

# **GA-G31M-ES2L**

# **GA-G31M-ES2C**

LGA775 socket motherboard for Intel® Core™ processor family/  
Intel® Pentium™ processor family/Intel® Celeron™ processor family

## **User's Manual**

Rev. 2401

12ME-G31MES2L-2401R

**Declaration of Conformity**

Manufacturer/Importer

G.B.T Technology Trading GmbH

Bahnhofstr. 16, 22047 Hamburg, Germany

declare that the product:

**Motherboard**

GA-G31M-ES2L(GA-G31M-ES2C

(reference to the specification under which conformity is declared)

is in accordance with 2004/108/EC EMC Directive

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

EN 55011

Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) High Frequency Equipment

EN 55010-3-2

Disturbances in supply systems caused by electronic equipment in supply systems caused by electronic equipment "Voltage fluctuations" electromagnetic compatibility

EN 55013

Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment

EN 55014

Industrial Technology equipment—immunity characteristics—Limits and methods of measurement

EN 55014-1

Limits and methods of measurement of radio disturbance characteristics of portable electrical apparatus, power lines and related electrical apparatus

EN 55014-2

Generic immunity standard Part 1: Residential, commercial and light industry Product immunity standard Part 2: Industrial environment

EN 55015

Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaires

EN 55011-2

Immunity requirements for household appliances tools and similar apparatus

EN 55020

Immunity from radio interference of broadcast receivers and associated equipment

EN 55021-2

EMC requirements for unshieldable power systems (UPS)

EN 55022

Limits and methods of measurement of radio disturbance characteristics of information technology equipment

IEC 61000-4-30

Limitation of voltage fluctuations and flicker in public low-voltage distribution systems, Equipment for receiving and/or distribution from section and television signals

CE marking



(i.e. CE conformity marking)

The manufacturer declares the conformity of above mentioned product with the actual required safety standards in accordance with 110/2006/EC

EN 60955

Safety requirements for mains operated electronic and related apparatus for household and similar general use

EN 60950

Safety for information technology equipment including electrical business equipment

EN 60335

Safety of household and similar electrical appliances

EN 50074-1

General and Safety requirements for ultra-high power systems (UHS)

Manufacturer/Importer

Signature: Timmy Huang

(Stamp)

Date: May 20, 2010

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-G31M-ES2L  
GA-G31M-ES2C

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: May 20, 2010

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## **Documentation Classifications**

In order to assist in the use of this product, GIGABYTE provides the following types of documentations:

- For detailed product information, carefully read the User's Manual.
- For instructions on how to use GIGABYTE's unique features, read or download the information on/from the Support&Downloads\Motherboard\Technology Guide page on our website.

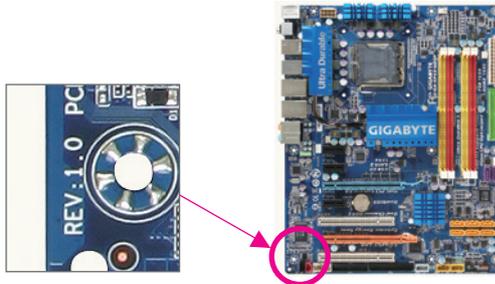
For product-related information, check on our website at:

<http://www.gigabyte.com>

## **Identifying Your Motherboard Revision**

The revision number on your motherboard looks like this: "REV: X.X." For example, "REV: 1.0" means the revision of the motherboard is 1.0. Check your motherboard revision before updating motherboard BIOS, drivers, or when looking for technical information.

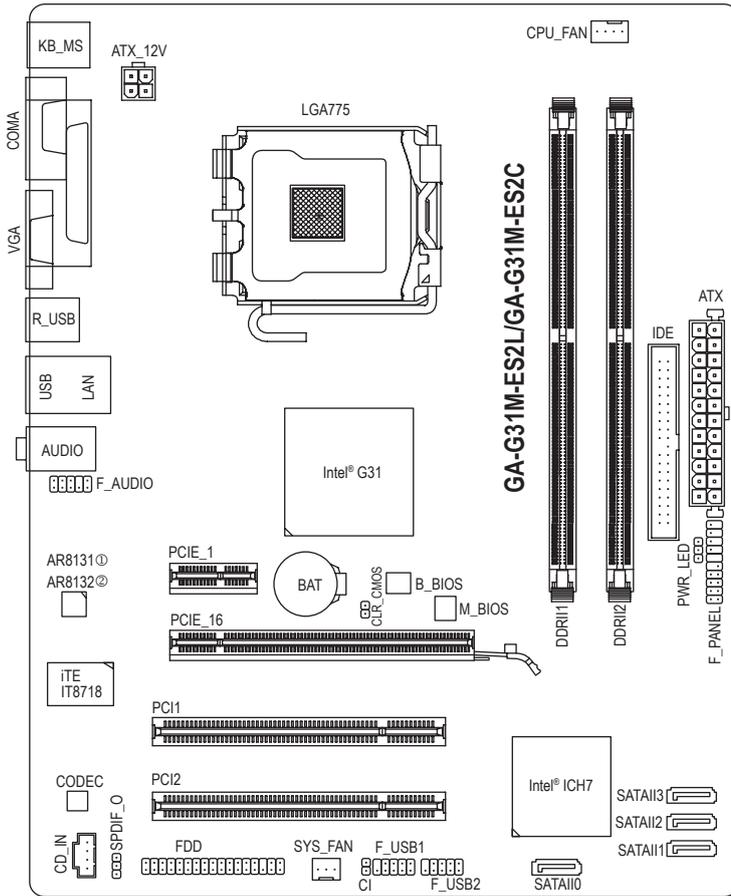
Example:



