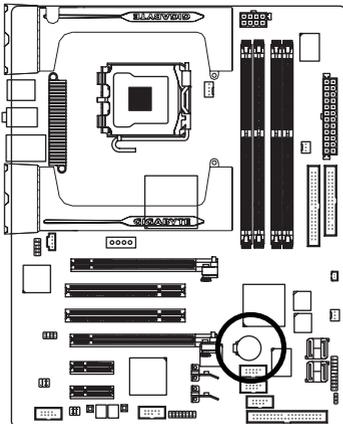
9) SATAII0_1 / SATAII2_3 (SATA 3Gb/s Connector)

SATA 3Gb/s can provide up to 300MB/s transfer rate. Please refer to the BIOS setting for the Serial ATA and install the proper driver in order to work properly.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

10) BATTERY



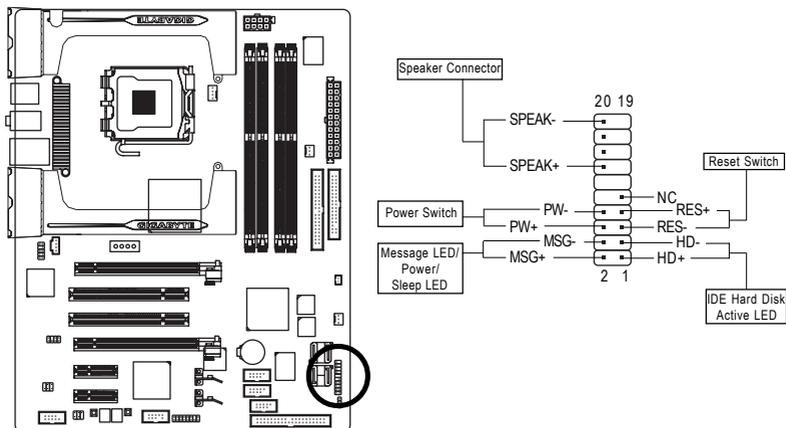
- ❖ Danger of explosion if battery is incorrectly replaced.
- ❖ Replace only with the same or equivalent type recommended by the manufacturer.
- ❖ Dispose of used batteries according to the manufacturer's instructions.

If you want to erase CMOS...

1. Turn OFF the computer and unplug the power cord.
2. Take out the battery gently and put it aside for about 10 minutes (Or you can use a metal object to connect the positive and negative pins in the battery holder to make them short for one minute).
3. Re-install the battery.
4. Plug the power cord and turn ON the computer.

11) F_PANEL (Front Panel Jumper)

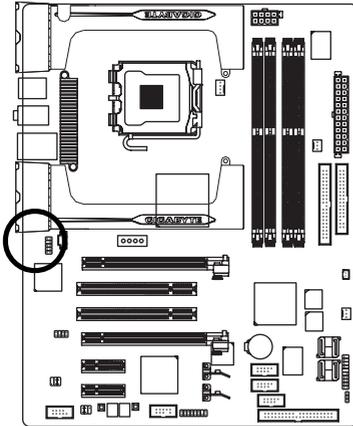
Please connect the power LED, PC speaker, reset switch and power switch etc. of your chassis front panel to the F_PANEL connector according to the pin assignment below.



HD (IDE Hard Disk Active LED) (Blue)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
SPEAK (Speaker Connector) (Amber)	Pin 1: Power Pin 2- Pin 3: NC Pin 4: Data(-)
RES (Reset Switch) (Green)	Open: Normal Close: Reset Hardware System
PW (Power Switch) (Red)	Open: Normal Close: Power On/Off
MSG (Message LED/Power/Sleep LED) (Yellow)	Pin 1: LED anode(+) Pin 2: LED cathode(-)
NC (Purple)	NC

12) F_AUDIO (Front Audio Connector)

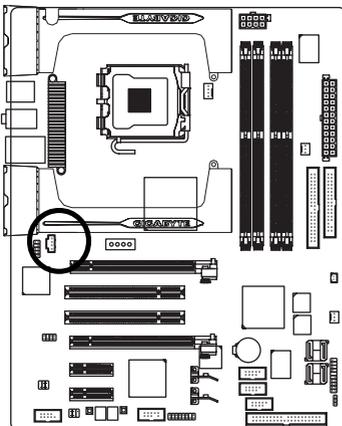
If you wish to use the front audio function, connect the front panel audio module to this connector. Check the pin assignments carefully while you connect the front panel audio module. Incorrect connection between the module and connector will make the audio device unable to work or even damage it. For optional front panel audio module, please contact your chassis manufacturer.



Pin No.	Definition
1	MIC
2	GND
3	MIC_BIAS
4	NC
5	FrontAudio(R)
6	NC
7	NC
8	No Pin
9	FrontAudio(L)
10	NC

13) CD_IN (CD IN)

Connect CD-ROM or DVD-ROM audio out to the connector.

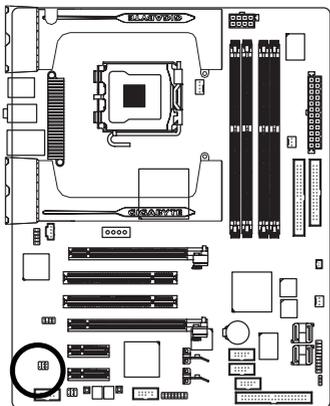


Pin No.	Definition
1	CD-L
2	GND
3	GND
4	CD-R

14) SPDIF_IO (SPDIF In/Out)

The SPDIF output is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder. Use this feature only when your stereo system has digital input function. Use SPDIF IN feature only when your device has digital output function.

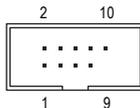
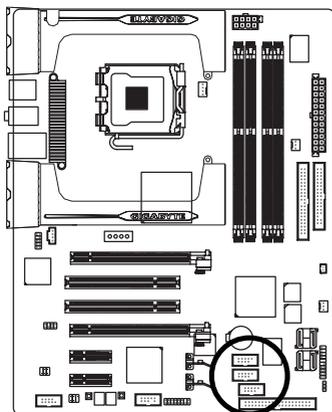
Be careful with the polarity of the SPDIF_IO connector. Check the pin assignment carefully while you connect the SPDIF cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional SPDIF cable, please contact your local dealer.



Pin No.	Definition
1	Power
2	No Pin
3	SPDIF
4	SPDIFI
5	GND
6	GND

15) F_USB1 / F_USB2 / GREEN_USB (Front USB Connector)

Be careful with the polarity of the front USB connector. Check the pin assignments carefully while you connect the front USB cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional front USB cable, please contact your local dealer. The GREEN_USB connector provides no standby power when system is off and it does not support USB device to wake up from S3 mode. Users who wish to shut down the standby power^(note) for their USB devices during system power-off can connect the devices to this connector via the optional front USB cable.

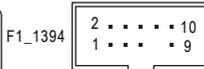
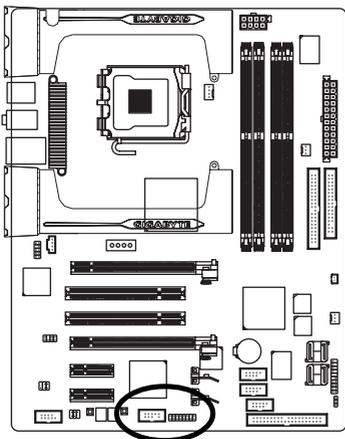


Pin No.	Definition
1	Power(5V)
2	Power(5V)
3	USB DX-
4	USB Dy-
5	USB DX+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	NC

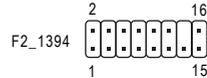
(Note) When the standby power is shut down, USB devices (example: optical mouses) will not light on during system power-off.

16) F1_1394 / F2_1394 (IEEE 1394 Connector)

Serial interface standard set by Institute of Electrical and Electronics Engineers, which has features like high speed, highbandwidth and hot plug. Be careful with the polarity of the IEEE1394 connector. Check the pin assignment carefully while you connect the IEEE1394 cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional IEEE1394 cable, please contact your local dealer.



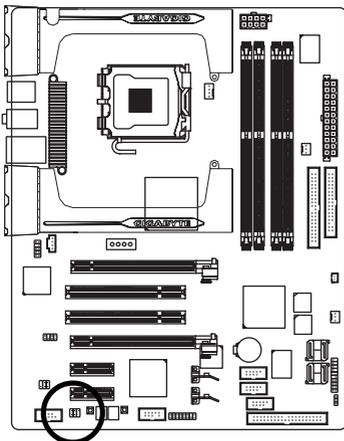
Pin No.	Definition
1	TPA2+
2	TPA2-
3	GND
4	GND
5	TPB2+
6	TPB2-
7	No Pin
8	Power(12V)
9	Power(12V)
10	GND



Pin No.	Definition
1	Power(12V)
2	Power(12V)
3	TPA0+
4	TPA0-
5	GND
6	GND
7	TPB0+
8	TPB0-
9	Power(12V)
10	Power(12V)
11	TPA1+
12	TPA1-
13	GND
14	No Pin
15	TPB1+
16	TPB1-

17) RF_ID

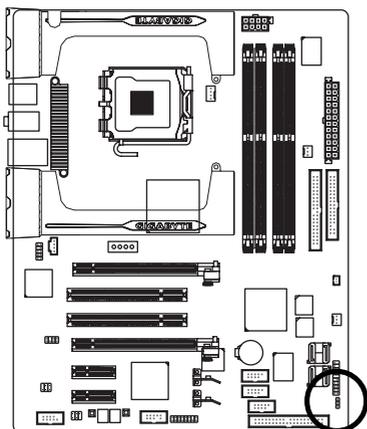
This connector allows you to connect external devices to use extra function. Check the pin assignments before you connect the external device cable. Please contact your nearest dealer for the optional GIGABYTE external device.



Pin No.	Definition
1	Power
2	RFID_RI-
3	RF_TXD
4	RF_RXD
5	No Pin
6	GND

18) PWR_LED

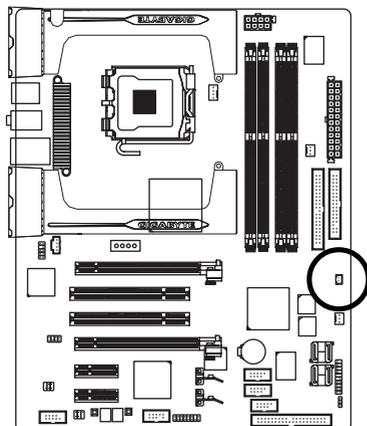
The PWR_LED connector is connected with the system power indicator to indicate whether the system is on/off. It will blink when the system enters suspend mode.



Pin No.	Definition
1	MPD+
2	MPD-
3	MPD-

19) CI (Chassis Intrusion, Case Open)

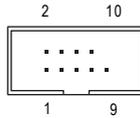
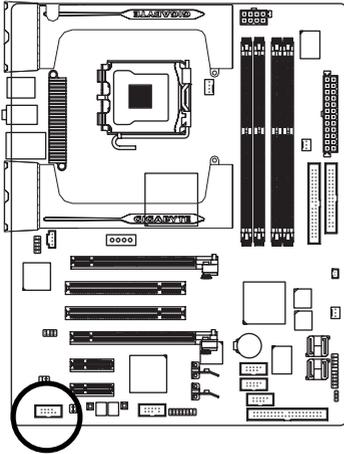
This 2-pin connector allows your system to detect if the chassis cover is removed. You can check the "Case Opened" status in BIOS Setup.



Pin No.	Definition
1	Signal
2	GND

20) COMA (COMA Connector)

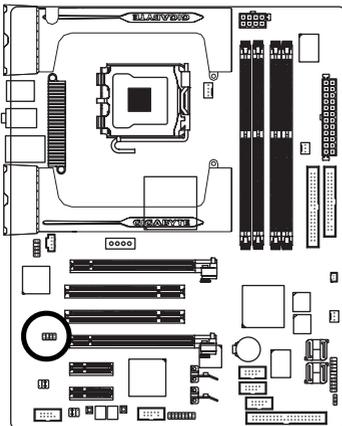
Be careful with the polarity of the COMA connector. Check the pin assignment carefully while you connect the COMA cable, incorrect connection between the cable and connector will make the device unable to work or even damage it. For optional COMA cable, please contact your local dealer.



Pin No.	Definition
1	NDCDA-
2	NSINA
3	NSOUTA
4	NDTRA-
5	GND
6	NDSRA-
7	NRTSA-
8	NCTSA-
9	NRIA-
10	No Pin

21) SUR_CEN (Surround Center Connector)

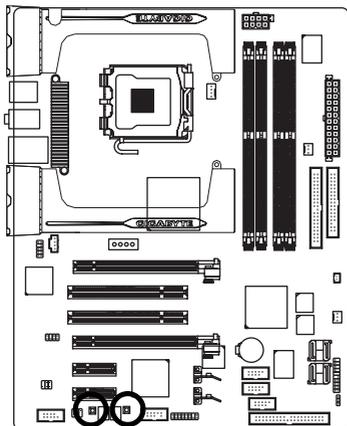
Please connect the Surround Kit connector from the included Audio Combo Kit to this connector.



Pin No.	Definition
1	REAR_L
2	REAR_R
3	GND
4	No Pin
5	CENTER
6	LEF
7	SIDE_L
8	SIDE_R

22) PW1 / PW2

C.R.S. (CMOS Reload Switch) allows user to clear the CMOS and reboot the system simultaneously. C.R.S. provides convenient default settings retrieve and jumper-free CMOS reload.



PW1(Red) PW2(Blue)

	Definition
PW1	Clear CMOS + Power On
PW2	Power On / Off

Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) includes a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS SRAM of the motherboard.

When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS SRAM.

When the power is turned on, pushing the button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen.

When setting up BIOS for the first time, it is recommended that you save the current BIOS to a disk in the event that BIOS needs to be reset to its original settings. If you wish to upgrade to a new BIOS, either GIGABYTE's Q-Flash or @BIOS utility can be used.

Q-Flash allows the user to quickly and easily update or backup BIOS without entering the operating system. @BIOS is a Windows-based utility that does not require users to boot to DOS before upgrading BIOS but directly download and update BIOS from the Internet.

CONTROL KEYS

<↑> <↓> <←> <→>	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
<Page Up>	Increase the numeric value or make changes
<Page Down>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Item Help
<F3>	Select Language
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the fail-safe default CMOS value from BIOS default table
<F7>	Load the Optimized Defaults
<F8>	Dual BIOS/Q-Flash utility
<F9>	System Information
<F10>	Save all the CMOS changes, only for Main Menu

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

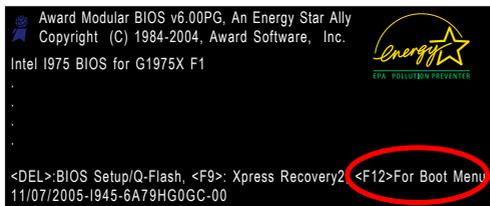
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.



Because BIOS flashing is potentially risky, please do it with caution and avoid inadequate operation that may result in system malfunction.

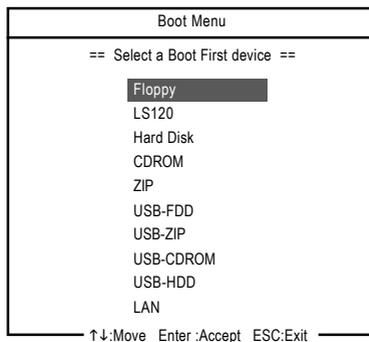
<F12> : For Boot Menu

Select boot sequence for onboard (or add-on cards) device.



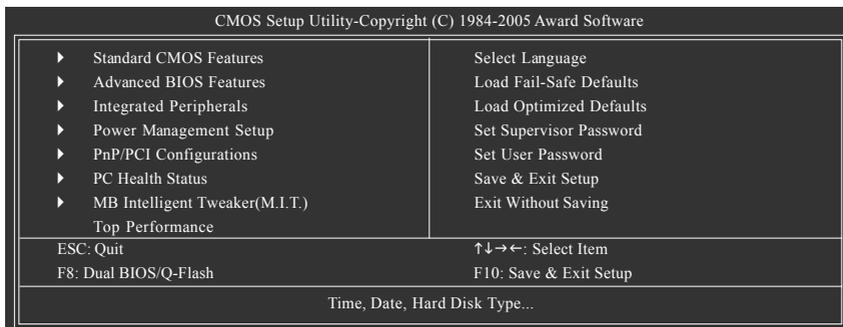
<F12> For Boot Menu

Use <↑> or <↓> to select a device, then press enter to accept . Press <ESC> to exit this menu.



The Main Menu (For example: BIOS Ver. : F1)

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (as figure below) will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



NOTE

Please Load Optimized Defaults in the BIOS when somehow the system works not stable as usual. This action makes the system reset to the default for stability.

The BIOS Setup menus described in this chapter are for reference only and may differ from the exact settings for your motherboard.

■ Standard CMOS Features

This setup page includes all the items in standard compatible BIOS.

■ Advanced BIOS Features

This setup page includes all the items of Award special enhanced features.

■ Integrated Peripherals

This setup page includes all onboard peripherals.

■ Power Management Setup

This setup page includes all the items of Green function features.

■ PnP/PCI Configuration

This setup page includes all the configurations of PCI & PnP ISA resources.

■ PC Health Status

This setup page is the System auto detect Temperature, voltage, fan, speed.

■ MB Intelligent Tweaker(M.I.T.)

This setup page is control CPU clock and frequency ratio.

■ Top Performance

If you wish to maximize the performance of your system, set "Top Performance" as "Enabled".

■ Select Language

This setup page is to select multi languages.

■ Load Fail-Safe Defaults

Fail-Safe Defaults indicates the value of the system parameters which the system would be in safe configuration.

■ Load Optimized Defaults

Optimized Defaults indicates the value of the system parameters which the system would be in best performance configuration.

■ Set Supervisor Password

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

■ Set User Password

Change, set, or disable password. It allows you to limit access to the system.

■ Save & Exit Setup

Save CMOS value settings to CMOS and exit setup.

■ Exit Without Saving

Abandon all CMOS value changes and exit setup.

2-1 Standard CMOS Features

CMOS Setup Utility-Copyright (C) 1984-2005 Award Software Standard CMOS Features		
Date (mm:dd:yy)	Wed, Oct 27 2005	Item Help
Time (hh:mm:ss)	22:31:24	Menu Level▶
▶ IDE Channel 0 Master	[None]	Change the day, month, year
▶ IDE Channel 0 Slave	[None]	<Week>
▶ IDE Channel 2 Master	[None]	Sun. to Sat.
▶ IDE Channel 2 Slave	[None]	<Month>
▶ IDE Channel 3 Master	[None]	Jan. to Dec.
▶ IDE Channel 3 Slave	[None]	<Day>
Drive A	[1.44M, 3.5"]	1 to 31 (or maximum allowed in the month)
Drive B	[None]	<Year>
Floppy 3 Mode Support	[Disabled]	1999 to 2098
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	511M	
Total Memory	512M	
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F3: Language F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

☞ Date

The date format is <week>, <month>, <day>, <year>.

- ▶▶ Week The week, from Sun to Sat, determined by the BIOS and is display only
- ▶▶ Month The month, Jan. Through Dec.
- ▶▶ Day The day, from 1 to 31 (or the maximum allowed in the month)
- ▶▶ Year The year, from 1999 through 2098

☞ Time

The times format in <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

☞ IDE Channel 0 Master, Slave

- ▶▶ IDE HDD Auto-Detection Press "Enter" to select this option for automatic device detection.
- ▶▶ IDE Device Setup. You can use one of three methods:
 - Auto Allows BIOS to automatically detect IDE devices during POST(default)
 - None Select this if no IDE devices are used and the system will skip the automatic detection step and allow for faster system start up.
 - Manual User can manually input the correct settings.
- ▶▶ Access Mode Use this to set the access mode for the hard drive. The four options are:
CHS/LBA/Large/Auto(default:Auto)
- ▶▶ Capacity Capacity of currently installed hard disk.

Hard drive information should be labeled on the outside drive casing. Enter the appropriate option based on this information.

- ▶▶ Cylinder Number of cylinders
- ▶▶ Head Number of heads
- ▶▶ Precomp Write precomp
- ▶▶ Landing Zone Landing zone
- ▶▶ Sector Number of sectors

If a hard disk has not been installed, select NONE and press <Enter>.

☞ IDE Channel 2/3 Master

- ▶▶ IDE HDD Auto-Detection Press "Enter" to select this option for automatic device detection.
- ▶▶ Extended IDE Drive

SATA IDE devices setup. You can use one of two methods:

- Auto Allows BIOS to automatically detect SATA IDE devices during POST(default)
- None Select this if no SATA IDE devices are used and the system will skip the automatic detection step and allow for faster system start up.

- ▶▶ Access Mode Use this to set the access mode for the hard drive. The two options are: Large/Auto(default:Auto)
- ▶▶ Capacity Capacity of correctly installed hard drive.

Hard drive information should be labeled on the outside drive casing. Enter the appropriate option based on this information.

- ▶▶ Cylinder Number of cylinders
- ▶▶ Head Number of heads
- ▶▶ Precomp Write precomp
- ▶▶ Landing Zone Landing zone
- ▶▶ Sector Number of sectors

☞ Drive A / Drive B

The category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

- ▶▶ None No floppy drive installed.
- ▶▶ 360K, 5.25" 5.25 inch PC-type standard drive; 360K byte capacity.
- ▶▶ 1.2M, 5.25" 5.25 inch AT-type high-density drive; 1.2M byte capacity. (3.5 inch when 3 Mode is Enabled).
- ▶▶ 720K, 3.5" 3.5 inch double-sided drive; 720K byte capacity
- ▶▶ 1.44M, 3.5" 3.5 inch double-sided drive; 1.44M byte capacity.
- ▶▶ 2.88M, 3.5" 3.5 inch double-sided drive; 2.88M byte capacity.

☞ Floppy 3 Mode Support (for Japan Area)

- ▶▶ Disabled Normal Floppy Drive. (Default value)
- ▶▶ Drive A Drive A is 3 mode Floppy Drive.
- ▶▶ Drive B Drive B is 3 mode Floppy Drive.
- ▶▶ Both Drive A & B are 3 mode Floppy Drives.

☞ Halt on

The category determines whether the computer will stop if an error is detected during power up.

- ▶▶ No Errors The system boot will not stop for any error that may be detected and you will be prompted.
- ▶▶ All Errors Whenever the BIOS detects a non-fatal error the system will be stopped.
- ▶▶ All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)
- ▶▶ All, But Diskette The system boot will not stop for a disk error; it will stop for all other errors.
- ▶▶ All, But Disk/Key The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

☞ **Memory**

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

» **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

» **Extended Memory**

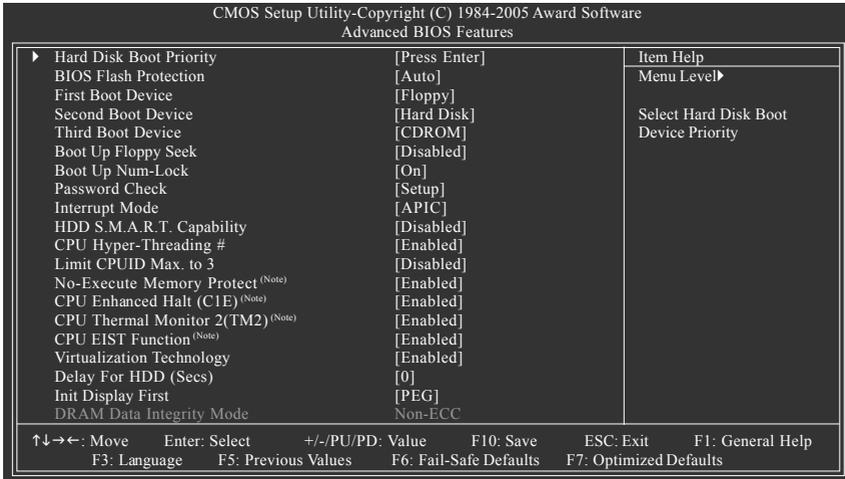
The BIOS determines how much extended memory is present during the POST.

This is the amount of memory located above 1 MB in the CPU's memory address map.

» **Total Memory**

This item displays the memory size that used.

2-2 Advanced BIOS Features



" # " System will detect automatically and show up when you install the Intel® Pentium® 4 processor with HT Technology.

☞ Hard Disk Boot Priority

Select boot sequence for onboard(or add-on cards) SCSI, RAID, etc.

Use <↑> or <↓> to select a device, then press<+> to move it up, or <-> to move it down the list.
Press <ESC> to exit this menu.

☞ BIOS Flash Protection

This feature allows you determine the states that flash BIOS.

- ▶ Auto BIOS enables flash write access automatically when updating BIOS data/DMI/ESCD. (Default Value)
- ▶ Enabled During POST, DMI/ESCD would not be updated. But flash tools can update BIOS always.

☞ First / Second / Third Boot Device

- ▶ Floppy Select your boot device priority by Floppy.
- ▶ LS120 Select your boot device priority by LS120.
- ▶ Hard Disk Select your boot device priority by Hard Disk.
- ▶ CDROM Select your boot device priority by CDROM.
- ▶ ZIP Select your boot device priority by ZIP.
- ▶ USB-FDD Select your boot device priority by USB-FDD.
- ▶ USB-ZIP Select your boot device priority by USB-ZIP.
- ▶ USB-CDROM Select your boot device priority by USB-CDROM.
- ▶ USB-HDD Select your boot device priority by USB-HDD.
- ▶ LAN Select your boot device priority by LAN.
- ▶ Disabled Disable this function.

(Note) This item will show up when you install a processor that supports this function.

☞ **Boot Up Floppy Seek**

Boot Up Floppy Seek During POST, BIOS will determine the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks 720K, 1.2M and 1.44M are all 80 tracks.

- ▶▶ Disabled BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K. (Default value)
- ▶▶ Enabled BIOS searches for floppy disk drive to determine it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.

☞ **Boot Up Num-Lock**

When set On, allows the BIOS to automatically enable the Num Lock Function when the system boots up.

- ▶▶ On Keypad is number keys. (Default value)
- ▶▶ Off Keypad is arrow keys.

☞ **Password Check**

- ▶▶ Setup The system will boot but will not access to Setup page if the correct password is not entered at the prompt. (Default value)
- ▶▶ System The system will not boot and will not access to Setup page if the correct password is not entered at the prompt.

☞ **Interrupt Mode**

- ▶▶ PIC PIC (8259 Programmable Interrupt Controller). Use the traditional method to provide IRQs for the system.
- ▶▶ APIC APIC (Advanced Programmable Interrupt Controller). Provide more IRQs for the system through IOAPIC. (Default value)

Note: BIOS will autodetect IOAPIC mode when an IOAPIC processor is installed. And your operating system will be APIC-supported if you enable the APIC mode in BIOS before installing the operating system.

However, if you replace the APIC processor with a non-APIC one or switch to PIC mode in BIOS, you will not be able to enter the APIC operating system and will have to reinstall it.

☞ **HDD S.M.A.R.T. Capability**

S.M.A.R.T. which allows your hard disk to report any read/write errors and issue a warning when LDCM installed.

- ▶▶ Enabled Enabled HDD S.M.A.R.T. capability.
- ▶▶ Disabled Disabled HDD S.M.A.R.T. capability. (Default value)

☞ **CPU Hyper-Threading**

- ▶▶ Enabled Enables CPU Hyper Threading Feature. Please note that this feature is only working for operating system with multi processors mode supported. (Default value)
- ▶▶ Disabled Disables CPU Hyper Threading.

(Note) This item will show up when you install a processor that supports this function.

☞ **Limit CPUID Max. to 3**

- ▶▶ Enabled Limit CPUID Maximum value to 3 when use older OS like NT4.
- ▶▶ Disabled Disables CPUID Limit for windows XP.(Default value)

☞ **No-Execute Memory Protect** ^(Note)

- ▶▶ Enabled Enable No-Execute Memory Protect function.(Default value)
- ▶▶ Disabled Disable No-Execute Memory Protect function.

☞ **CPU Enhanced Halt (C1E)** ^(Note)

- ▶▶ Enabled Enable CPU Enhanced Halt (C1E) function.(Default value)
- ▶▶ Disabled Disable CPU Enhanced Halt (C1E) function.

☞ **CPU Thermal Monitor 2 (TM2)** ^(Note)

- ▶▶ Enabled Enable CPU Thermal Monitor 2 (TM2) function.(Default value)
- ▶▶ Disabled Disable CPU Thermal Monitor 2 (TM2) function.

☞ **CPU EIST Function** ^(Note)

- ▶▶ Enabled Enable CPU EIST function.(Default value)
- ▶▶ Disabled Disable CPU EIST function.

☞ **Virtualization Technology**

- ▶▶ Enabled A VMM can utilize the additional hardware capabilities provided by Virtualization Technology. (Default value)
- ▶▶ Disabled Disabled this function.

☞ **Delay For HDD (Secs)**

- ▶▶ Set delay HDD time from 0~15(sec).

☞ **Init Display First**

This feature allows you to select the first initiation of the monitor display from which card when you install a PCI card and a PCI Express VGA card on the motherboard.

- ▶▶ PCI Set Init Display First to PCI VGA card.
- ▶▶ PEG Set Init Display First to PCI Express VGA card (PCIE_16_1 slot). (Default value)
- ▶▶ PEG2 Set Init Display First to PCI Express VGA card (PCIE_16_2 slot).

☞ **DRAM Data Integrity Mode**

- ▶▶ ECC Enable Memory Error Checking and Correction feature when all installed DIMMs are 72bits width.
- ▶▶ Non-ECC Set DRAM Data Integrity Mode to Non-ECC. (Default value)

2-3 Integrated Peripherals

CMOS Setup Utility-Copyright (C) 1984-2005 Award Software Integrated Peripherals		
On-Chip Primary PCI IDE	[Enabled]	Item Help
SATA RAID/AHCI Mode	[Disabled]	Menu Level▶
On-Chip SATA Mode	[Auto]	
x PATA IDE Set to	Ch.0 Master/Slave	If a hard disk controller card is used, set at Disabled.
SATA Port 0/2 Set to	Ch.2 Master/Slave	
SATA Port 1/3 Set to	Ch.3 Master/Slave	
USB Controller	[Enabled]	
USB 2.0 Controller	[Enabled]	[Enabled]
USB Keyboard Support	[Disabled]	Enable on-chip IDE Port.
USB Mouse Support	[Disabled]	
Legacy USB storage detect	[Enabled]	
Onboard H/W Sound	[Enabled]	[Disabled]
Onboard H/W 1394	[Enabled]	Disable on-chip IDE Port.
Onboard H/W GigaATA	[Enabled]	
Onboard H/W LAN	[Enabled]	
OnBoard LAN Boot ROM	[Disabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
i-Lock	[Enabled]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F3: Language F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

On-Chip Primary PCI IDE

- ▶▶ Enabled Enable onboard 1st channel IDE port. (Default value)
- ▶▶ Disabled Disable onboard 1st channel IDE port.

SATA RAID / AHCI Mode

- ▶▶ RAID Set the onboard SATA controller to RAID mode.
- ▶▶ AHCI Set the onboard SATA controller to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug. For more details about AHCI, please visit Intel's website.
- ▶▶ Disabled Set the onboard SATA controller to IDE mode.(Default value)

On-Chip SATA Mode

- ▶▶ Disabled Disable this function.
- ▶▶ Auto BIOS will detect automatically. (Default value)
- ▶▶ Combined Set On-Chip SATA mode to Combined, you can use up to 4 HDDs on the motherboard; 2 for SATA and the other for PATA IDE.
- ▶▶ Enhanced Set On-Chip SATA mode to Enhanced, the motherboard allows up to 6 HDDs to use.
- ▶▶ Non-Combined Set On-Chip SATA mode to Non-Combined, SATA will be simulated to PATA mode.

PATA IDE Set to

- ▶▶ Ch.1 Master/Slave Set PATA IDE to Ch. 1 Master/Slave.
- ▶▶ Ch.0 Master/Slave Set PATA IDE to Ch. 0 Master/Slave.(Default value)

SATA Port 0/2 Set to

- ▶▶ This value will be automatically made by the setting "On-Chip SATA Mode" and "PATA IDE Set to". If PATA IDE were set to Ch. 1 Master/Slave, this function will auto set to Ch. 0 Master/Slave.

SATA Port 1/3 Set to

- ▶▶ This value will be automatically made by the setting "On-Chip SATA Mode" and "PATA IDE Set to". If PATA IDE were set to Ch. 0 Master/Slave, this function will auto set to Ch. 1 Master/Slave.

☞ **USB Controller**

- ▶▶ Enabled Enable USB controller. (Default value)
- ▶▶ Disabled Disable USB controller.

☞ **USB 2.0 Controller**

Disable this function if you are not using onboard USB 2.0 feature.

- ▶▶ Enabled Enable USB 2.0 controller. (Default value)
- ▶▶ Disabled Disable USB 2.0 controller.

☞ **USB Keyboard Support**

- ▶▶ Enabled Enable USB keyboard support.
- ▶▶ Disabled Disable USB keyboard support. (Default value)

☞ **USB Mouse Support**

- ▶▶ Enabled Enable USB mouse support.
- ▶▶ Disabled Disable USB mouse support. (Default value)

☞ **Onboard H/W Sound**

- ▶▶ Enabled Enable onboard sound. (Default value)
- ▶▶ Disabled Disable this function.

☞ **Onboard H/W 1394**

- ▶▶ Enabled Enable onboard IEEE 1394 function. (Default value)
- ▶▶ Disabled Disable this function.

☞ **Onboard H/W GigaATA**

- ▶▶ Enabled Enable onboard H/W GigaATA function. (Default value)
- ▶▶ Disabled Disable this function.

☞ **Onboard H/W LAN**

- ▶▶ Enabled Enable onboard H/W LAN function. (Default value)
- ▶▶ Disabled Disable this function.

☞ **OnBoard LAN Boot ROM**

This function decide whether to invoke the boot ROM of the onboard LAN chip.

- ▶▶ Enabled Enable this function.
- ▶▶ Disabled Disable this function. (Default value)

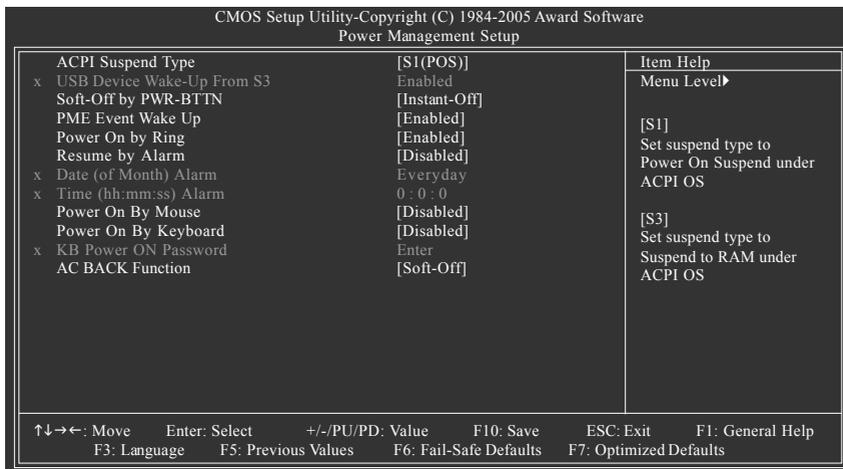
☞ **Onboard Serial Port 1**

- ▶▶ Auto BIOS will automatically setup the port 1 address.
- ▶▶ 3F8/IRQ4 Enable onboard Serial port 1 and address is 3F8/IRQ4. (Default value)
- ▶▶ 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.
- ▶▶ Disabled Disable onboard Serial port 1.