# Table of Contents

GA-G31M-ES2L/GA-G31M-ES2C Motherboard Layout.....	5
Chapter 1 Hardware Installation .....	6
1-1 Installation Precautions .....	6
1-2 Product Specifications .....	7
1-3 Installing the CPU and CPU Cooler.....	9
1-3-1 Installing the CPU .....	9
1-4 Installing the Memory .....	10
1-4-1 Dual Channel Memory Configuration .....	10
1-5 Installing an Expansion Card.....	10
1-6 Back Panel Connectors .....	11
1-7 Internal Connectors .....	13
Chapter 2 BIOS Setup .....	22
2-1 Startup Screen.....	22
2-2 The Main Menu.....	22
2-3 Standard CMOS Features .....	23
2-4 Advanced BIOS Features .....	24
2-5 Integrated Peripherals .....	26
2-6 Power Management Setup .....	28
2-7 PnP/PCI Configurations.....	30
2-8 PC Health Status .....	30
2-9 MB Intelligent Tweaker(M.I.T.) .....	31
2-10 Load Fail-Safe Defaults .....	33
2-11 Load Optimized Defaults .....	33
2-12 Set Supervisor/User Password .....	34
2-13 Save & Exit Setup .....	34
2-14 Exit Without Saving.....	35
Chapter 3 Drivers Installation .....	35
3-1 Installing Chipset Drivers.....	35
Regulatory Statements.....	36

# GA-G31M-ES2L/GA-G31M-ES2C Motherboard Layout



## Box Contents

- GA-G31M-ES2L or GA-G31M-ES2C motherboard
- Motherboard driver disk
- User's Manual
- One IDE cable
- Two SATA cables
- I/O Shield

The box contents above are for reference only and the actual items shall depend on the product package you obtain. The box contents are subject to change without notice.

- ① Only for GA-G31M-ES2L.
- ② Only for GA-G31M-ES2C.

# Chapter 1 Hardware Installation

## 1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- 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.

## 1-2 Product Specifications

 CPU	<ul style="list-style-type: none"> <li>Support for an Intel® Core™ 2 Extreme processor/Intel® Core™ 2 Quad processor/Intel® Core™ 2 Duo processor/Intel® Pentium® processor/Intel® Celeron® processor in the LGA 775 package (Go to GIGABYTE's website for the latest CPU support list.)</li> <li>L2 cache varies with CPU</li> </ul>
 Front Side Bus	<ul style="list-style-type: none"> <li>1333/1066/800 MHz FSB</li> </ul>
 Chipset	<ul style="list-style-type: none"> <li>North Bridge: Intel® G31 Express Chipset</li> <li>South Bridge: Intel® ICH7</li> </ul>
 Memory	<ul style="list-style-type: none"> <li>2 x 1.8V DDR2 DIMM sockets supporting up to 4 GB of system memory <sup>(Note 1)</sup></li> <li>Dual channel memory architecture</li> <li>Support for DDR2 800/667 MHz memory modules (Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)</li> </ul>
 Onboard Graphics	<ul style="list-style-type: none"> <li>Integrated in the North Bridge: <ul style="list-style-type: none"> <li>- 1 x D-Sub port</li> </ul> </li> </ul>
 Audio	<ul style="list-style-type: none"> <li>Realtek ALC883/888B codec</li> <li>High Definition Audio</li> <li>2/4/5.1/7.1-channel <sup>(Note 2)</sup></li> <li>Support for S/PDIF Out</li> <li>Support for CD In</li> </ul>
 LAN	<ul style="list-style-type: none"> <li>AR8131 chip (10/100/1000 Mbit)①</li> <li>AR8132 chip (10/100 Mbit)②</li> </ul>
 Expansion Slots	<ul style="list-style-type: none"> <li>1 x PCI Express x16 slot</li> <li>1 x PCI Express x1 slot</li> <li>2 x PCI slots</li> </ul>
 Storage Interface	<ul style="list-style-type: none"> <li>South Bridge: <ul style="list-style-type: none"> <li>- 1 x IDE connector supporting ATA-100/66/33 and up to 2 IDE devices</li> <li>- 4 x SATA 3Gb/s connectors supporting up to 4 SATA 3Gb/s devices</li> </ul> </li> <li>iTE IT8718 chip: <ul style="list-style-type: none"> <li>- 1 x floppy disk drive connector supporting up to 1 floppy disk drive</li> </ul> </li> </ul>
 USB	<ul style="list-style-type: none"> <li>South Bridge: <ul style="list-style-type: none"> <li>- Up to 8 USB 2.0/1.1 ports (4 on the back panel, 4 via the USB brackets connected to the internal USB headers)</li> </ul> </li> </ul>
 Internal Connectors	<ul style="list-style-type: none"> <li>1 x 24-pin ATX main power connector</li> <li>1 x 4-pin ATX 12V power connector</li> <li>1 x floppy disk drive connector</li> <li>1 x IDE connector</li> <li>4 x SATA 3Gb/s connectors</li> <li>1 x CPU fan header</li> <li>1 x system fan header</li> </ul>

① Only for GA-G31M-ES2L.

② Only for GA-G31M-ES2C.