☞ **i-Lock**

- ▶▶ Enabled Enable the i-Lock function. (Default value)
- ▶▶ Disabled Disable the i-Lock function.

2-4 Power Management Setup



ACPI Suspend Type

- ▶▶ S1(POS) Set ACPI suspend type to S1/POS(Power On Suspend). (Default value)
- ▶▶ S3(STR) Set ACPI suspend type to S3/STR(Suspend To RAM).

Soft-Off by PWR-BTTN

- ▶▶ Instant-Off Press power button then Power off instantly. (Default value)
- ▶▶ Delay 4 Sec. Press power button 4 seconds to Power off. Enter suspend if button is pressed less than 4 seconds.

PME Event Wake Up

- ▶▶ Disabled Disable this function.
- ▶▶ Enabled Enable PME Event Wake up. (Default value)

Power On by Ring

- ▶▶ Disabled Disable Power on by Ring function.
- ▶▶ Enabled Enable Power on by Ring function. (Default value)

Resume by Alarm

You can set "Resume by Alarm" item to enabled and key in Date/Time to power on system.

- ▶▶ Disabled Disable this function. (Default value)
- ▶▶ Enabled Enable alarm function to POWER ON system.

If Resume by Alarm is Enabled.

- ▶▶ Date (of Month) Alarm : Everyday, 1~31
- ▶▶ Time (hh: mm: ss) Alarm : (0~23) : (0~59) : (0~59)

Power On By Mouse

- ▶▶ Disabled Disabled this function. (Default value)
- ▶▶ Double Click Double click on PS/2 mouse left button to power on the system.

☞ Power On By Keyboard

- ▶ Password Enter from 1 to 5 characters to set the Keyboard Power On Password.
- ▶ Disabled Disabled this function. (Default value)
- ▶ Keyboard 98 If your keyboard have "POWER Key" button, you can press the key to power on the system.

☞ KB Power ON Password

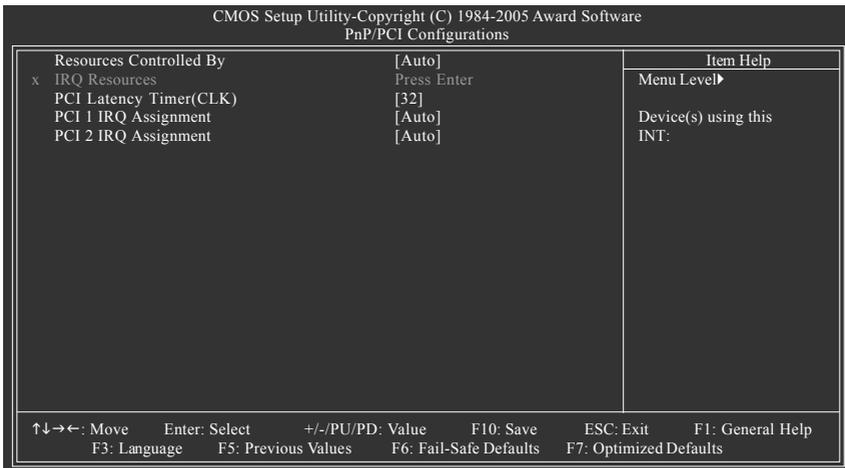
When "Power On by Keyboard" set at Password, you can set the password here.

- ▶ Enter Input password (from 1 to 5 characters) and press Enter to set the Keyboard Power On password.

☞ AC BACK Function

- ▶ Soft-Off When AC-power back to the system, the system will be in "Off" state. (Default value)
- ▶ Full-On When AC-power back to the system, the system always in "On" state.
- ▶ Memory When AC-power back to the system, the system will return to the Last state before AC-power off.

2-5 PnP/PCI Configurations



☞ Resources Controlled By

- ▶ Auto Assign PnP resource (I/O address, IRQ & DMA channels) for Plug and Play compatible devices automatically. (Default value)
- ▶ Manual Assign resource manually.

☞ IRQ Resources (IRQ3,4,5,7,9,10,11,12,14,15)

- ▶ PCI Device This IRQ assigns for PCI device. (Default value)
- ▶ Reserved Reserved this IRQ for other device.

☞ PCI Latency Timer (CLK)

- ▶ Set PCI Latency Timer to 32, 64, 128. (Default value: 32)

☞ PCI 1 IRQ Assignment

- ▶ Auto Auto assign IRQ to PCI 1. (Default value)
- ▶ 3,4,5,7,9,10,11,12,14,15 Set IRQ 3,4,5,7,9,10,11,12,14,15 to PCI 1.

☞ PCI 2 IRQ Assignment

- ▶ Auto Auto assign IRQ to PCI 2. (Default value)
- ▶ 3,4,5,7,9,10,11,12,14,15 Set IRQ 3,4,5,7,9,10,11,12,14,15 to PCI 2.

2-6 PC Health Status

CMOS Setup Utility-Copyright (C) 1984-2005 Award Software		Item Help
PC Health Status		Menu Level▶
Reset Case Open Status	[Disabled]	
Case Opened	No	
Vcore	OK	
DDRIV	OK	
+3.3V	OK	
+12V	OK	
Current CPU Temperature	33°C	
Current CPU FAN Speed	4687 RPM	
Current POWER FAN Speed	0 RPM	
Current SYSTEM FAN Speed	0 RPM	
CPU Warning Temperature	[Disabled]	
CPU FAN Fail Warning	[Disabled]	
POWER FAN Fail Warning	[Disabled]	
SYSTEM FAN Fail Warning	[Disabled]	
CPU Smart FAN Control	[Enabled]	
CPU Smart FAN Mode	[Auto]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
 F3: Language F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☞ Reset Case Open Status

- ▶ Disabled Don't reset case open status. (Default value)
- ▶ Enabled Clear case open status at next boot.

☞ Case Opened

If the case is closed, "Case Opened" will show "No". If the case has been opened, "Case Opened" will show "Yes". If you want to reset "Case Opened" value, set "Reset Case Open Status" to **Enabled** then save BIOS setup and restart your system.

☞ Current Voltage(V) Vcore / DDRV / +3.3V / +12V

- ▶ Detect system's voltage status automatically.

☞ Current CPU Temperature

- ▶ Detect CPU temperature automatically.

☞ Current CPU/POWER/SYSTEM FAN Speed (RPM)

- ▶ Detect CPU/POWER/SYSTEM fan speed status automatically.

☞ CPU Warning Temperature

- ▶▶ 60°C / 140°F Monitor CPU temperature at 60°C / 140°F.
- ▶▶ 70°C / 158°F Monitor CPU temperature at 70°C / 158°F.
- ▶▶ 80°C / 176°F Monitor CPU temperature at 80°C / 176°F.
- ▶▶ 90°C / 194°F Monitor CPU temperature at 90°C / 194°F.
- ▶▶ Disabled Disable this function. (Default value)

☞ CPU/POWER/SYSTEM FAN Fail Warning

- ▶▶ Disabled Disable fan fail warning function. (Default value)
- ▶▶ Enabled Enable fan fail warning function.

☞ CPU Smart FAN Control

- ▶▶ Disabled Disable this function.
- ▶▶ Enabled When this function is enabled, CPU fan will run at different speed depending on CPU temperature. Users can adjust the fan speed with Easy Tune based on their requirements. (Default value)

☞ CPU Smart FAN Mode

This option is available only when CPU Smart FAN Control is enabled.

- ▶▶ Auto BIOS autodetects the type of CPU fan you installed and sets the optimal CPU Smart FAN control mode for it. (Default value)
- ▶▶ Voltage Set to Voltage when you use a CPU fan with a 3-pin fan power cable.
- ▶▶ PWM Set to PWM when you use a CPU fan with a 4-pin fan power cable.

Note: In fact, the Voltage option can be used for CPU fans with 3-pin or 4-pin power cables. However, some 4-pin CPU fan power cables are not designed following Intel 4-Wire fans PWM control specifications. With such CPU fans, selecting PWM will not effectively reduce the fan speed.

2-7 MB Intelligent Tweaker(M.I.T.)

CMOS Setup Utility-Copyright (C) 1984-2005 Award Software
MB Intelligent Tweaker(M.I.T.)

		Item Help
C.A.M. (Note)	[High]	Menu Level▶
CPU Clock Ratio (Note)	[16X]	CPU Adjustable Multiplier
Robust Graphics Booster	[Auto]	Set Clock Ratio For Frequency-locked CPU
C.I.A. 2	[Disabled]	
CPU Host Clock Control	[Disabled]	
x CPU Host Frequency(Mhz)	200	
x PCI Express Frequency(Mhz)	Auto	
x PCI Frequency(Mhz)	Auto	
System Memory Multiplier	[Auto]	
Memory Frequency (Mhz)	533	
DIMM OverVoltage Control	[Normal]	
PCI-E OverVoltage Control	[Normal]	
FSB OverVoltage Control	[Normal]	
CPU Voltage Control	[Normal]	
Normal CPU Vcore	1.3875V	
CAS Latency Time	[Auto]	
DRAM RAS# to CAS# Delay	[Auto]	
DRAM RAS# Precharge	[Auto]	
Active to Precharge Delay	[Auto]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F3: Language F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

CMOS Setup Utility-Copyright (C) 1984-2005 Award Software
MB Intelligent Tweaker(M.I.T.)

		Item Help
Refresh Mode Select	[Auto]	Menu Level▶
M.I.B.2	[Auto]	CPU Adjustable Multiplier
x Vendor Brand	Micron\Micron	Set Clock Ratio For Frequency-locked CPU
x Component	3YB11 Z9BQT	
x Size	512M	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F3: Language F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults



Incorrect using these features may cause your system broken. For power end-user use only.

☞ C.A.M. (Note)

- ▶▶ High Set clock ratio for frequency-locked CPU to High. (Default value)
- ▶▶ Low Set clock ratio for frequency-locked CPU to Low.

☞ CPU Clock Ratio (Note)

This setup option will automatically assign by CPU detection.

The option will display "Locked" and read only if the CPU ratio is not changeable.

(Note) This item will show up when you install a processor that supports this function.

☞ Robust Graphics Booster

Select the options can enhance the VGA graphics card bandwidth to get higher performance.

- ▶▶ Auto Set Robust Graphics Booster to Auto. (Default value)
- ▶▶ Fast Set Robust Graphics Booster to Fast.
- ▶▶ Turbo Set Robust Graphics Booster to Turbo.

☞ C.I.A.2

C.I.A.2 (CPU Intelligent Accelerator 2) is designed to detect CPU loading during software program executing, and automatically adjust CPU computing power to maximize system performance.

- ▶▶ Disabled Disable this function. (Default value)
- ▶▶ Cruise Set C.I.A.2 to Cruise. Automatically increase CPU frequency(5%,7%) by CPU loading.
- ▶▶ Sports Set C.I.A.2 to Sports. Automatically increase CPU frequency(7%,9%) by CPU loading.
- ▶▶ Racing Set C.I.A.2 to Racing. Automatically increase CPU frequency(9%,11%) by CPU loading.
- ▶▶ Turbo Set C.I.A.2 to Turbo. Automatically increase CPU frequency(15,17%) by CPU loading.
- ▶▶ Full Thrust Set C.I.A.2 to Full Thrust. Automatically increase CPU frequency(17%,19%) by CPU loading.

Warning: Stability is highly dependent on system components.

☞ CPU Host Clock Control

- ▶▶ Disabled Disable CPU Host Clock Control. (Default value)
- ▶▶ Enabled Enable CPU Host Clock Control.

☞ CPU Host Frequency(Mhz)

- ▶▶ 100Mhz ~ 600Mhz Set CPU Host Clock from 100Mhz to 600Mhz.

The actual range depends on the CPU you install.

If you use an 800Mhz FSB processor, please set **CPU Host Frequency** to **200Mhz**.

If you use a 1066Mhz FSB processor, please set **CPU Host Frequency** to **266Mhz**.

☞ PCI Express Frequency(Mhz)

- ▶▶ Auto Set PCI Express frequency automatically. (Default value)
- ▶▶ 90Mhz ~ 150Mhz Set PCI Express frequency from 90Mhz to 150Mhz.

☞ PCI Frequency(Mhz)

- ▶▶ Auto Set PCI frequency automatically. (Default value)
- ▶▶ 33.3Mhz ~ 37.5Mhz Set PCI frequency from 33.3Mhz to 37.5Mhz.

☞ System Memory Multiplier

Wrong frequency may make system can't boot, clear CMOS to overcome wrong frequency issue.

for FSB(Front Side Bus) frequency=1066MHz,

- ▶▶ 1.50 Memory Frequency = Host clock X 1.50.
- ▶▶ 2.00 Memory Frequency = Host clock X 2.00.
- ▶▶ 2.50 Memory Frequency = Host clock X 2.50.
- ▶▶ 2.0+ Memory Frequency = Host clock X 2.0+.
- ▶▶ 2.66 Memory Frequency = Host clock X 2.66.
- ▶▶ 3.33 Memory Frequency = Host clock X 3.33.
- ▶▶ 3.00 Memory Frequency = Host clock X 3.00.
- ▶▶ 4.00 Memory Frequency = Host clock X 4.00.
- ▶▶ Auto Set Memory frequency by DRAM SPD data. (Default value)

for FSB(Front Side Bus) frequency=800MHz,

- ▶▶ 2.00 Memory Frequency = Host clock X 2.00.
- ▶▶ 2.66 Memory Frequency = Host clock X 2.66.
- ▶▶ 3.33 Memory Frequency = Host clock X 3.33.
- ▶▶ 3.00 Memory Frequency = Host clock X 3.00.
- ▶▶ 4.00 Memory Frequency = Host clock X 4.00.
- ▶▶ 1.50 Memory Frequency = Host clock X 1.50.
- ▶▶ 2.0- Memory Frequency = Host clock X 2.0-.
- ▶▶ 2.50 Memory Frequency = Host clock X 2.50.
- ▶▶ Auto Set Memory frequency by DRAM SPD data. (Default value)

☞ **Memory Frequency (Mhz)**

- ▶▶ The values depend on **CPU Host Frequency(Mhz)** and **System Memory Multiplier** setting.

☞ **DIMM OverVoltage Control**

- ▶▶ Normal Set DIMM OverVoltage Control to Normal. (Default value)
- ▶▶ +0.1V Set DIMM OverVoltage Control to +0.1V.
- ▶▶ +0.2V Set DIMM OverVoltage Control to +0.2V.
- ▶▶ +0.3V Set DIMM OverVoltage Control to +0.3V.
- ▶▶ +0.4V Set DIMM OverVoltage Control to +0.4V.
- ▶▶ +0.5V Set DIMM OverVoltage Control to +0.5V.
- ▶▶ +0.6V Set DIMM OverVoltage Control to +0.6V.
- ▶▶ +0.7V Set DIMM OverVoltage Control to +0.7V.

☞ **PCI-E OverVoltage Control**

- ▶▶ Normal Set PCI-E OverVoltage Control to Normal. (Default value)
- ▶▶ +0.1V Set PCI-E OverVoltage Control to +0.1V.
- ▶▶ +0.2V Set PCI-E OverVoltage Control to +0.2V.
- ▶▶ +0.3V Set PCI-E OverVoltage Control to +0.3V.
- ▶▶ +0.4V Set PCI-E OverVoltage Control to +0.4V.
- ▶▶ +0.5V Set PCI-E OverVoltage Control to +0.5V.
- ▶▶ +0.6V Set PCI-E OverVoltage Control to +0.6V.
- ▶▶ +0.7V Set PCI-E OverVoltage Control to +0.7V.

☞ **FSB OverVoltage Control**

- ▶▶ Normal Set FSB OverVoltage Control to Normal. (Default value)
- ▶▶ +0.05V Set FSB OverVoltage Control to +0.05V.
- ▶▶ +0.10V Set FSB OverVoltage Control to +0.10V.
- ▶▶ +0.15V Set FSB OverVoltage Control to +0.15V.
- ▶▶ +0.20V Set FSB OverVoltage Control to +0.20V.
- ▶▶ +0.25V Set FSB OverVoltage Control to +0.25V.
- ▶▶ +0.30V Set FSB OverVoltage Control to +0.30V.
- ▶▶ +0.35V Set FSB OverVoltage Control to +0.35V.

☞ **CPU Voltage Control**

- ▶▶ Supports adjustable CPU Vcore from 1.7500V to 1.5625V. (Default value: Normal)

☞ **Normal CPU Vcore**

- ▶▶ Display your CPU's normal voltage.

☞ CAS Latency Time

This feature allows you to select the CAS latency Time, When any DDRII DIMM installed.

- ▶▶ 5 Set CAS latency Time is 5.
- ▶▶ 4 Set CAS latency Time is 4.
- ▶▶ 3 Set CAS latency Time is 3.
- ▶▶ 6 Set CAS latency Time is 6.
- ▶▶ Auto Set CAS latency Time automatically. (Default Value)

☞ DRAM RAS# to CAS# Delay

This feature allows you to set the delay time that from the DRAM RAS# active to CAS#.

- ▶▶ 2 Set DDRII RAM RAS# to CAS# delay 2 SCLKs.
- ▶▶ 3 Set DDRII RAM RAS# to CAS# delay 3 SCLKs.
- ▶▶ 4 Set DDRII RAM RAS# to CAS# delay 4 SCLKs.
- ▶▶ 5 Set DDRII RAM RAS# to CAS# delay 5 SCLKs.
- ▶▶ 6 Set DDRII RAM RAS# to CAS# delay 6 SCLKs.
- ▶▶ Auto Set DDRII RAM RAS# to CAS# delay time automatically. (Default Value)

☞ DRAM RAS# Precharge

This feature allows you to set the DRAM RAS# Precharge Time.

- ▶▶ 2 Set DDRII RAM RAS# Precharge Time to 2.
- ▶▶ 3 Set DDRII RAM RAS# Precharge Time to 3.
- ▶▶ 4 Set DDRII RAM RAS# Precharge Time to 4.
- ▶▶ 5 Set DDRII RAM RAS# Precharge Time to 5.
- ▶▶ 6 Set DDRII RAM RAS# Precharge Time to 6.
- ▶▶ Auto Set DDRII RAM RAS# Precharge time automatically. (Default Value)

☞ Active to Precharge Delay

This feature allows you to set Active to Precharge Delay when any DDRII DIMM installed.

- ▶▶ 4~15 Set active to Precharge delay timing is 4~15 clk.
- ▶▶ Auto Set active to Precharge delay timing automatically. (Default Value)

☞ Refresh Mode Select

- ▶▶ Set active to Refresh mode timing is 7.8 usec.
- ▶▶ Set active to Refresh mode timing is 15.6 usec.
- ▶▶ Set active to Refresh mode timing automatically.(Default Value)

☞ M.I.B.2

- ▶▶ M.I.B. 2(Memory Intelligent Booster 2) is designed especially to maximize memory performance and boost memory bandwidth up to 10%.

☞ Vendor \ Brand

Select the memory module that you use.

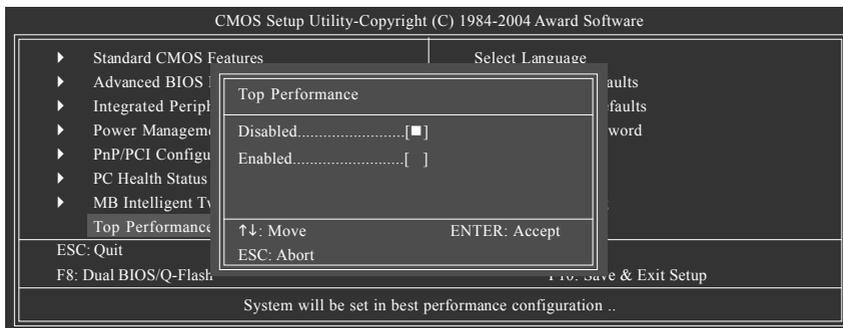
Options are: Micron\Micron, A-Data\Hynix, Kingston\Elpida, Pmi\Samsung, Kingstone\Infineon.

☞ Component / Size

Displays the memory module component that you use.

Micron\Micron -->	3YB11 Z9BQT	512M
A-Data\Hynix -->	HY5PS12821	512M
Kingston\Elpida -->	E5108AB-5C-E	512M
Pmi\Samsung -->	K4T51083QB-GCD5	512M
Kingstone\Infineon -->	HYB18T51216DAC-3.7	256M

2-8 Top Performance

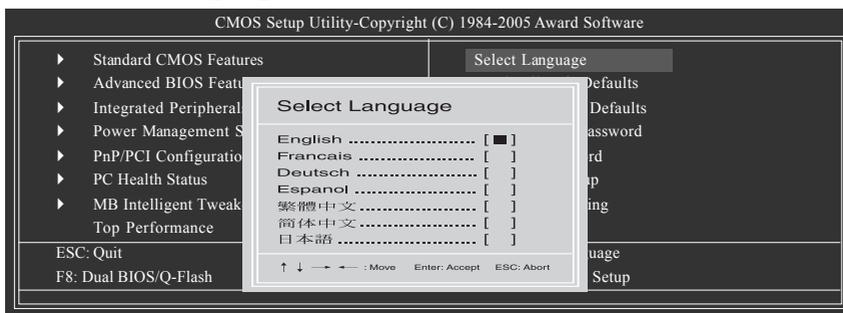


If you wish to maximize the performance of your system, set "Top Performance" as "Enabled".

- ▶▶ Disabled Disable this function. (Default Value)
- ▶▶ Enabled Enable Top Performance function.

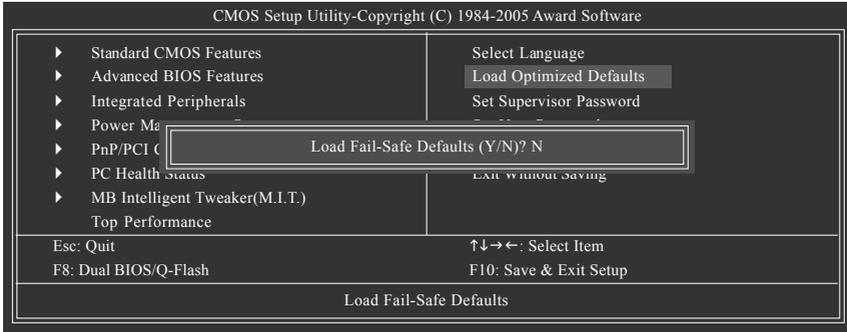
"Top Performance" will increase hardware working speed. Different system configuration (both hardware component and OS) will effect the result. For example, the same hardware configuration might not run properly with Windows XP, but works smoothly with Windows NT. Therefore, if your system is not perform enough, the reliability or stability problem will appear sometimes, and we will recommend you disabling the option to avoid the problem as mentioned above.

2-9 Select Language



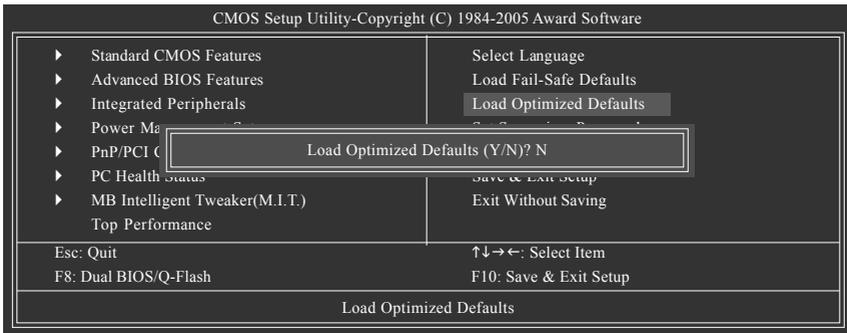
Multi-language supports 7 languages. There are English, French, German, Spanish, Traditional Chinese, Simplified Chinese, and Japanese.

2-10 Load Fail-Safe Defaults



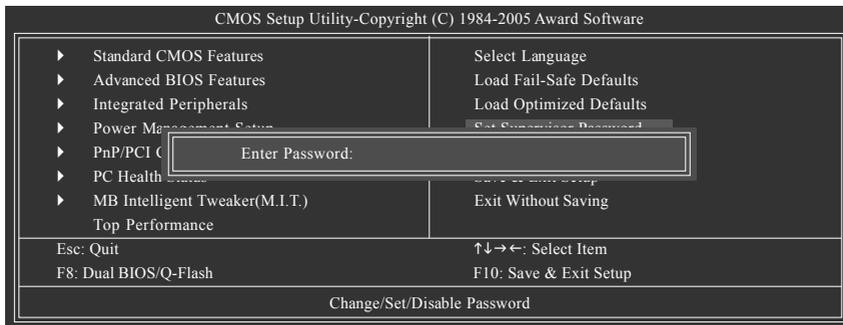
Fail-Safe defaults contain the most appropriate values of the system parameters that allow minimum system performance.

2-11 Load Optimized Defaults



Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

2-12 Set Supervisor/User Password



When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Type the password, up to eight characters, and press <Enter>. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message "PASSWORD DISABLED" will appear to confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

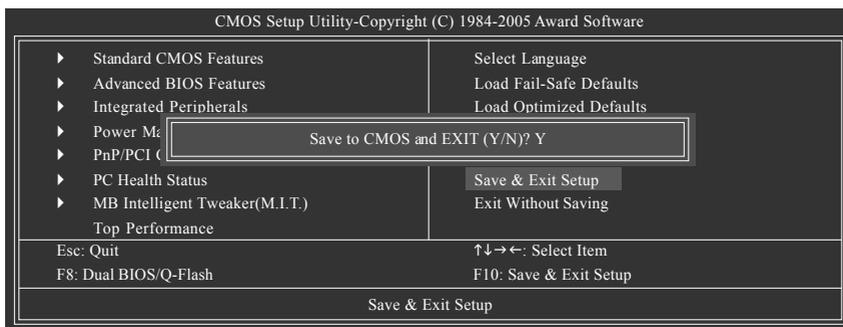
The BIOS Setup program allows you to specify two separate passwords:

SUPERVISOR PASSWORD and a USER PASSWORD. When disabled, anyone may access all BIOS Setup program function. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full configuration fields, the User password is required to access only basic items.

If you select "System" at "Password Check" in Advance BIOS Features Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup Menu.

If you select "Setup" at "Password Check" in Advance BIOS Features Menu, you will be prompted only when you try to enter Setup.

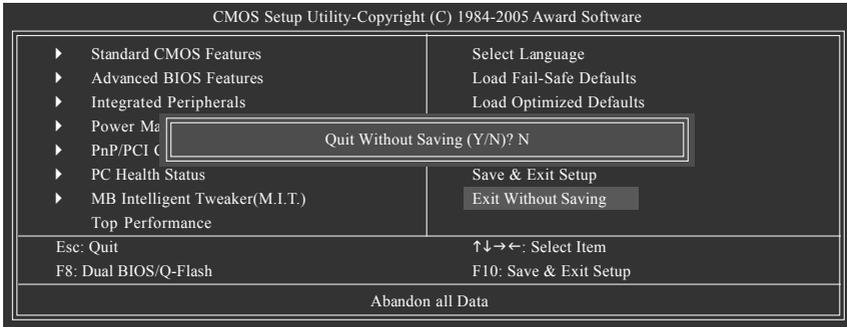
2-13 Save & Exit Setup



Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS.

Type "N" will return to Setup Utility.

2-14 Exit Without Saving



Type "Y" will quit the Setup Utility without saving to RTC CMOS.

Type "N" will return to Setup Utility.

Chapter 3 Drivers Installation



Pictures below are shown in Windows XP.

Insert the driver CD-title that came with your motherboard into your CD-ROM drive, the driver CD-title will auto start and show the installation guide. If not, please double click the CD-ROM device icon in "My computer", and execute the Run.exe.

3-1 Install Chipset Drivers

"Xpress Install " is now analyzing your computer...99%

After insert the driver CD, "Xpress Install" will scan automatically the system and then list all the drivers that recommended to install. Please pick the item that you want and press "install" followed the item; or you can press "Xpress Install" to install all items defaulted.



Some device drivers will restart your system automatically. After restarting your system the "Xpress Install" will continue to install other drivers.

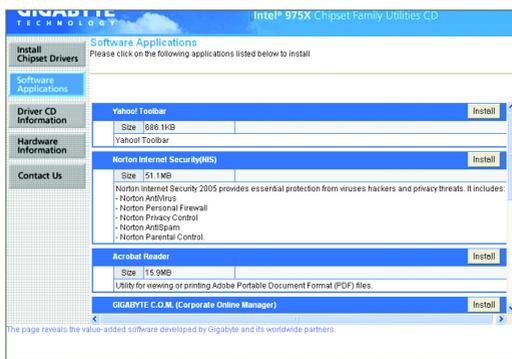
System will reboot automatically after install the drivers, afterward you can install others application.



For USB2.0 driver support under Windows XP operating system, please use Windows Service Pack. After install Windows Service Pack, it will show a question mark "?" in "Universal Serial Bus controller" under "Device Manager". Please remove the question mark and restart the system (System will auto-detect the right USB2.0 driver).

3-2 Software Applications

This page displays all the tools that Gigabyte developed and some free software, you can choose anyone you want and press "install" to install them.



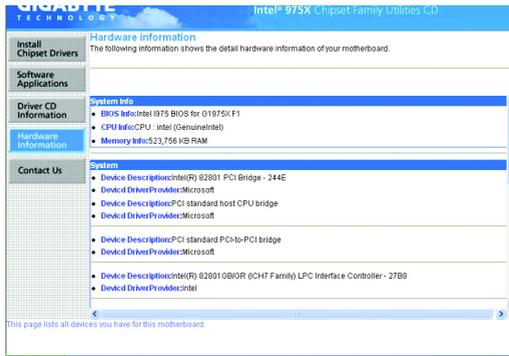
3-3 Driver CD Information

This page lists the contents of software and drivers in this CD-title.



3-4 Hardware Information

This page lists all device you have for this motherboard.



3-5 Contact Us

Please see the last page for details.



Chapter 4 Appendix

4-1 Unique Software Utilities

(Not all model support these Unique Software Utilities, please check your MB features.)



U-PLUS D.P.S. (Universal Plus Dual Power System)

The U-Plus Dual Power System (U-Plus DPS) is a revolutionary eight-phase power circuit built for ultimate system protection. Designed to withstand varying current levels and changes, the U-Plus D.P.S. provides an immensely durable and stable power circuit to the CPU for solid system stability. These characteristics make it the ideal companion with the latest LGA775 Intel® Pentium® 4 Processor as well as future Intel® processors. As well, 4 blue LED's are mounted on the U-Plus D.P.S. for intelligent indication of system loading.



M.I.T. (Motherboard Intelligent Tweaker)

Motherboard Intelligent Tweaker (M.I.T.) allows user to access and change BIOS feature settings with relative speed and ease. Through GIGABYTE M.I.T. feature the user is no longer required to switch into different modes within BIOS setup in order to change system settings such as the CPU system bus, memory timings or to enabled Gigabyte's unique C.I.A. 2 and M.I.B. 2 features. M.I.T.'s integration of all platform performance settings into a single mode now gives any user the ability to control and enhance their computer system to the desired level.



C.I.A.2 (CPU Intelligent Accelerator 2)

GIGABYTE CPU Intelligent Accelerator 2(C.I.A. 2) is designed to automatically adjust CPU computing power to maximize system performance. When enabled, the program detects the current CPU loading and automatically accelerates the CPU computing performance to allow for a faster and smoother execution of programs. When the function is disabled, the CPU is returned to its initial status.



M.I.B.2 (Memory Intelligent Booster 2)

Built on the original M.I.B., the new Memory Intelligent Booster 2 (M.I.B. 2) is designed especially to maximize memory performance and boost memory bandwidth up to 10%. With added branded memory module information, users are able to optimize memory performance by selecting from a recommended memory module list.



S.O.S. (System Overclock Saver)

System Overclock Saver (S.O.S.) is a unique feature that eliminates system boot-up errors resulting from system over-enhancement by the user. With GIGABYTE's proprietary S.O.S. feature, users no longer need to open up the PC chassis and short-circuit the "Clear CMOS" pins or the battery on the motherboard to reset the system back to factory default settings. Instead, S.O.S. automatically resets the overclocked system settings back to their factory defaults to provide a more user-friendly and reliable platform for users.



Download Center

Download Center allows users to quickly download and update their BIOS as well as the latest drivers for their system. Download Center automatically runs a system check of the user PC and provides the user with the current system information as well as displaying a detailed list of all new drivers with the option for download.



C.O.M. (Corporate Online Management)

A web-based system management tool that allows system hardware information such as CPU, memory, graphics card, etc. to be monitored and controlled via the Internet, C.O.M. allows corporate MIS engineers to easily maintain corporate computers such as providing the most up-to-date drivers and BIOS.(Do not use C.O.M. and @BIOS at the same time.)

4-1-1 EasyTune 5 Introduction

EasyTune 5 presents the most convenient Windows based system performance enhancement and manageability utility. Featuring several powerful yet easy to use tools such as 1) Overclocking for enhancing system performance, 2) C.I.A. and M.I.B. for special enhancement for CPU and Memory, 3) Smart-Fan control for managing fan speed control of both CPU cooling fan and North-Bridge Chipset cooling fan, 4) PC health for monitoring system status. ^(Note)

User Interface Overview



	Button / Display	Description
1.	Overclocking	Enters the Overclocking setting page
2.	C.I.A./C.I.A.2 and M.I.B./M.I.B.2	Enters the C.I.A./2 and M.I.B./2 setting page
3.	Smart-Fan	Enters the Smart-Fan setting page
4.	PC Health	Enters the PC Health setting page
5.	GO	Confirmation and Execution button
6.	"Easy Mode" & "Advance Mode"	Toggles between Easy and Advance Mode
7.	Display screen	Display panel of CPU frequency
8.	Function display LEDs	Shows the current functions status
9.	GIGABYTE Logo	Log on to GIGABYTE website
10.	Help button	Display EasyTune™ 5 Help file
11.	Exit or Minimize button	Quit or Minimize EasyTune™ 5 software

(Note) EasyTune 5 functions may vary depending on different motherboards.

4-1-2 Xpress Recovery2 Introduction



Xpress Recovery2 is designed to provide quick backup and restoration of hard disk data. Supporting Microsoft operating systems including Windows XP/2000/NT/98/Me and DOS, and file systems including FAT16, FAT32, and NTFS, Xpress Recovery2 is able to back up data on hard disks on PATA and SATA IDE controllers. After Xpress Recovery2 is executed from CD-ROM for the first time, it will stay permanent in your hard disk. If you wish to run Xpress Recovery2 later, you can simply press F9 during system bootup to enter Xpress Recovery2 without the CD-ROM.

System requirements:

1. Intel x86 platforms
2. At least 64M bytes of system memory
3. VESA-supported VGA cards

How to use the Xpress Recovery2

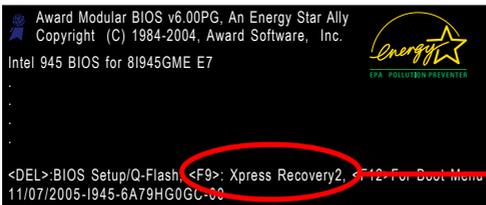
Initial access by booting from CD-ROM and subsequent access by pressing the F9 key:

Steps: After entering BIOS Setup, go to **Advanced BIOS Feature** and set to boot from CD-ROM. Save the settings and exit the BIOS Setup. Insert the provided driver CD into your CD-ROM drive. Upon system restart, the message which says "Boot from CD/DVD:" will appear in the bottom left corner of the screen. Press any key to enter Xpress Recovery2.