 Internal Connectors	<ul style="list-style-type: none"> <li>◆ 1 x front panel header</li> <li>◆ 1 x front panel audio header</li> <li>◆ 1 x CD In connector</li> <li>◆ 1 x S/PDIF Out header</li> <li>◆ 2 x USB 2.0/1.1 headers</li> <li>◆ 1 x power LED header</li> <li>◆ 1 x chassis intrusion header</li> </ul>
 Back Panel Connectors	<ul style="list-style-type: none"> <li>◆ 1 x PS/2 keyboard port</li> <li>◆ 1 x PS/2 mouse port</li> <li>◆ 1 x parallel port</li> <li>◆ 1 x serial port</li> <li>◆ 1 x D-Sub port</li> <li>◆ 4 x USB 2.0/1.1 ports</li> <li>◆ 1 x RJ-45 port</li> <li>◆ 3 x audio jacks (Line In/Line Out/Microphone)</li> </ul>
 I/O	<ul style="list-style-type: none"> <li>◆ iTE IT8718</li> </ul>
 Hardware Monitor	<ul style="list-style-type: none"> <li>◆ System voltage detection</li> <li>◆ CPU temperature detection</li> <li>◆ CPU/System fan speed detection</li> <li>◆ CPU overheating warning</li> <li>◆ CPU/System fan fail warning</li> <li>◆ CPU fan speed control<sup>(Note 3)</sup></li> </ul>
 BIOS	<ul style="list-style-type: none"> <li>◆ 2 x 4 Mbit flash</li> <li>◆ Use of licensed AWARD BIOS</li> <li>◆ Support for DualBIOS™</li> <li>◆ PnP 1.0a, DMI 2.0, SM BIOS 2.4, ACPI 1.0b</li> </ul>
 Unique Features	<ul style="list-style-type: none"> <li>◆ Support for @BIOS</li> <li>◆ Support for Q-Flash</li> <li>◆ Support for Xpress BIOS Rescue</li> <li>◆ Support for Download Center</li> <li>◆ Support for Xpress Install</li> <li>◆ Support for Xpress Recovery2</li> <li>◆ Support for EasyTune<sup>(Note 4)</sup></li> <li>◆ Support for Easy Energy Saver<sup>(Note 5)</sup></li> <li>◆ Support for Time Repair</li> <li>◆ Support for ON/OFF Charge</li> <li>◆ Support for Q-Share</li> </ul>
 Bundled Software	<ul style="list-style-type: none"> <li>◆ Norton Internet Security (OEM version)</li> </ul>
 Operating System	<ul style="list-style-type: none"> <li>◆ Support for Microsoft® Windows® 7/Vista/XP</li> </ul>
 Form Factor	<ul style="list-style-type: none"> <li>◆ Micro ATX form factor; 24.4cm x 19.4cm</li> </ul>

- (Note 1) Based on standard PC architecture, a certain amount of memory is reserved for system usage and therefore the actual memory size is less than the stated amount. For example, 4 GB of memory size will instead be shown as 3.xx GB during system startup.
- (Note 2) To configure 7.1-channel audio, you need connect with the port of HD Audio standard via front panel and enable the multi-channel audio feature through the audio driver.
- (Note 3) Whether the CPU fan speed control function is supported will depend on the CPU you install.
- (Note 4) Available functions in EasyTune may differ by motherboard model.
- (Note 5) Due to the hardware limitation, you must install the Intel® Core™ 2 Extreme/Core™ 2 Quad/Core™ 2 Duo/Pentium Dual-Core/Celeron Dual-Core/Celeron 400 Series CPU to enable support for Easy Energy Saver

### 1-3 Installing the CPU and CPU Cooler

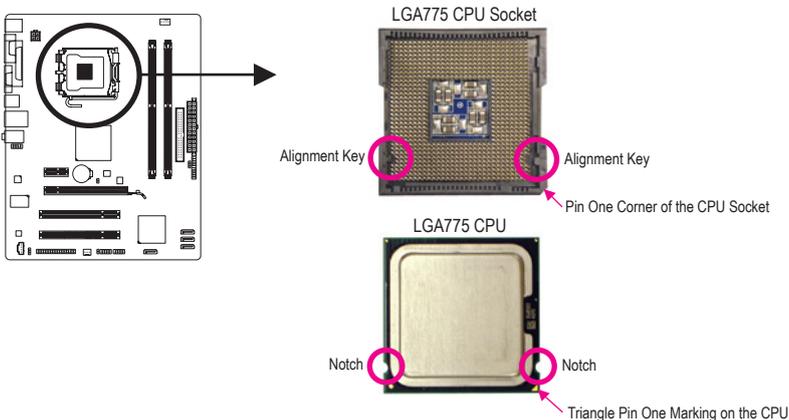


Read the following guidelines before you begin to install the CPU:

- Make sure that the motherboard supports the CPU.  
(Go to GIGABYTE's website for the latest CPU support list.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on both sides of the CPU and alignment keys on the CPU socket.)
- Apply an even and thin layer of thermal grease on the surface of the CPU.
- Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.
- Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.

#### 1-3-1 Installing the CPU

- A. Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.



## 1-4 Installing the Memory



Read the following guidelines before you begin to install the memory:

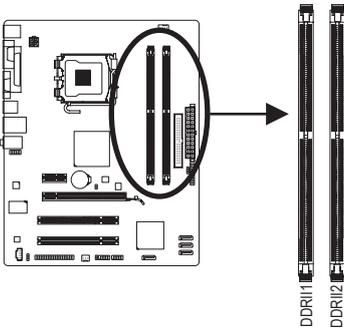
- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.  
(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

### 1-4-1 Dual Channel Memory Configuration

This motherboard provides two DDR2 memory sockets and supports Dual Channel Technology.

The two DDR2 memory sockets are divided into two channels and each channel has one memory socket as following:

- ▶▶ Channel 0: DDRII1
- ▶▶ Channel 1: DDRII2



Due to chipset limitation, read the following guidelines before installing the memory in Dual Channel mode.

1. Dual Channel mode cannot be enabled if only one DDR2 memory module is installed.
2. When enabling Dual Channel mode with two memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used.

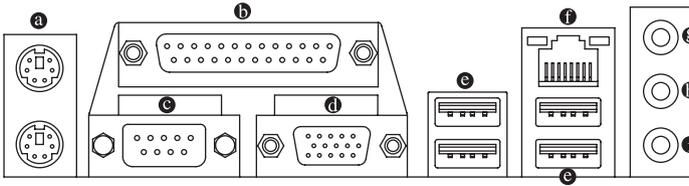
## 1-5 Installing an Expansion Card



Read the following guidelines before you begin to install an expansion card:

- Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card.
- Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage.

# 1-6 Back Panel Connectors



## a PS/2 Keyboard and PS/2 Mouse Port

Use the upper port (green) to connect a PS/2 mouse and the lower port (purple) to connect a PS/2 keyboard.

## b Parallel Port

Use the parallel port to connect devices such as a printer, scanner and etc. The parallel port is also called a printer port.