After the steps above are completed, subsequent access to Xpress Recovery2 can be made by simply pressing the <F9> key during system power-on.



Boot from CD/DVD:



<F9> Xpress Recovery2



NOTE

1. If you have already entered Xpress Recovery2 by booting from the CD-ROM, you can enter Xpress Recovery2 by pressing the <F9> key in the future.
2. System storage capacity and the reading/writing speed of the hard disk will affect the data backup speed.
3. It is recommended that Xpress Recovery2 be immediately installed once you complete installations of OS and all required drivers as well as software.

The Main Screen of Xpress Recovery2



1. RESTORE:

Restore the backed-up data to your hard disk. (This button will not appear if there is no backup file.)

2. BACKUP:

Back up data from hard disk.

3. REMOVE:

Remove previously-created backup files to release disk space. (This button will not appear if there is no backup file.)

4. REBOOT:

Exit the main screen and restart the system.

Limitations:

1. Not compatible to Xpress Recovery.
2. For the use of Xpress Recovery2, a primary partition must be reserved.
3. Xpress Recovery2 will store the backup file at the end of the hard disk, so free space available on the hard disk for the backup file must be allocated in advance. (A minimum 4GB is recommended but the actual space is dependent on the size of the data to be backed up)
4. Capable of backing up hard disks installed with Windows operating systems including DOS and Windows XP/2000/NT/9x/Me.
5. USB hard disks are currently not supported.
6. Does not support RAID/AHCI (class code 0104/0106) hard disks.
7. Capable of backing up and restoring only the first physical hard disk.

Hard disks detection sequence is as follows:

- a. PATA IDE primary channel
- b. PATA IDE secondary channel
- c. SATA IDE channel 1
- d. SATA IDE channel 2
- e. SATA IDE channel 3
- f. SATA IDE channel 4

Precautions:

1. When using hard disks with more than 128G under Windows 2000, be sure to execute the EnableBigLba.exe program from the driver CD before data backup.
2. It is normal that data backup takes longer time than data restoration.
3. Xpress Recovery2 is compliant with the GPL regulations.
4. On a few motherboards based on Nvidia chipsets, BIOS update is required for Xpress Recovery2 to correctly identify RAID and SATA IDE mode. Please contact your motherboard manufacturer.
5. Xpress Recovery2 supports only PATA hard disks and not SATA hard disks on the following motherboards (As this is a BIOS-related issue, it can be solved by BIOS update)

GA-K8U	GA-K8NXP-9	GA-8N-SLI Royal
GA-K8U-9	GA-K8N Ultra-9	GA-8N-SLI Pro
GA-K8NXP-SLI	GA-K8NF-9 (PCB Ver. 1.0)	GA-8N-SLI
GA-K8N Ultra-SLI	GA-K8NE (PCB Ver. 1.0)	
GA-K8N Pro-SLI	GA-K8NMF-9	

4-1-3 Flash BIOS Method Introduction



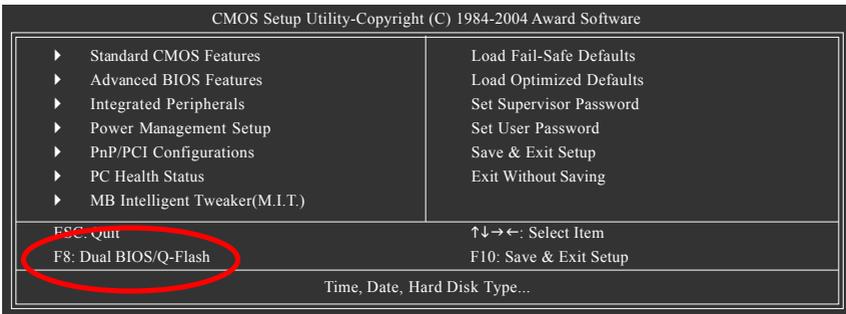
A. What is Dual BIOS Technology?

Dual BIOS means that there are two system BIOS (ROM) on the motherboard, one is the Main BIOS and the other is Backup BIOS.

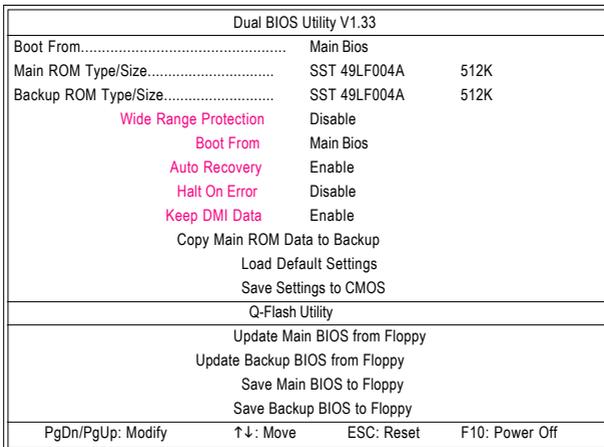
Under the normal circumstances, the system works on the Main BIOS. If the Main BIOS is corrupted or damaged, the Backup BIOS can take over while the system is powered on. This means that your PC will still be able to run stably as if nothing has happened in your BIOS.

B. How to use Dual BIOS and Q-Flash Utility?

a. After power on the computer, pressing immediately during POST (Power On Self Test) it will allow you to enter Award BIOS CMOS SETUP, then press <F8> to enter Flash utility.



b. Dual BIOS / Q-Flash Programming Utility



c. Dual BIOS Item explanation:

Wide Range Protection: Disable(Default), Enable

Status 1:

If any failure (ex. Update ESCD failure, checksum error or reset? occurs in the Main BIOS, just before the Operating System is loaded and after the power is on, and that the Wide Range Protection is set to "Enable", the PC will boot from Backup BIOS automatically.

Status 2:

If the ROM BIOS on peripherals cards(ex. SCSI Cards, LAN Cards,..) emits signals to request restart of the system after the user make any alteration on it, the boot up BIOS will not be changed to the Backup BIOS.

Boot From : Main BIOS(Default), Backup BIOS

Status 1:

The user can set to boot from main BIOS or Backup BIOS.

Status 2:

If one of the main BIOS or the Backup BIOS fails, this item "Boot From : Main BIOS(Default)" will become gray and will not be changed by user.

Auto Recovery : Enable(Default), Disable

When one of the Main BIOS or Backup BIOS occurs checksum failure, the working BIOS will automatically recover the BIOS of checksum failure.

(In the Power Management Setup of the BIOS Setting, if ACPI Suspend Type is set to Suspend to RAM, the Auto Recovery will be set to Enable automatically.)

(If you want to enter the BIOS setting, please press "Del" key when the boot screen appears.)

Halt On Error : Disable(Default), Enable

If the BIOS occurs a checksum error or the Main BIOS occurs a WIDE RANGE PROTECTION error and Halt On Error set to Enable, the PC will show messages on the boot screen, and the system will pause and wait for the user's instruction.

If Auto Recovery :Disable, it will show <or the other key to continue.>

If Auto Recovery :Enable, it will show <or the other key to Auto Recover.>

Keep DMI Data : Enable(Default), Disable

Enable: The DMI data won't be replaced by flashing new BIOS.(recommend)

Disable: The DMI data will be replaced by flashing new BIOS.

Copy Main ROM Data to Backup

(If you boot from Backup ROM, this item will change to Copy Backup ROM Data to Main)

Auto recovery message:

BIOS Recovery: Main to Backup

The means that the Main BIOS works normally and could automatically recover the Backup BIOS.

BIOS Recovery: Backup to Main

The means that the Backup BIOS works normally and could automatically recover the Main BIOS.

(This auto recovery utility is set by system automatically and can't be changed by user.)

Load Default Settings

Load dual BIOS default value.

Save Settings to CMOS

Save revised setting.



Method 1 : Q-Flash™ Utility

Q-Flash™ is a BIOS flash utility embedded in Flash ROM. With this utility, users only have to stay in the BIOS menu when they want to update BIOS. Q-Flash™ allows users to flash BIOS without any utility in DOS or Windows. Using Q-Flash™ indicating no more fooling around with any complicated instructions and operating system since it is in the BIOS menu.



Please note that because updating BIOS has potential risk, please do it with caution!! We are sorry that Gigabyte Technology Co., Ltd is not responsible for damages of system because of incorrect manipulation of updating BIOS to avoid any claims from end-users.

Before You Begin:

Before you start updating BIOS with the Q-Flash™ utility, please follow the steps below first.

1. Download the latest BIOS for your motherboard from Gigabyte's website.
2. Extract the BIOS file downloaded and save the BIOS file (the one with model name.Fxx. For example, 8KNXP.U.Fba) to a floppy disk.
3. Reboot your PC and press **Del** to enter BIOS menu.

The BIOS upgrading guides below are separated into two parts.

If your motherboard has dual-BIOS, please refer to **Part One**.

If your motherboard has single-BIOS, please refer to **Part Two**.

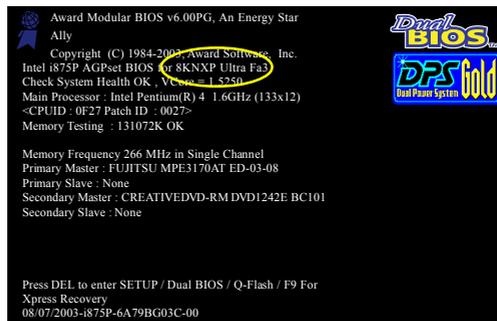
Part One:

Updating BIOS with Q-Flash™ Utility on Dual BIOS Motherboards.

Some of Gigabyte motherboards are equipped with dual BIOS. In the BIOS menu of the motherboards supporting Q-Flash and Dual BIOS, the Q-Flash utility and Dual BIOS utility are combined in the same screen. This section only deals with how to use Q-Flash utility.

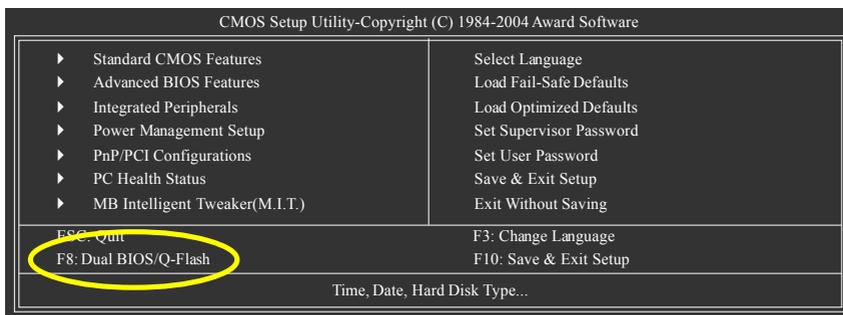
In the following sections, we take GA-8KNXP Ultra as the example to guide you how to flash BIOS from an older version to the latest version. For example, from Fa3 to Fba.

The BIOS file is Fa3
before updating



Entering the Q-Flash™ utility:

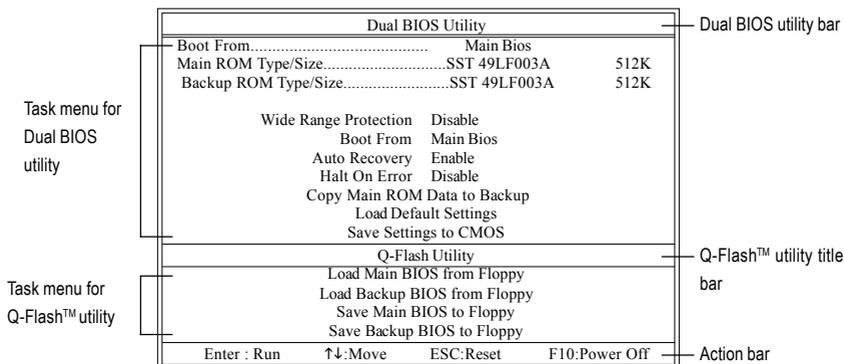
Step 1: To use Q-Flash utility, you must press **Del** in the boot screen to enter BIOS menu.



Step 2: Press **F8** button on your keyboard and then **Y** button to enter the Dual BIOS/Q-Flash utility.

Exploring the Q-Flash™ / Dual BIOS utility screen

The Q-Flash / Dual BIOS utility screen consists of the following key components.



Task menu for Dual BIOS utility:

Contains the names of eight tasks and two item showing information about the BIOS ROM type. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Task menu for Q-Flash utility:

Contains the names of four tasks. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Action bar:

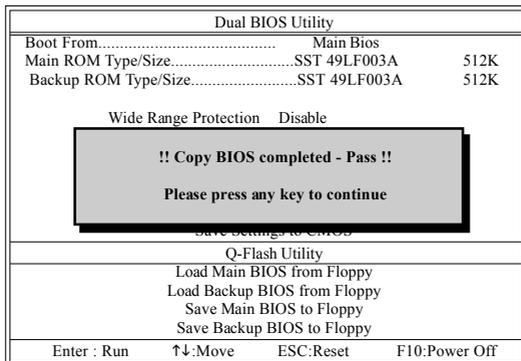
Contains the names of four actions needed to operate the Q-Flash/Dual BIOS utility. Pressing the buttons mentioned on your keyboards to perform these actions.

3. Press Y button on your keyboard after you are sure to update BIOS.
Then it will begin to update BIOS. The progress of updating BIOS will be displayed.



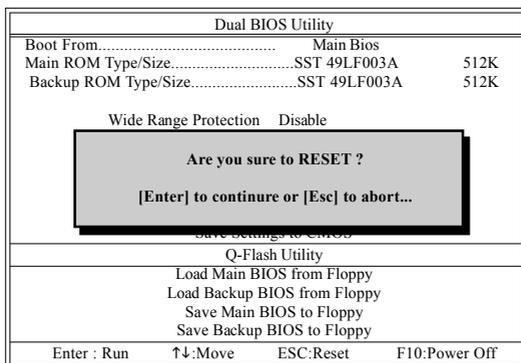
Please do not take out the floppy disk when it begins flashing BIOS.

4. Press any keys to return to the Q-Flash menu when the BIOS updating procedure is completed.



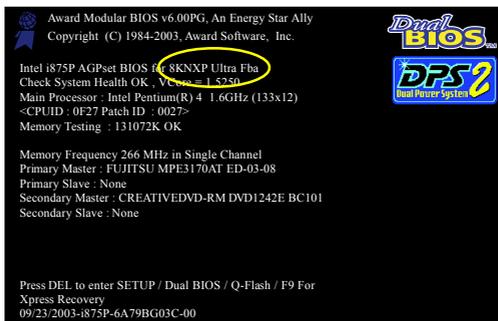
You can repeat Step 1 to 4 to flash the backup BIOS, too.

5. Press Esc and then Y button to exit the Q-Flash utility. The computer will restart automatically after you exit Q-Flash.

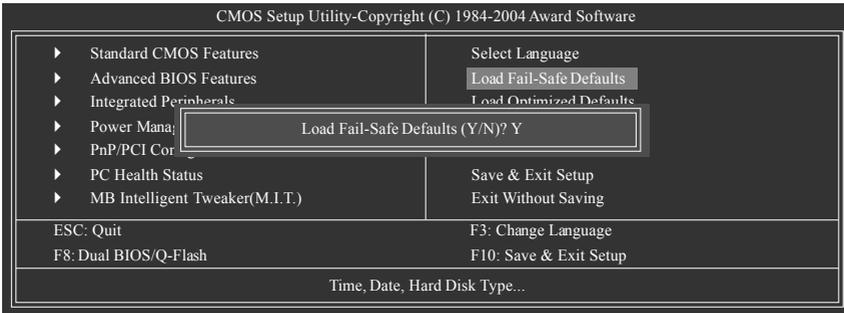


After system reboots, you may find the BIOS version on your boot screen becomes the one you flashed.

The BIOS file becomes Fab after updating.

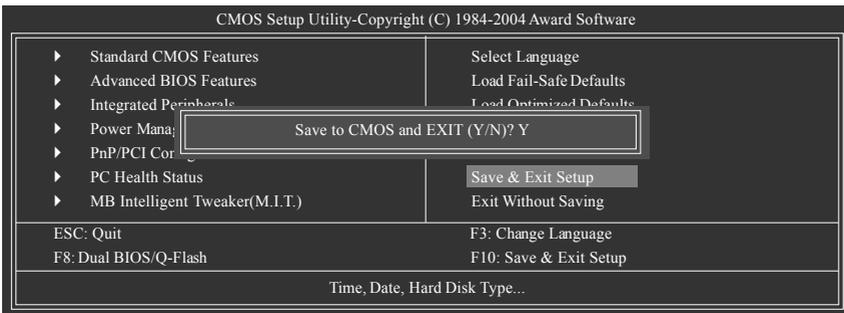


6. Press **Del** to enter BIOS menu after system reboots. When you are in BIOS menu, move to **Load Fail-Safe Defaults** item and press **Enter** to load BIOS Fail-Safe Defaults. Normally the system redetects all devices after BIOS has been upgraded. Therefore, we highly recommend reloading the BIOS defaults after BIOS has been upgraded.



Press **Y** on your keyboard to load defaults.

7. Select **Save & Exit Setup** item to save the settings to CMOS and exit the BIOS menu. System will reboot after you exit the BIOS menu. The procedure is completed.

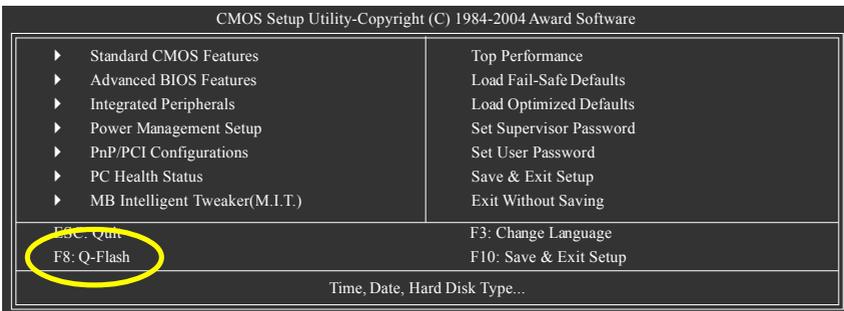


Press **Y** on your keyboard to save and exit.

Part Two:

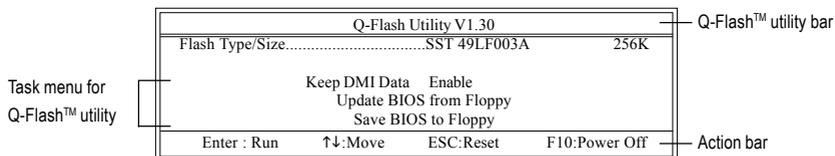
Updating BIOS with Q-Flash™ Utility on Single-BIOS Motherboards.

This part guides users of single-BIOS motherboards how to update BIOS using the Q-Flash™ utility.



Exploring the Q-Flash™ utility screen

The Q-FlashBIOS utility screen consists of the following key components.



Task menu for Q-Flash utility:

Contains the names of three tasks. Blocking a task and pressing Enter key on your keyboard to enable execution of the task.

Action bar:

Contains the names of four actions needed to operate the Q-Flash utility. Pressing the buttons mentioned on your keyboards to perform these actions.

Using the Q-Flash™ utility:

This section tells you how to update BIOS using the Q-Flash utility. As described in the "Before you begin" section above, you must prepare a floppy disk having the BIOS file for your motherboard and insert it to your computer. If you have already put the floppy disk into your system and have entered the Q-Flash utility, please follow the steps below to flash BIOS.

Steps:

1. Press arrow buttons on your keyboard to move the light bar to "Update BIOS from Floppy" item in the Q-Flash menu and press Enter button.

Later, you will see a box pop up showing the BIOS files you previously downloaded to the floppy disk.



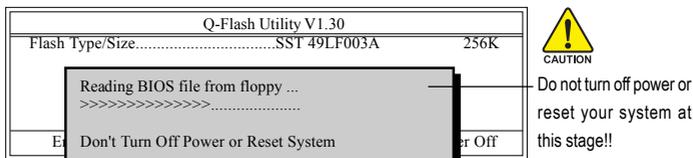
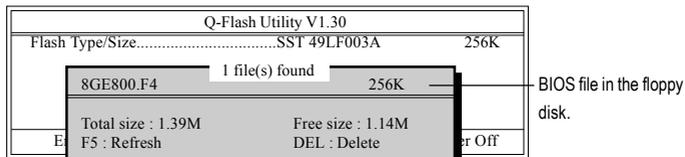
If you want to save the current BIOS for backup purpose, you can begin Step 1 with "Save BIOS to Floppy" item.

2. Move to the BIOS file you want to flash and press Enter.

In this example, we only download one BIOS file to the floppy disk so only one BIOS file, 8GE800.F4, is listed.



Please confirm again you have the correct BIOS file for your motherboard.

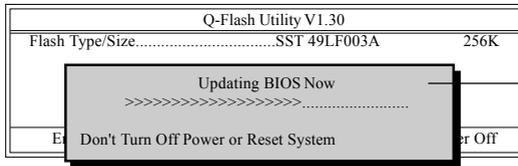


After BIOS file is read, you'll see a confirmation dialog box asking you "Are you sure to update BIOS?"



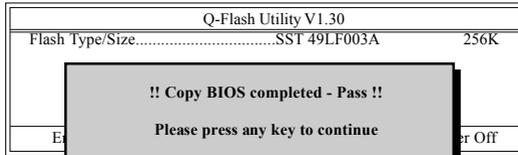
Please do not take out the floppy disk when it begins flashing BIOS.

- Press Y button on your keyboard after you are sure to update BIOS.
Then it will begin to update BIOS. The progress of updating BIOS will be shown at the same time.

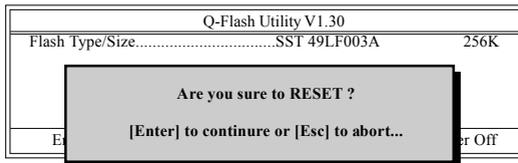


Do not turn off power or reset your system at this stage!!

- Press any keys to return to the Q-Flash menu when the BIOS updating procedure is completed.

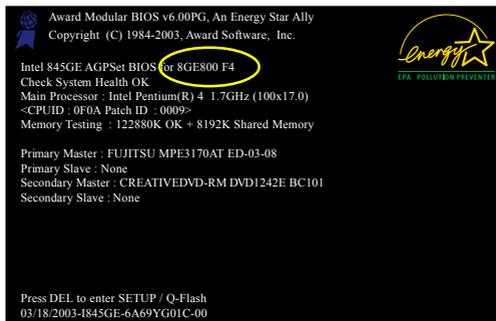


- Press Esc and then Y button to exit the Q-Flash utility. The computer will restart automatically after you exit Q-Flash.



After system reboots, you may find the BIOS version on your boot screen becomes the one you flashed.

The BIOS file becomes F4 after updating



- Press Del to enter BIOS menu after system reboots and "Load BIOS Fail-Safe Defaults". See how to Load BIOS Fail-Safe Defaults, please kindly refer to Step 6 to 7 in **Part One**.

Congratulation!! You have updated BIOS successfully!!



Method 2 : @BIOS™ Utility

If you do not have a DOS startup disk, we recommend that you use the new @BIOS utility. @BIOS allows users to update their BIOS under Windows. Just select the desired @BIOS server to download the latest version of BIOS.

Fig 1. Installing the @BIOS utility

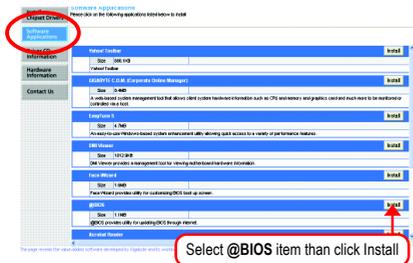


Fig 2. Installation Complete and Run @BIOS

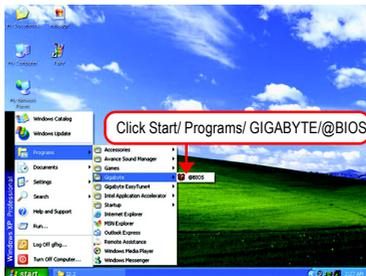


Fig 3. The @BIOS Utility

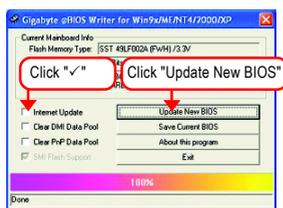
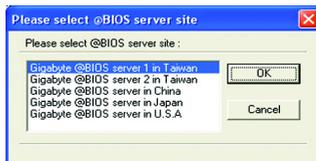


Fig 4. Select the desired @BIOS server



1. Methods and steps:

I. Update BIOS through Internet

- Click "Internet Update" icon
- Click "Update New BIOS" icon
- Select @BIOS™ sever
- Select the exact model name on your motherboard
- System will automatically download and update the BIOS.

II. Update BIOS NOT through Internet:

- Do not click "Internet Update" icon
- Click "Update New BIOS"
- Please select "All Files" in dialog box while opening the old file.
- Please search for BIOS unzip file, downloading from internet or any other methods (such as: G1975X.F1).
- Complete update process following the instruction.

III. Save BIOS

In the very beginning, there is "Save Current BIOS" icon shown in dialog box. It means to save the current BIOS version.

IV. Check out supported motherboard and Flash ROM:

In the very beginning, there is "About this program" icon shown in dialog box. It can help you check out which kind of motherboard and which brand of Flash ROM are supported.

2. Note:

- I. In method I, if it shows two or more motherboard's model names to be selected, please make sure your motherboard's model name again. Selecting wrong model name will cause the system unbooted.
- II. In method II, be sure that motherboard's model name in BIOS unzip file are the same as your motherboard's. Otherwise, your system won't boot.
- III. In method I, if the BIOS file you need cannot be found in @BIOSTM server, please go onto Gigabyte's web site for downloading and updating it according to method II.
- IV. Please note that any interruption during updating will cause system unbooted
- V. Do not use @BIOS and C.O.M. (Corporate Online Management) at the same time.

4-1-4 Configuring SATA Hard Drive(s) (Controller: Intel ICH7R)

To configure SATA hard drive(s), follow the steps below:

- (1) Install SATA hard drive(s) in your system.
- (2) Configure SATA controller mode and boot sequence in BIOS Setup.
- (3)* Configure RAID set in RAID BIOS.
- (4) Make a floppy disk containing the SATA controller driver.
- (5) Install the SATA controller driver during OS installation.

Before you begin

Please prepare:

- (a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
- (b) An empty formatted floppy disk.
- (c) Windows XP/2000 setup disk.
- (d) Driver CD for your motherboard.

(1) Installing SATA hard drive(s) in your computer

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA 3Gb/s port(s) on the motherboard. Then connect the power connector from your power supply to the hard drive.

*** Skip this step if you do not want to create RAID array on the SATA controller

(2) Configuring SATA controller mode and boot sequence in BIOS Setup

You have to make sure whether the SATA controller is configured correctly in system BIOS Setup and set BIOS boot sequence for the SATA hard drive(s).

Step 1:

Turn on your computer and press Del to enter BIOS Setup during POST (Power-On Self Test). If you want to create RAID, set **SATA RAID/AHCI Mode** under the **Integrated Peripherals** menu to **RAID (Disabled)** by default). Then, set **On-Chip SATA Mode** to **Manual** or **Auto** (default) based on your own requirements.

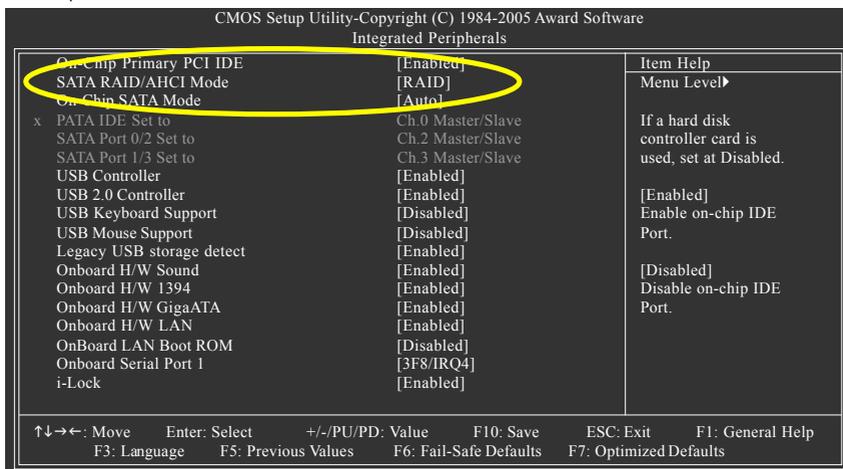


Figure 1



The BIOS Setup menus described in this section may not show the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

Step 2:

Later, select **Hard Disk Boot Priority** under the **Advanced BIOS Features** menu. In the **Hard Disk Boot Priority** submenu, select the model of the SATA hard drive onto which you intent to install Microsoft Windows 2000/XP (Figure 2).

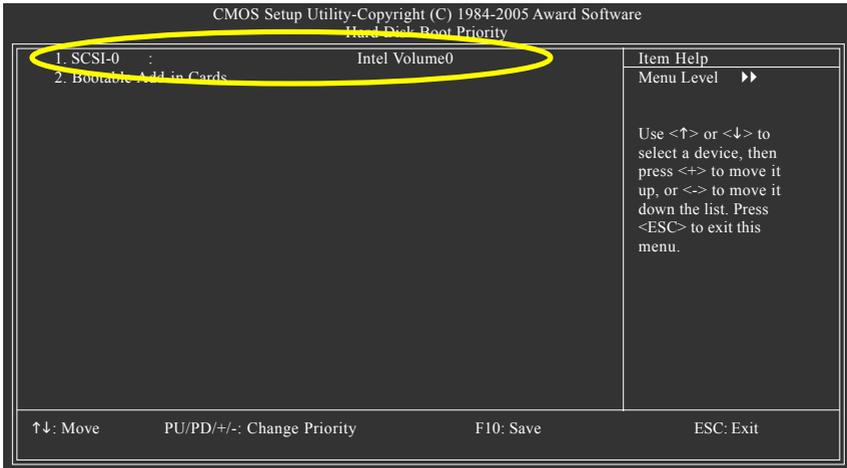


Figure 2

Step 3:

Set **First Boot Device** under the **Advanced BIOS Features** menu to **CD-ROM** to boot from CD-ROM after system restarts (Figure 3).

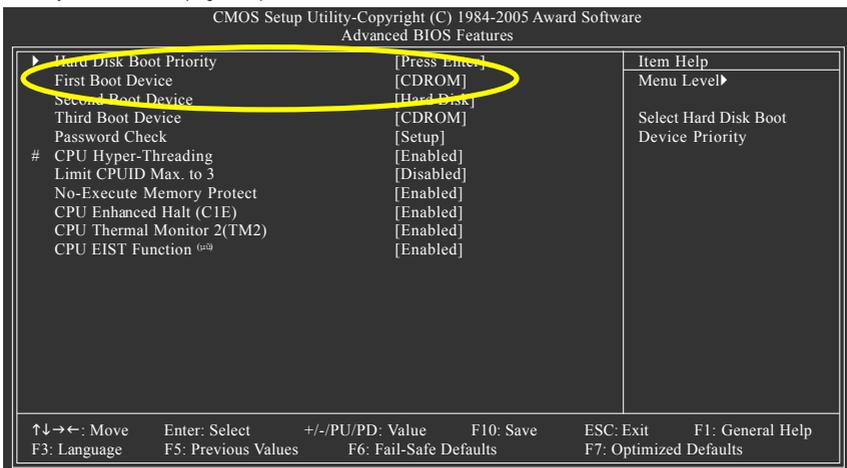


Figure 3

Step 4:

Save and exit BIOS Setup.

(3) Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create RAID.

Step 1:

After the POST memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl-I> to enter Configuration utility" (Figure 4). Press CTRL+ I to enter the RAID BIOS setup utility.

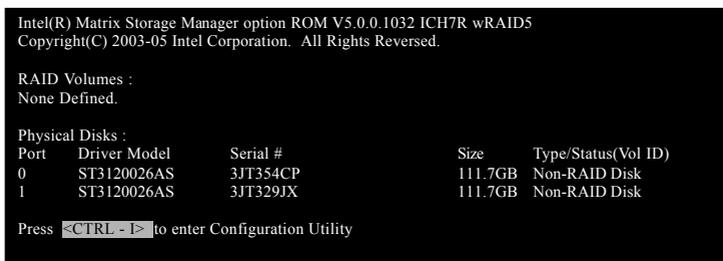


Figure 4

Step 2:

After you press CTRL+ I, the **Create RAID Volume** screen will appear (Figure 5).

Create RAID Volume

If you want to create RAID array, select **Create RAID Volume** in Main Menu and press ENTER.

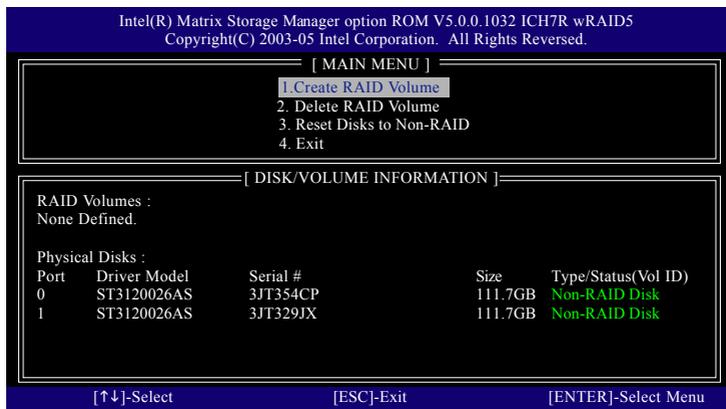


Figure 5

Step 3:

After entering the Create Volume Menu screen, name the disk array with 1–16 letters (letters cannot be special characters) under the Name item. When finished, press ENTER to select a RAID level (Figure 6). There are four RAID levels: RAID0, RAID1, RAID10 and RAID5. Select a RAID level and press ENTER.

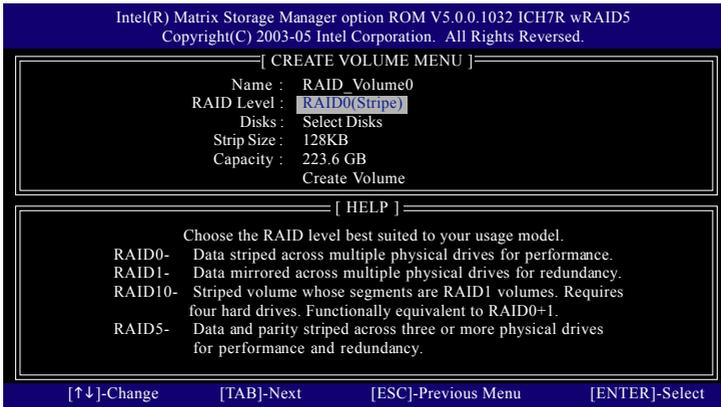


Figure 6

Step 4:

Set the stripe block size (Figure 7). The KB is the standard unit of stripe block size. The stripe block size can be set from 4KB to 128KB. After the setting, press ENTER to set array capacity.