## c Serial Port

Use the serial port to connect devices such as a mouse, modem or other peripherals.

## d D-Sub Port

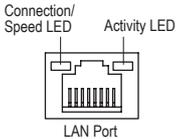
The D-Sub port supports a 15-pin D-Sub connector. Connect a monitor that supports D-Sub connection to this port.

## e USB 2.0/1.1 Port

The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

## f RJ-45 LAN Port ①

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.



Connection/Speed LED:

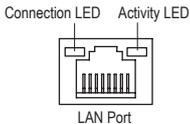
State	Description
Orange	1 Gbps data rate
Green	100 Mbps data rate
Off	10 Mbps data rate

Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

## g RJ-45 LAN Port ②

The Fast Ethernet LAN port provides Internet connection at up to 100 Mbps data rate. The following describes the states of the LAN port LEDs.



Connection LED:

State	Description
On	LAN link is established
Off	LAN link is not established

Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

① Only for GA-G31M-ES2L.

② Only for GA-G31M-ES2C.

⑨ **Line In Jack (Blue)**

The default line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc.

⑩ **Line Out Jack (Green)**

The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1-channel audio configuration.

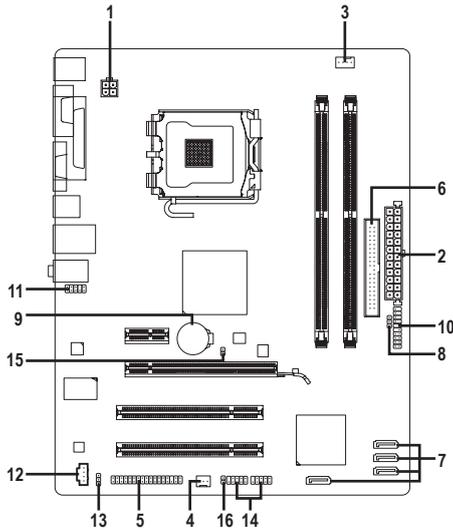
⑪ **Mic In Jack (Pink)**

The default Mic in jack. Microphones must be connected to this jack.



- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

# 1-7 Internal Connectors



1)	ATX_12V	9)	BAT
2)	ATX	10)	F_PANEL
3)	CPU_FAN	11)	F_AUDIO
4)	SYS_FAN	12)	CD_IN
5)	FDD	13)	SPDIF_O
6)	IDE	14)	F_USB1/F_USB2
7)	SATAII0/1/2/3	15)	CLR_CMOS
8)	PWR_LED	16)	CI



Read the following guidelines before connecting external devices:

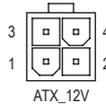
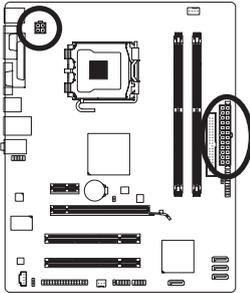
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

## 1/2) ATX\_12V/ATX (2x2 12V Power Connector and 2x12 Main 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, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.

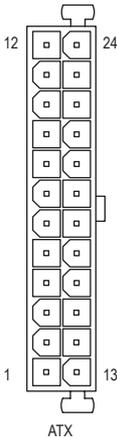


To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.



ATX\_12V:

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

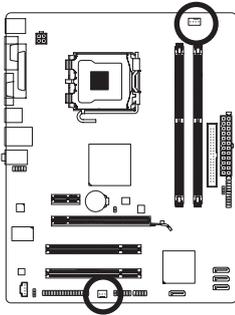


ATX:

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	5VSB (stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V (Only for 2x12-pin ATX)	23	+5V (Only for 2x12-pin ATX)
12	3.3V (Only for 2x12-pin ATX)	24	GND (Only for 2x12-pin ATX)

### 3/4) CPU\_FAN/SYS\_FAN (Fan Headers)

The motherboard has a 4-pin CPU fan header (CPU\_FAN) and a 3-pin (SYS\_FAN) system fan header. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



CPU\_FAN:

Pin No.	Definition
1	GND
2	+12V / Speed Control
3	Sense
4	Speed Control

SYS\_FAN:

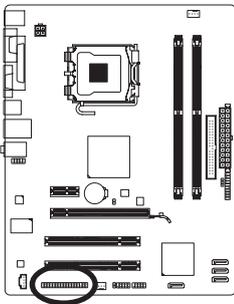
Pin No.	Definition
1	GND
2	+12V
3	Sense



- Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang.
- These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers.

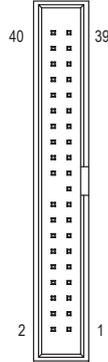
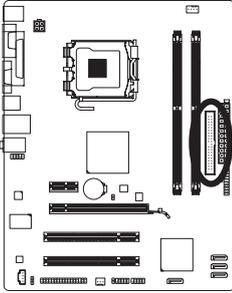
### 5) FDD (Floppy Disk Drive Connector)

This connector is used to connect a floppy disk drive. The types of floppy disk drives supported are: 360 KB, 720 KB, 1.2 MB, 1.44 MB, and 2.88 MB. Before connecting a floppy disk drive, be sure to locate pin 1 of the connector and the floppy disk drive cable. The pin 1 of the cable is typically designated by a stripe of different color. For purchasing the optional floppy disk drive cable, please contact the local dealer.



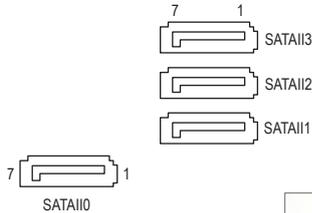
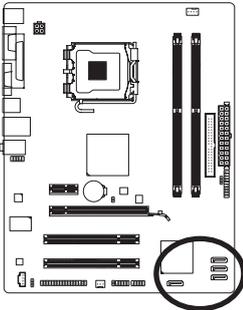
## 6) IDE (IDE Connector)

The IDE connector supports up to two IDE devices such as hard drives and optical drives. Before attaching the IDE cable, locate the foolproof groove on the connector. If you wish to connect two IDE devices, remember to set the jumpers and the cabling according to the role of the IDE devices (for example, master or slave). (For information about configuring master/slave settings for the IDE devices, read the instructions from the device manufacturers.)

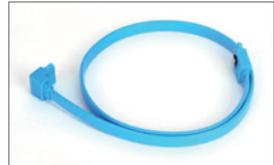


## 7) SATAII0/1/2/3 (SATA 3Gb/s Connectors)

The SATA connectors conform to SATA 3Gb/s standard and are compatible with SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device.



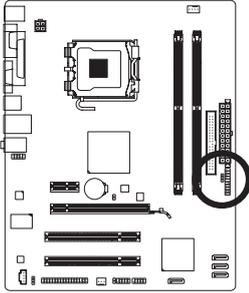
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



Please connect the L-shaped end of the SATA cable to your SATA hard drive.

## 8) PWR\_LED (System Power LED Header)

This header can be used to connect a system power LED on the chassis to indicate system power status. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

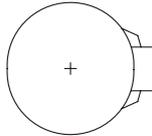
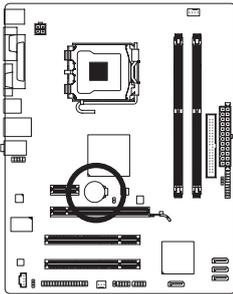


Pin No.	Definition
1	MPD+
2	MPD-
3	MPD-

System Status	LED
S0	On
S1	Blinking
S3/S4/S5	Off

## 9) BAT (Battery)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.



You may clear the CMOS values by removing the battery:

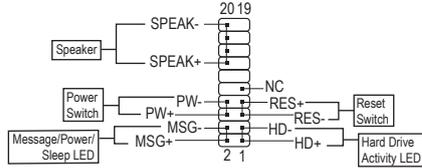
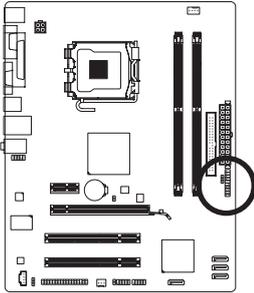
1. Turn off your computer and unplug the power cord.
2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.)
3. Replace the battery.
4. Plug in the power cord and restart your computer.



- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up).
- Used batteries must be handled in accordance with local environmental regulations.

## 10) F\_PANEL (Front Panel Header)

Connect the power switch, reset switch, speaker and system status indicator on the chassis front panel to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



- **MSG (Message/Power/Sleep LED):**

System Status	LED
S0	On
S1	Blinking
S3/S4/S5	Off

Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

- **PW (Power Switch):**

Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch (refer to Chapter 2, "BIOS Setup," "Power Management Setup," for more information).

- **SPEAK (Speaker):**

Connects to the speaker on the chassis front panel. The system reports system startup status by issuing a beep code. One single short beep will be heard if no problem is detected at system startup. If a problem is detected, the BIOS may issue beeps in different patterns to indicate the problem.

- **HD (Hard Drive Activity LED)**

Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

- **RES (Reset Switch):**

Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

- **NC:**

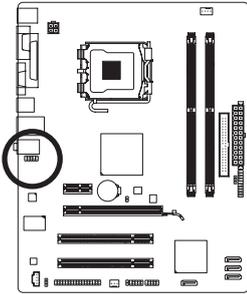
No connection



The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

## 11) F\_AUDIO (Front Panel Audio Header)

The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.



For HD Front Panel Audio:

Pin No.	Definition
1	MIC2_L
2	GND
3	MIC2_R
4	-ACZ_DET
5	LINE2_R
6	GND
7	FAUDIO_JD
8	No Pin
9	LINE2_L
10	GND

For AC'97 Front Panel Audio:

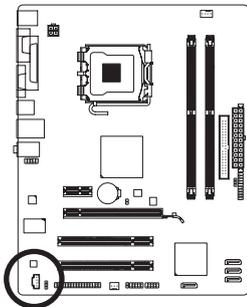
Pin No.	Definition
1	MIC
2	GND
3	MIC Power
4	NC
5	Line Out (R)
6	NC
7	NC
8	No Pin
9	Line Out (L)
10	NC



- The front panel audio header supports HD audio by default.
- Audio signals will be present on both of the front and back panel audio connections simultaneously.
- Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer.

## 12) CD\_IN (CD In Connector)

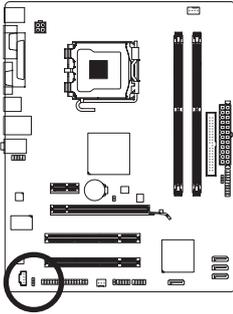
You may connect the audio cable that came with your optical drive to the header.



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

### 13) SPDIF\_O (S/PDIF Out Header)

This header supports digital S/PDIF out. Via an optional S/PDIF out cable, this header can connect to an audio device that supports digital audio in. For purchasing the optional S/PDIF out cable, please contact the local dealer.



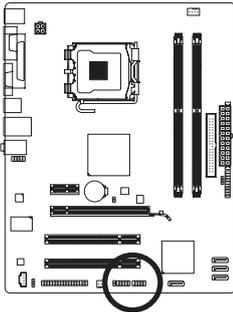
Pin No.	Definition
1	Power
2	SPDIFO
3	GND



Pin 1 (the red wire) of the S/PDIF out cable must align with pin 1 of the SPDIF\_O header. Incorrect connection may render the device unusable or even result in damage to the device.

### 14) F\_USB1/F\_USB2 (USB Headers)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



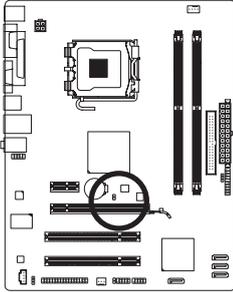
Pin No.	Definition
1	Power (5V)
2	Power (5V)
3	USB DX-
4	USB DY-
5	USB DX+
6	USB DY+
7	GND
8	GND
9	No Pin
10	NC



- Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB header.
- Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket.