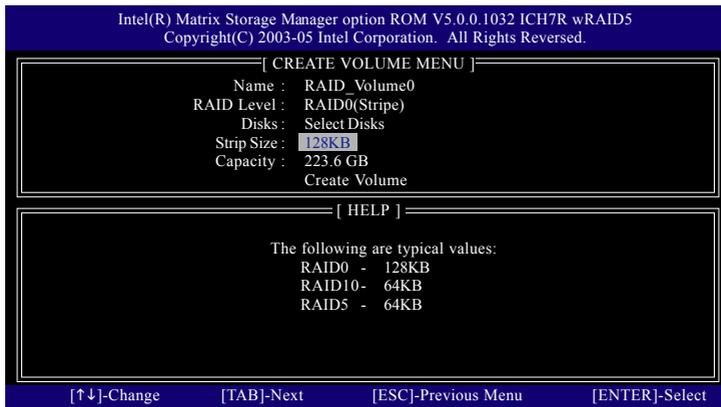


Figure 7

Step 5:

After setting all the items above, select Create Volume and press ENTER (Figure 8) to begin the creation of the RAID array.

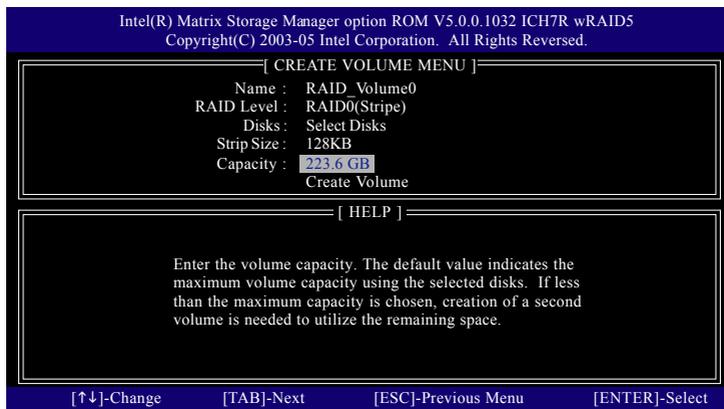


Figure 8

Step 6:

When prompted to confirm whether to create this volume, press Y to create or N to cancel.

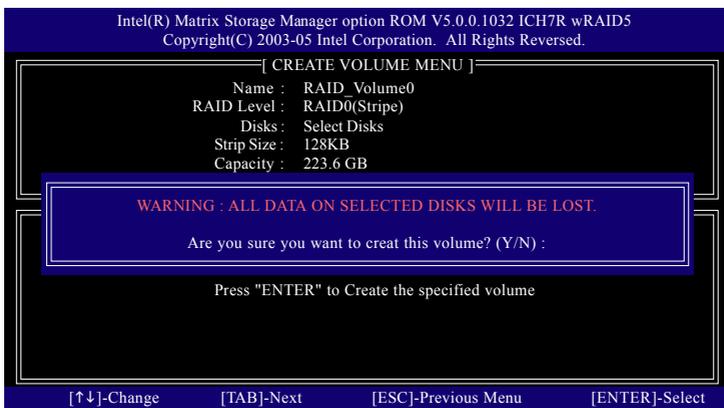


Figure 9

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.

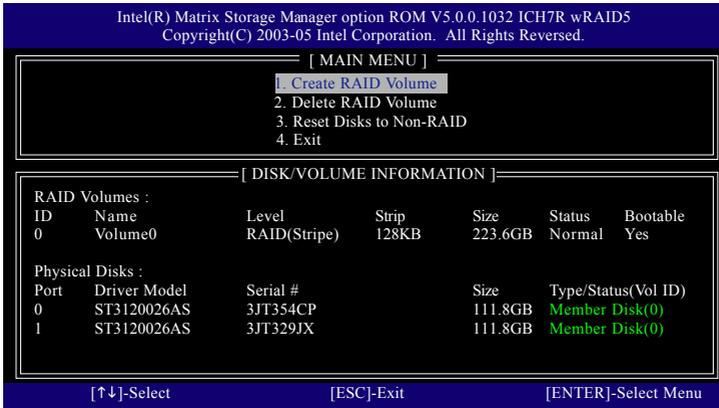
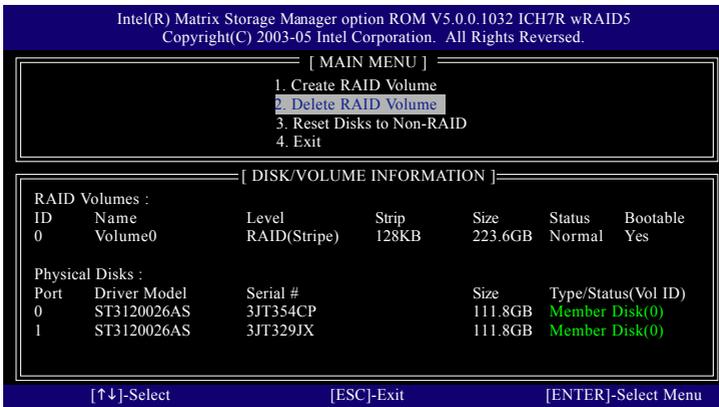


Figure 10

Delete RAID Volume

If you want to delete a RAID volume, select the Delete RAID Volume option in Main Menu. Press ENTER and follow on-screen instructions.



To exit the ICH7R RAID BIOS utility, press ESC in Main Menu.

Now, you can proceed to the installation of the SATA driver and operating system.

(4) Making a SATA Driver Disk

To install operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, copy the driver for the SATA controller from the motherboard driver CD-ROM to a floppy disk. See the instructions below about how to copy the driver in MS-DOS mode^(Note 1). Prepare a startup disk that has CD-ROM support and a blank formatted floppy disk.

Step 1: Insert the prepared startup disk and motherboard driver CD-ROM in your system. Boot from the startup disk. Once at the A:\> prompt, change to the CD-ROM drive (example: D:\>). At the D:\> prompt, type the following two commands. Press ENTER after each command (Fig.12):

```
cd bootdrv
menu
```

Step 2: When the controller menu (Fig.13) appears, remove the startup disk and insert the blank formatted disk. Select the controller driver by pressing the corresponding letter from the menu. For example, from the menu in Figure 13, press 7 to select **Intel Matrix Storage Manager 32 bit** for Windows operating system^(Note 2). Your system will then automatically zip and transfer this driver file to the floppy disk. Press 0 to exit when finished.

```
D:\BOOTDRV 1 10-08-02 7:51p
DISMHL DLL 94,266 06-15-04 1:19p
DRIVERS <DIR> 11-23-04 9:24p
HISTORY TXT 7,703 05-24-04 1:50p
HNDRV DLL 53,248 08-21-02 10:11a
IP LIG 21,877 12-01-04 11:21a
MANUAL <DIR> 11-23-04 9:17p
NETSWRK <DIR> 11-23-04 9:24p
NMS <DIR> 11-23-04 9:26p
DEPSETUP INF 38,057 10-08-02 7:51p
OTHER <DIR> 11-23-04 9:26p
PRISSET11 <DIR> 11-23-04 9:27p
README TXT 4,551 12-01-04 2:09p
SETUP EXE 421,888 11-25-04 3:32p
TESTM EXE 196,688 08-09-04 1:44p
TIP INI 2,839 09-30-04 10:01a
UTILITY <DIR> 11-23-04 9:27p
VDFILE TIC 13 03-20-03 1:45p
XUCD TXT 7,028 11-24-04 1:51p
Files(s) 869,314 bytes
11 file(s) 0 bytes free
D:\>cd bootdrv
D:\>menu
```

Fig.12

```
1)GIGABYTE
2)S1314 BASE Driver
3)S1314 RAID Driver
4)IA 640 RAID
5)Promise 20779 SATA Driver
6)Promise 20779 SATA RAID Driver
7)Intel Matrix Storage Manager 32 bit
8)Intel Matrix Storage Manager 64 bit
9)Intel Matrix Storage Manager 32 Bit Driver
A)S1312 BASE <64 Bit> Driver
B)S1312 RAID <32 Bit> Driver
C)S1312 RAID <64 Bit> Driver
0)exit
```

Fig. 13



NOTE

(Note 1) For users without a startup disk:

Use an alternative system and insert the GIGABYTE motherboard driver CD-ROM. From the CD-ROM drive folder, double click the **MENU.exe** file in the **BootDrv** folder (Figure 14). A command prompt window will open similar to that in Fig. 13.

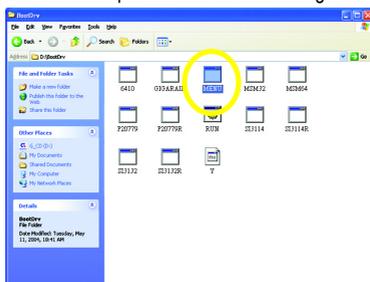


Fig. 14

(Note 2) For 64-bit Windows Operating System, please select **Intel(R) Matrix Storage Manager 64bit**.

(5) Installing SATA controller driver during OS installation

Now that you have prepared the SATA driver disk and configured BIOS settings, you are ready to install Windows 2000/XP onto your SATA hard drive with the SATA driver. The following is an example of Windows XP installation.

Step 1: Restart your system to boot from the Windows 2000/XP Setup disk and press F6 as soon as you see the "Press F6 if you need to install a 3rd party SCSI or RAID driver" message (Figure 15). After pressing F6, there will be a few moments of some files being loaded before you see the next screen.

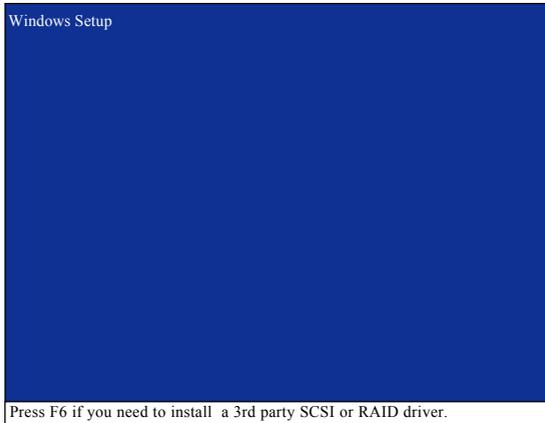


Figure 15

Step 2:

When a screen similar to that below appears, insert the floppy disk containing the SATA driver and press S (Figure 16).

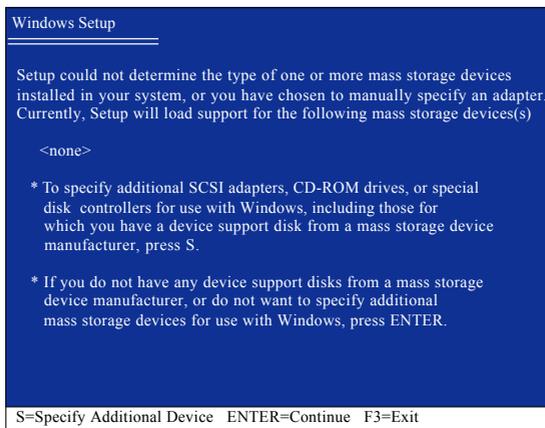


Figure 16

Step 3:

Use the ARROW keys on your keyboard to select **Intel(R) 82801 GR/GH SATA RAID Controller (Desktop ICH7R/DH)*** (Figure 17) and press ENTER. Then the system will load the SATA driver from the floppy disk.

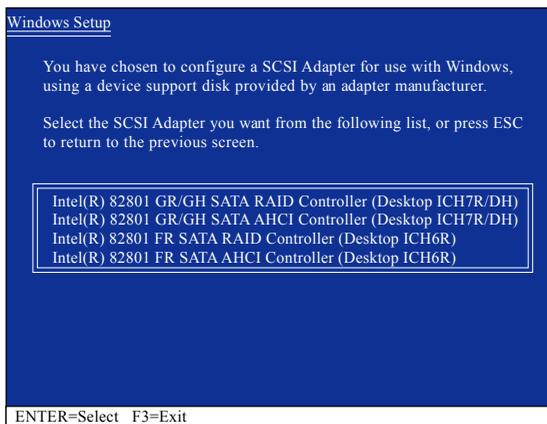


Figure 17



If a message appears saying one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the motherboard driver CD.

Step 4:

When the screen as shown below appears, press ENTER to continue the SATA driver installation from the floppy disk. The driver installation will be finished in about one minute.

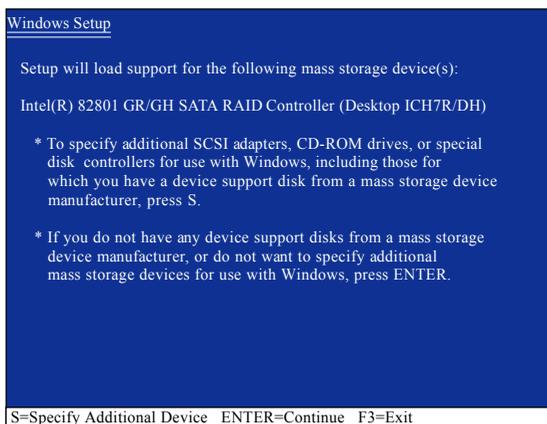


Figure 18

*** If you set the SATA RAID/AHCI Mode item in BIOS Setup to AHCI mode, please select **Intel(R) 82801 GR/GH SATA AHCI Controller (Desktop ICH7R/DH)**.

After the SATA controller driver installation is completed, you should see a screen as below. It indicates that you have installed the SATA controller driver successfully. You can proceed with the Windows 2000/XP installation.

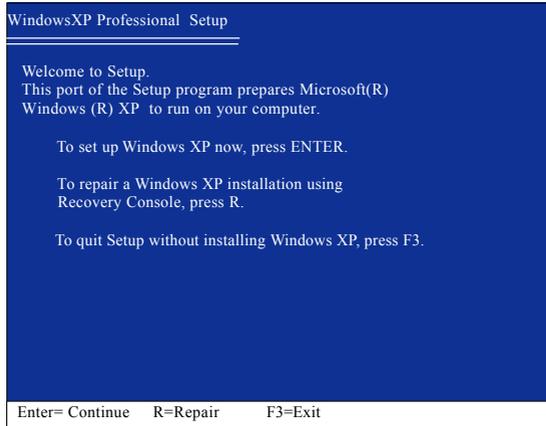


Figure 19

(Note: Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.)



4-1-5 2- / 4- / 5.1- / 6.1- / 7.1- Channel Audio Function

Introduction

Please follow the steps below for speakers configurations.
(Following pictures are in Windows XP.)



For users who wish to configure 4/4.1 channel, 5.1 channel, 6.1 channel, and 7.1 channel speakers, they **MUST** use the Audio Combo Kit.

Accessing Creative Speaker Settings

Method One:

After installation of the audio driver, you should find a Creative Volume Control icon  in your system tray. Double-click the icon to open the Creative Audio Control Panel.



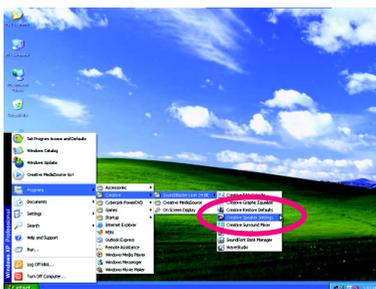
To configure speakers, click the **Speaker Settings** icon.



Creative Audio Control Panel

Method Two:

On the taskbar, click **Start -> Program -> Creative -> Sound Blaster Live 24-bit -> Creative Speaker Settings**.

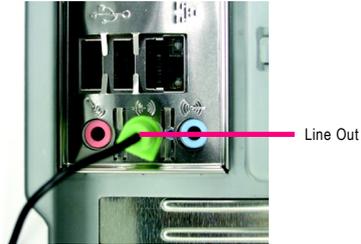


2/2.1 Channel Speaker Configurations

We recommend that you use the speaker with amplifier to acquire the best sound effect if the stereo output is applied.

STEP 1 :

Connect the 2/2.1 channel speakers (headphone) to the Line Out jack.



STEP 2:

In the **Speaker Selection** tab of **Creative Speaker Settings**, click **2/2.1 Speakers** in the **Speaker/Headphone Selection** list. After completion, you can click the **Channel/Noise** button to check whether the speaker selection corresponds to your speaker or headphone configuration.



Configuring Multi-Channel Speakers with Audio Combo Kit

Audio Combo Kit includes a Surround-Kit and a SPDIF Output module^(Note). If you wish to set up a multi-channel speaker configuration, you **MUST** use the Surround-Kit. The Surround-Kit offers rear surround, center/subwoofer output and side surround.



Installing Audio Combo Kit

STEP 1:

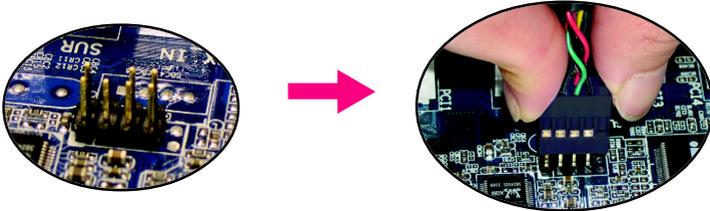
Secure the Audio Combo Kit bracket to a free PCI slot.



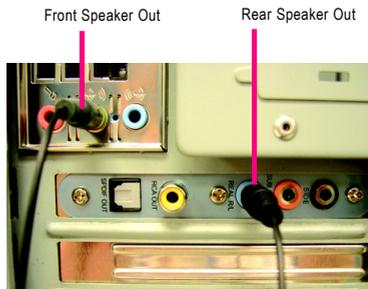
(Note) The Audio Combo Kit provides only Surround Kit and SPDIF Out module, SPDIF In module is an optional device. Please contact your dealer for the SPDIF In module.

STEP 2:

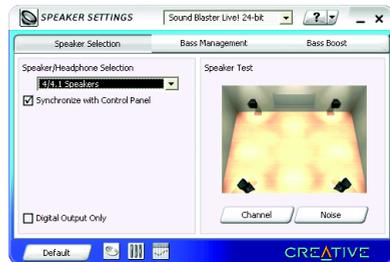
Connect the Surround-Kit to the SUR_CEN connector located on the motherboard. Then the installation is completed.

**4/4.1 Channel Speaker Configurations****STEP 1 :**

Connect the 4/4.1 channel speakers to the Line Out (Front Speaker Out) jack in the back panel and the Rear Speaker Out jack on the Surround Kit.