## 15) CLR\_CMOS (Clearing CMOS Jumper)

Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins or temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few seconds.



Open: Normal



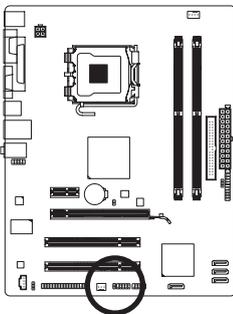
Short: Clear CMOS Values



- Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.
- After clearing the CMOS values and before turning on your computer, be sure to remove the jumper cap from the jumper. Failure to do so may cause damage to the motherboard.
- After system restart, go to BIOS Setup to load factory defaults (select **Load Optimized Defaults**) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations).

## 16) CI (Chassis Intrusion Header)

This motherboard provides a chassis detection feature that detects if the chassis cover has been removed. This function requires a chassis with chassis intrusion detection design.



Pin No.	Definition
1	Signal
2	GND

# Chapter 2 BIOS Setup

To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on. To see more advanced BIOS Setup menu options, you can press <Ctrl> + <F1> in the main menu of the BIOS Setup program.

To upgrade the BIOS, use either the GIGABYTE Q-Flash or @BIOS utility.

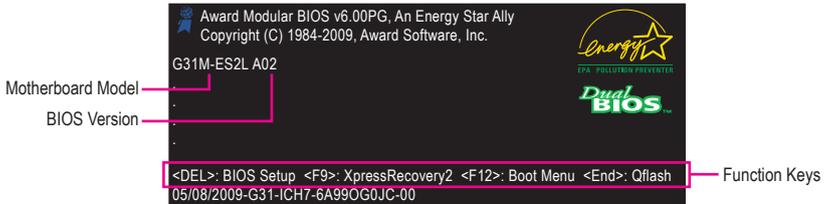
- Q-Flash allows the user to quickly and easily upgrade or back up BIOS without entering the operating system.
- @BIOS is a Windows-based utility that searches and downloads the latest version of BIOS from the Internet and updates the BIOS.



- Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

## 2-1 Startup Screen

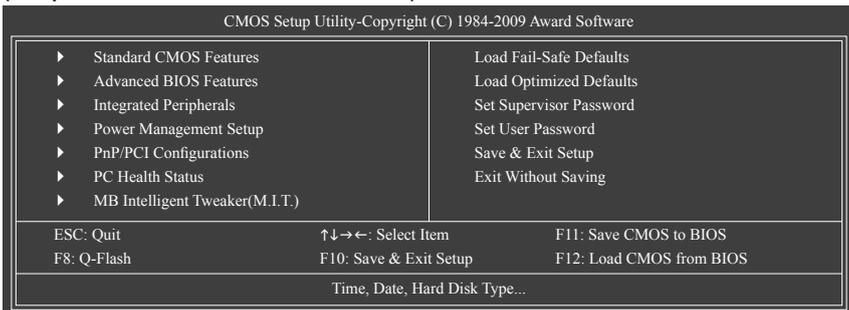
The following screens may appear when the computer boots.



## 2-2 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.

**(Sample BIOS Version: GA-G31M-ES2L A02)**





- If you do not find the settings you want in the Main Menu or a submenu, press <Ctrl>+<F1> to access more advanced options.
- When the system is not stable as usual, select the **Load Optimized Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

## The Functions of the <F11> and <F12> keys (For the Main Menu Only)

### ► F11: Save CMOS to BIOS

This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles (Profile 1-8) and name each profile. First enter the profile name (to erase the default profile name, use the SPACE key) and then press <Enter> to complete.

### ► F12: Load CMOS from BIOS

If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load, then press <Enter> to complete.

## 2-3 Standard CMOS Features

CMOS Setup Utility-Copyright (C) 1984-2009 Award Software		Item Help
Standard CMOS Features		Menu Level ▶
Date (mm:dd:yy)	Fri, May 8 2009	
Time (hh:mm:ss)	22:31:24	
▶ IDE Channel 0 Master	[None]	
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 2 Master	[None]	
▶ IDE Channel 2 Slave	[None]	
▶ IDE Channel 3 Master	[None]	
▶ IDE Channel 3 Slave	[None]	
Drive A	[1.44M, 3.5"]	
Floppy 3 Mode Support	[Disabled]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	510M	
Total Memory	512M	

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

### ☞ Date (mm:dd:yy)

Sets the system date.

### ☞ Time (hh:mm:ss)

Sets the system time.

### ☞ IDE Channel 0, 2, 3 Master/Slave

#### ▶▶ IDE HDD Auto-Detection, IDE Auto-Detection

Press <Enter> to autodetect the parameters of the IDE/SATA device on this channel.

#### ▶▶ IDE Channel 0 Master/Slave, Extended IDE Drive

Configure your IDE/SATA devices by using one of the three methods below:

- Auto Lets the BIOS automatically detect IDE/SATA devices during the POST. (Default)
- None If no IDE/SATA devices are used, set this item to **None** so the system will skip the detection of the device during the POST for faster system startup.

- Manual Allows you to manually enter the specifications of the hard drive when the hard drive access mode is set to **CHS**. (For **IDE Channel 0 Master/Slave** only.)

▶ Access Mode Sets the hard drive access mode. (Default: Auto)

The following fields display your hard drive specifications. If you wish to enter the parameters manually, refer to the information on the hard drive.

- ▶ Capacity Approximate capacity of the currently installed hard drive.
- ▶ Cylinder Number of cylinders.
- ▶ Head Number of heads.
- ▶ Precomp Write precompensation cylinder.
- ▶ Landing Zone Landing zone.
- ▶ Sector Number of sectors.

### ☞ Drive A

Allows you to select the type of floppy disk drive installed in your system. If you do not install a floppy disk drive, set this item to **None**. Options are: None, 360K/5.25", 1.2M/5.25", 720K/3.5", 1.44M/3.5", 2.88M/3.5".

### ☞ Floppy 3 Mode Support

Allows you to specify whether the installed floppy disk drive is 3-mode floppy disk drive, a Japanese standard floppy disk drive. Options are: Disabled (default), Drive A.

### ☞ Halt On

Allows you to determine whether the system will stop for an error during the POST.

Options are: [All Errors], [No Errors], [All, But Keyboard] (default), [All, But Diskette], [All, But Disk/Key].

### ☞ Memory

These fields are read-only and are determined by the BIOS POST.

## 2-4 Advanced BIOS Features

CMOS Setup Utility-Copyright (C) 1984-2009 Award Software  
Advanced BIOS Features

	Item Help	
▶ Hard Disk Boot Priority	[Press Enter]	
First Boot Device	[Floppy]	Menu Level ▶
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Password Check	[Setup]	
HDD S.M.A.R.T. Capability	[Enabled]	
CPU Multi-Threading <small>(Note)</small>	[Enabled]	
Limit CPUID Max. to 3 <small>(Note)</small>	[Disabled]	
No-Execute Memory Protect <small>(Note)</small>	[Enabled]	
CPU Enhanced Halt (C1E) <small>(Note)</small>	[Enabled]	
CPU Thermal Monitor 2(TM2) <small>(Note)</small>	[Enabled]	
CPU EIST Function <small>(Note)</small>	[Enabled]	
Virtualization Technology <small>(Note)</small>	[Enabled]	
Init Display First	[PCI]	
Onboard VGA	[Enable If No Ext PEG]	
On-Chip Frame Buffer Size	[[8MB+1~2MB for GTT]	

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

(Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website.

### ☞ **Hard Disk Boot Priority**

Specifies the sequence of loading the operating system from the installed hard drives.

### ☞ **First/Second/Third Boot Device**

Specifies the boot order from the available devices.

### ☞ **Password Check**

Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the **Set Supervisor/User Password** item in the BIOS Main Menu.

▶▶ Setup            A password is only required for entering the BIOS Setup program. (Default)

▶▶ System          A password is required for booting the system and for entering the BIOS Setup program.

### ☞ **HDD S.M.A.R.T. Capability**

Enables or disables the S.M.A.R.T. (Self Monitoring and Reporting Technology) capability of your hard drive. This feature allows your system to report read/write errors of the hard drive and to issue warnings when a third party hardware monitor utility is installed. (Default: Enabled)

### ☞ **CPU Multi-Threading** <sup>(Note)</sup>

Allows you to determine whether to enable all CPU cores and multi-threading function when using an Intel CPU that supports multi-core technology. This feature only works for operating systems that support multi-processor mode.

▶▶ Enabled          Enables all CPU cores and multi-threading capability. (Default)

▶▶ Disabled        Enables only one CPU core.

### ☞ **Limit CPUID Max. to 3** <sup>(Note)</sup>

Allows you to determine whether to limit CPUID maximum value. Set this item to **Disabled** for Windows XP operating system; set this item to **Enabled** for legacy operating system such as Windows NT4.0. (Default: Disabled)

### ☞ **No-Execute Memory Protect** <sup>(Note)</sup>

Enables or disables Intel Execute Disable Bit function. This function may enhance protection for the computer, reducing exposure to viruses and malicious buffer overflow attacks when working with its supporting software and system. (Default: Enabled)

### ☞ **CPU Enhanced Halt (C1E)** <sup>(Note)</sup>

Enables or disables Intel CPU Enhanced Halt (C1E) function, a CPU power-saving function in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. (Default: Enabled)

### ☞ **CPU Thermal Monitor 2 (TM2)** <sup>(Note)</sup>

Enables or disables Intel CPU Thermal Monitor (TM2) function, a CPU overheating protection function. When enabled, the CPU core frequency and voltage will be reduced when the CPU is overheated. (Default: Enabled)

### ☞ **CPU EIST Function** <sup>(Note)</sup>

Enables or disables Enhanced Intel SpeedStep Technology (EIST). Depending on CPU loading, Intel EIST technology can dynamically and effectively lower the CPU voltage and core frequency to decrease average power consumption and heat production. (Default: Enabled)

(Note) This item is present only if you install a CPU that supports this feature. For more information about Intel CPUs' unique features, please visit Intel's website.

### Virtualization Technology <sup>(Note)</sup>

Enables or disables Intel Virtualization Technology. Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. (Default: Enabled)

### Init Display First

Specifies the first initiation of the monitor display from the installed PCI graphics card, PCI Express graphics card or the onboard graphics.

- ▶ PCI Sets the PCI graphics card as the first display. (Default)
- ▶ Onboard Sets the onboard graphics as the first display.
- ▶ PEG Sets the PCI Express graphics card as the first display.

### Onboard VGA

Enables or disables the onboard graphics function.

- ▶ Enable If No Ext PEG Activates the onboard graphics only if no PCI Express graphics card is installed. (Default)
- ▶ Always Enable Always activates the onboard graphics, whether or not a PCI Express graphics card is installed. If you wish to set up a dual view configuration, set this item to **Always Enable**.

### On-Chip Frame Buffer Size

Frame buffer size is the total amount of system memory allocated solely for the onboard graphics controller. MS-DOS, for example, will use only this memory for display. Options are: 8MB+1~2MB for GTT (default), 1MB+1~2MB for GTT.

## 2-5 Integrated Peripherals

CMOS Setup Utility-Copyright (C) 1984-2009 Award Software  
Integrated Peripherals

		Item Help
On-Chip Primary PCI IDE	[Enabled]	
On-Chip SATA Mode	[Auto]	Menu Level ▶
x PATA IDE Set to	Ch.1 Master/Slave	
SATA Port 0/2 Set to	Ch.0 Master/Slave	
SATA Port 1/3 Set to	Disable	
USB Controller	[Enabled]	
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
Legacy USB storage detect	[Enabled]	
Azalia Codec	[Auto]	
Onboard H/W LAN	[Enabled]	
▶ SMART LAN	[Press Enter]	
Onboard LAN Boot ROM	[Disabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	

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

### On-Chip Primary PCI IDE

Enables or disables the first integrated IDE controller. (Default: Enabled)

## ☞ On-Chip SATA Mode

Configures the integrated SATA controller.