**STEP 2:**

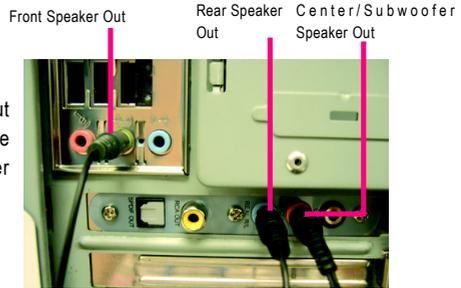
In the **Speaker Selection** tab of Creative **Speaker Settings**, click **4/4.1 Speakers** in the **Speaker/Headphone Selection** list. After completion, you can click the **Channel/Noise** button to check whether the speaker selection corresponds to your speaker configuration.



5.1 Channel Speaker Configurations

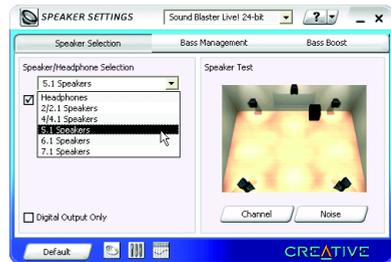
STEP 1 :

Connect the 5.1 channel speakers to the Line Out (Front Speaker Out) jack in the back panel and the Rear Speaker Out, Center/Subwoofer Speaker Out jacks on the Surround Kit.



STEP 2:

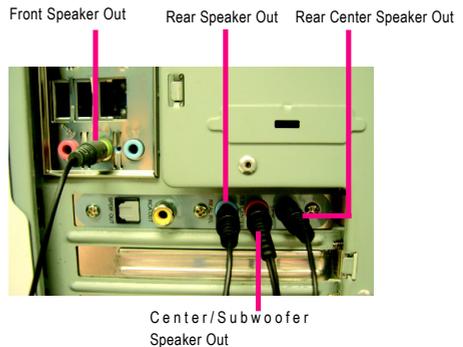
In the **Speaker Selection** tab of Creative **Speaker Settings**, click **5.1 Speakers** in the **Speaker/Headphone Selection** list. After completion, you can click the **Channel/Noise** button to check whether the speaker selection corresponds to your speaker configuration.



6.1 Channel Speaker Configurations

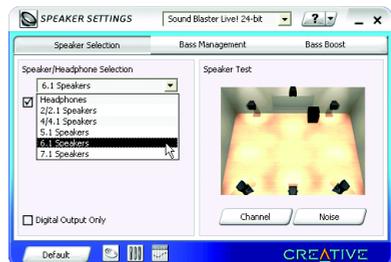
STEP 1 :

Connect the 6.1 channel speakers to the Line Out (Front Speaker Out) jack in the back panel and the Rear Speaker Out, Center/Subwoofer Speaker Out, Side Speaker (Rear Center Speaker) Out jacks on the Surround Kit.



STEP 2:

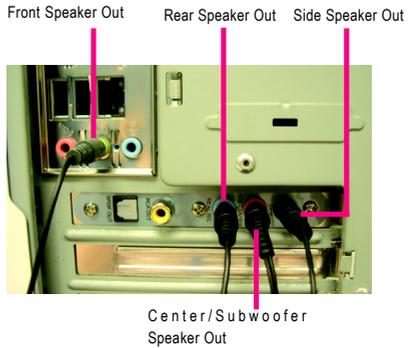
In the **Speaker Selection** tab of Creative **Speaker Settings**, click **6.1 Speakers** in the **Speaker/Headphone Selection** list. After completion, you can click the **Channel/Noise** button to check whether the speaker selection corresponds to your speaker configuration.



7.1 Channel Speaker Configurations

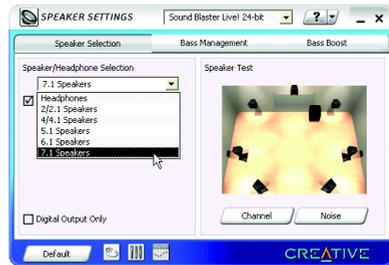
STEP 1 :

Connect the 7.1 channel speakers to the Line Out (Front Speaker Out) jack in the back panel and the Rear Speaker Out, Center/Subwoofer Speaker Out, Side Speaker Out jacks on the Surround Kit.



STEP 2:

In the **Speaker Selection** tab of Creative **Speaker Settings**, click **7.1 Speakers** in the **Speaker/Headphone Selection** list. After completion, you can click the **Channel/Noise** button to check whether the speaker selection corresponds to your speaker configuration.



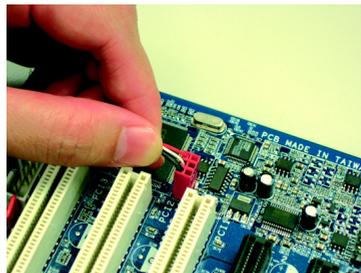
Enabling Digital Output

The Audio Combo Kit provides the SPDIF Out module which is required for digital output. The SPDIF Out module includes an optical SPDIF Out jack and a coaxial SPDIF Out jack. Follow the steps below to enable digital output support.

Optical SPDIF Out Coaxial SPDIF Out



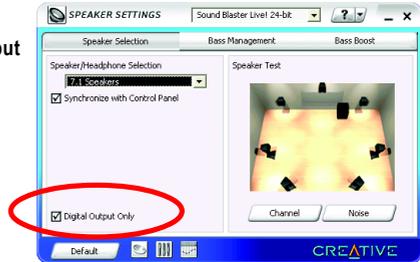
Step 1. Connect SPDIF Out module connector to the SPDIF_IO connector on the motherboard.



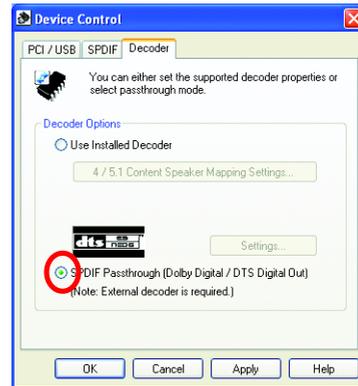
2. Connect a decoder to your system through optical cable or coaxial cable. The picture to the right is an example of connecting an optical cable to the optical SPDIF Out jack.



3. In the **Speaker Selection** tab of Creative **Speaker Settings**, select the **Digital Output Only** checkbox to activate digital output.



4. Set the decoder options in **Start -> Program -> Creative -> Sound Blaster Live 24-bit -> Device Control to SPDIF Passthrough**. Please refer to Page 85.



4-1-6 DTS Introduction

1. Introduction

In a continuous effort to bring the finest cinematic surround effects to the consumers, Creative has partnered with DTS, Inc to integrate DTS-ES and DTS-Neo:6 into their Sound Blaster line of audio products. This paper will discuss the benefits of having these technologies and how to bring the ultimate entertainment experience out of them via the Creative software applications.

2. DTS-ES

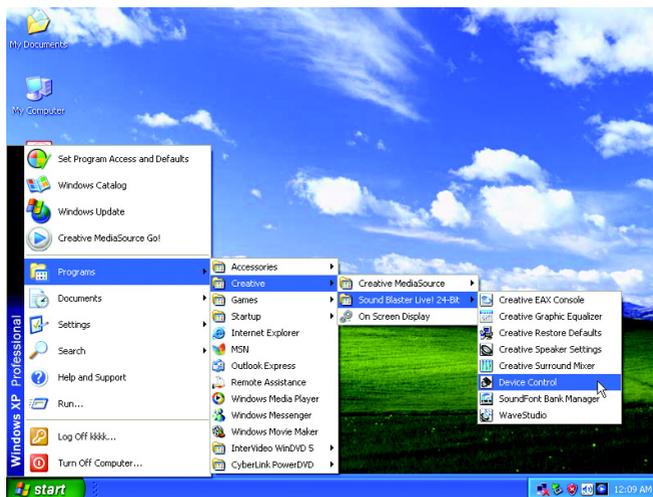
A new encoding scheme adopted by DTS that provides realistic home theatre experience through discrete 6.1 channel extended surround sound while still maintaining compatibility with existing 5.1 systems. This new DTS Extended Surround bitstream is available for DTS-encoded content on all media (CD, LD and DVD-Video) whenever the multichannel recordings are discretely mixed in 6.1. Audio data can be decoded through either an external decoder or now, Creative built-in decoder.

When using a DVD-Video disc encoded with DTS-ES content, the audio mode has to be set to this format before playback begins. The setting is usually in the Main Menu Audio Setup section that will automatically be displayed when the disc is inserted.

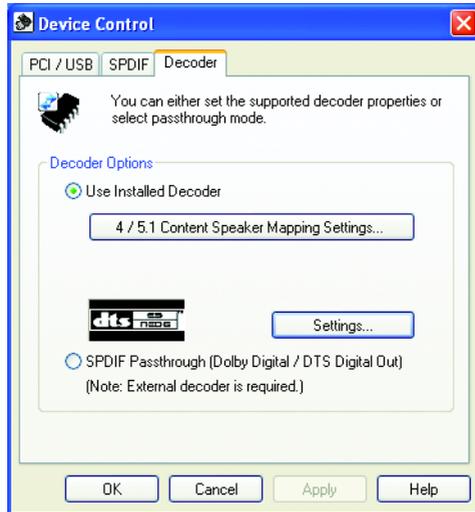
2.1 Using Creative Built-in decoder

Step 1: Device Control

One of the most recent audio products that incorporate DTS technology is the Sound Blaster Live! 24-bit integrated on motherboards. Device Control is the control application that handles the decoding.



By default, the on-board Creative audio device provides the decoding. The **Use Installed Decoder** option will be checked.



When a 7.1 speaker system is used, a 4-channel or 6-channel audio content can be mapped to the additional speakers. Default is a map to the side speakers.



The Creative configuration is completed once the Creative Speaker Settings is set to 6.1 or 7.1 speaker mode.

Step 2: Configuring 3rd party SoftDVD players

All softDVD players typically have an option to use SPDIF OUT. This option needs to be turned on in conjunction with the Creative settings above for the built-in decoder feature to work. Examples using WinDVD and PowerDVD are illustrated below.



2.2 Using External Decoder

In a case whereby an external hardware decoder (e/g DTS Home Theatre System) is used, the option to use SPDIF Passthrough is to be checked. Encoded audio data will pass through Creative driver without decoding.



2.3 Decoding using SoftDVD player

A softDVD player which supports multi-channel playback offers an alternative option to external hardware decoding. Select a 8-channel playback option if a 7.1 speaker system is used. Examples using WinDVD and PowerDVD are illustrated below.



3. DTS Neo:6

Integrated into Creative's full-featured media player Creative MediaSource, DTS Neo:6 Settings enables users with 5.1 or 6.1 speaker systems to derive five or six full-band channels of audio from two-channel matrix-encoded sources. The result is a richer and more natural aural experience, a luxury that owners of discrete multichannel systems have increasingly come to expect.

DTS Neo:6 Settings features two modes:

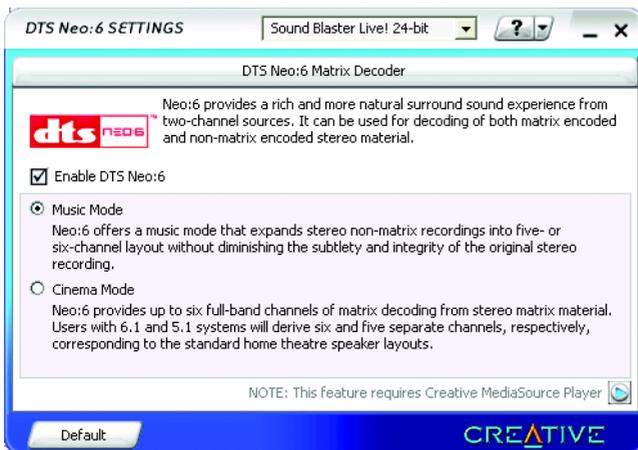
- **Music Mode:** Expands stereo non-matrix recordings into five or six channel layouts without diminishing the subtlety and integrity of the original stereo recording. It is designed to enhance the playback of two-channel music recordings such as Compact Discs (CDs) and stereo audio files through 5.1 or 6.1 speaker systems.
- **Cinema Mode:** Decodes extended surround matrix soundtracks optimally. It is designed to enhance the playback of matrix-encoded movie content through 5.1 or 6.1 speaker systems.

Note that DTS Neo:6 Settings only works in conjunction with Creative MediaSource Player and this technology is effective on two-channel content only. It will not have an effect on content that is mono or that has more than two channels. DTS Neo:6 Settings can only be launched from within Creative MediaSource Player/Organizer.

3.1 Launching DTS Neo:6 Settings

To launch DTS Neo:6 Settings:

1. Launch Creative MediaSource Player/Organizer.
2. On the Menu bar, click Tools -> DTS Neo:6 Settings.
3. DTS Neo:6 Settings appears.



The DTS Neo:6 is located under the time display area in Creative MediaSource Player (version 2.02 and above). It is circled in red below:



Neo:6 Mus indicates that Music Mode is enabled while Neo:6 Cin indicates that Cinema Mode is enabled. Note that changes to DTS Neo:6 settings will not take effect on the track that is currently in play. The changes will only take effect from the next track onwards.

4. Final Word

Neo:6 will be featured with DTS-ES in a Creative audio system that is lined up to include DTS technologies. Together, they offer both discrete and matrix decoding that will help to bring the best audio experience out of a Sound Blaster.

4-2 Troubleshooting

Below is a collection of general asked questions. To check general asked questions based on a specific motherboard model, please log on to <http://www.gigabyte.com.tw>

Question 1: I cannot see some options that were included in previous BIOS after updating BIOS. Why?

Answer: Some advanced options are hidden in new BIOS version. Please press Ctrl and F1 keys after entering BIOS menu and you will be able to see these options.

Questions 2: Why is the light of my keyboard/optical mouse still on after computer shuts down?

Answer: In some boards, a small amount of electricity is kept on standby after computer shuts down and that's why the light is still on.

Question 3: How do I clear CMOS?

Answer: If your board has a Clear CMOS jumper, please refer to the Clear CMOS steps in the manual. If your board doesn't have such jumper, you can take off the on-board battery to leak voltage to clear CMOS. Please refer to the steps below:

Steps:

1. Turn off power.
2. Disconnect the power cord from MB.
3. Take out the battery gently and put it aside for about 10 minutes (Or you can use a metal object to connect the positive and negative pins in the battery holder to makethem short for one minute).
4. Re-insert the battery to the battery holder.
5. Connect power cord to MB again and turn on power.
6. Press Del to enter BIOS and load Fail-Safe Defaults(or load Optimized Defaults).
7. Save changes and reboot the system.

Question 4: Why do I still get a weak sound after turning up the speaker to the maximum volume?

Answer: Please make sure the speaker you are using is equipped with an internal amplifier. If not, please change another speaker with power/amplifier and try again later.

Question 5: Sometimes I hear different continuous beeps from computer after system boots up. What do these beeps usually stand for?

Answer: The beep codes below may help you identify the possible computer problems. However, they are only for reference purposes. The situations might differ from case to case.

→ AMI BIOS Beep Codes

*Computer gives 1 short beep when system boots successfully.

*Except for beep code 8, these codes are always fatal.

- 1 beep Refresh failure
- 2 beeps Parity error
- 3 beeps Base 64K memory failure
- 4 beeps Timer not operational
- 5 beeps Processor error
- 6 beeps 8042 - gate A20 failure
- 7 beeps Processor exception interrupt error
- 8 beeps Display memory read/write failure
- 9 beeps ROM checksum error
- 10 beeps CMOS shutdown register read/write error
- 11 beeps Cache memory bad

→ AWARD BIOS Beep Codes

1 short: System boots successfully

2 short: CMOS setting error

1 long 1 short: DRAM or M/B error

1 long 2 short: Monitor or display card error

1 long 3 short: Keyboard error

1 long 9 short: BIOS ROM error

Continuous long beeps: DRAM error

Continuous short beeps: Power error

4-3 POST Error Code

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	1. Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below) 2. PEG slots Auto-Configuration
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
03h	Initial Superio_Early_Init switch.
05h	1. Blank out screen 2. Clear CMOS error flag
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
16h	Initial Early_Init_Onboard_Generator switch.
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.

POST (hex)	Description
1Dh	Initial EARLY_PM_INIT switch.
1Fh	Load keyboard matrix (notebook platform)
21h	HPM initialization (notebook platform)
23h	<ol style="list-style-type: none"> 1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: <ul style="list-style-type: none"> -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
25h	PCI Bus Initialization
26h	Init clock Generator
27h	Initialize INT 09 buffer
29h	<ol style="list-style-type: none"> 1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed
2Bh	Invoke video BIOS.
2Dh	<ol style="list-style-type: none"> 1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed
33h	Reset keyboard except Winbond 977 series Super I/O chips.
3Ch	Test 8254
3Eh	Test 8259 interrupt mask bits for channel 1.
40h	Test 8259 interrupt mask bits for channel 2.
43h	Test 8259 functionality.
47h	Initialize EISA slot
49h	<ol style="list-style-type: none"> 1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU 64K page.
4Eh	<ol style="list-style-type: none"> 1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.

POST (hex)	Description
50h	Initialize USB
52h	Test all memory (clear all extended memory to 0)
55h	Display number of processors (multi-processor platform)
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
59h	Initialize the combined Trend Anti-Virus code.
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
65h	Initialize PS/2 Mouse
67h	Prepare memory size information for function call: INT 15h ax=E820h
69h	Turn on L2 cache
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM;K..
77h	Detect serial ports & parallel ports.
7Ah	Detect & install co-processor
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue:
	◆ Clear EPA or customization logo.
	E8POST.ASM starts

POST (hex)	Description
82h	<ol style="list-style-type: none"> 1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	<ol style="list-style-type: none"> 1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none"> 1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	<ol style="list-style-type: none"> 1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	<ol style="list-style-type: none"> 1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)



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