- ▶ Disabled Disables the integrated SATA controller.
- ▶ Auto Lets the BIOS set SATA devices to **Combined** or **Enhanced** mode. If your on-board SATA controller is automatically configured to **Combined** mode, you can manually re-configure it to **Enhanced** mode as needed. (Default)
- ▶ Combined Sets all SATA devices to operate in PATA mode. **Combined** allows a maximum of 4 ATA devices to be used simultaneously: two PATA devices plus two SATA devices.
- ▶ Enhanced Sets all SATA devices to operate in SATA mode.
- ▶ Non-Combined Sets all SATA devices to operate in PATA mode and disables the integrated IDE controller.

## ☞ PATA IDE Set to

This item is configurable only if the **On-Chip SATA Mode** is set to **Combined**.

- ▶ Ch.0 Master/Slave Sets the IDE channels to Ch. 0 Master/Slave. (Default)
- ▶ Ch.1 Master/Slave Sets the IDE channels to Ch. 1 Master/Slave.
- ▶ Disabled Disables the integrated IDE controller when **Non-Combined** is selected.

## ☞ SATA Port 0/2 Set to

This value is dependent on the **On-Chip SATA Mode** and **PATA IDE Set to** settings. When **PATA IDE Set to** is configured to **Ch. 1 Master/Slave**, this option will be automatically set to **Ch. 0 Master/Slave**.

## ☞ SATA Port 1/3 Set to

This value is dependent on the **On-Chip SATA Mode** and **PATA IDE Set to** settings. When **PATA IDE Set to** is configured to **Ch. 0 Master/Slave**, this option will be automatically set to **Ch. 1 Master/Slave**.

## ☞ USB Controller

Enables or disables the integrated USB controller. **Disabled** will turn off all of the USB functionalities below. (Default: Enabled)

### ☞ USB 2.0 Controller

Enables or disables the integrated USB 2.0 controller. (Default: Enabled)

### ☞ USB Keyboard Support

Allows USB keyboard to be used in MS-DOS. (Default: Disabled)

### ☞ USB Mouse Support

Allows USB mouse to be used in MS-DOS. (Default: Disabled)

### ☞ Legacy USB storage detect

Determines whether to detect USB storage devices, including USB flash drives and USB hard drives during the POST. (Default: Enabled)

### ☞ Azalia Codec

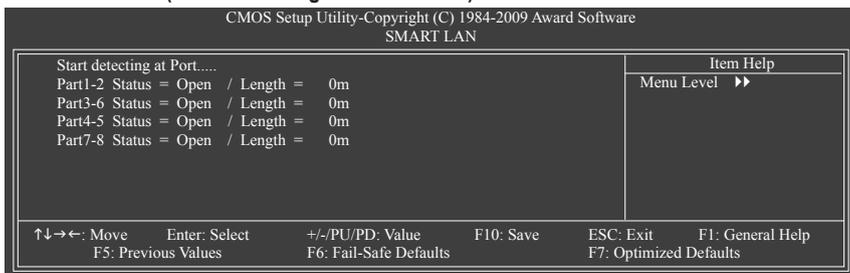
Enables or disables the onboard audio function. If you wish to install a 3rd party add-in audio card instead of using the onboard audio, set this item to **Disabled**. (Default: Auto)

### ☞ Onboard H/W LAN

Enables or disables the onboard LAN function. (Default: Enabled)

If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to **Disabled**.

## SMART LAN (LAN Cable Diagnostic Function)



This motherboard incorporates cable diagnostic feature designed to detect the status of the attached LAN cable. This feature will detect cabling issue and report the approximate distance to the fault or short.

## Onboard LAN Boot ROM

Allows you to decide whether to activate the boot ROM integrated with the onboard LAN chip.  
(Default: Disabled)

## Onboard Serial Port 1

Enables or disables the first serial port and specifies its base I/O address and corresponding interrupt. Options are: Auto, 3F8/IRQ4 (default), 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled.

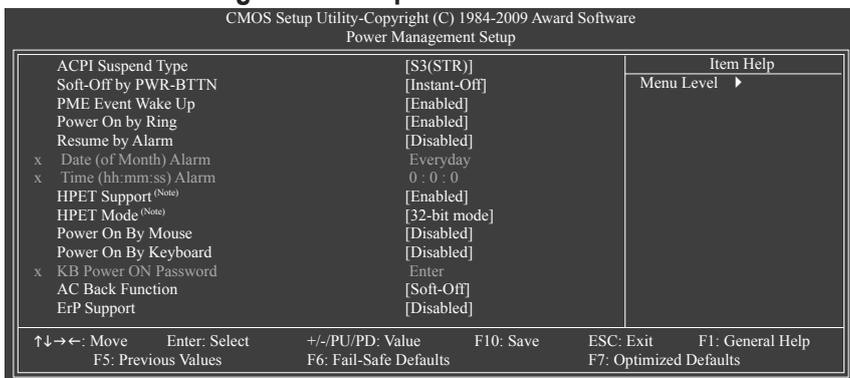
## Onboard Parallel Port

Enables or disables the onboard parallel port (LPT) and specifies its base I/O address and corresponding interrupt. Options are: 378/IRQ7 (default), 278/IRQ5, 3BC/IRQ7, Disabled.

## Parallel Port Mode

Selects an operating mode for the onboard parallel (LPT) port. Options are: SPP (Standard Parallel Port) (default), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), ECP+EPP.

## 2-6 Power Management Setup



## ACPI Suspend Type

Specifies the ACPI sleep state when the system enters suspend.

▶▶ S1(POS)    Enables the system to enter the ACPI S1 (Power on Suspend) sleep state. In S1 sleep state, the system appears suspended and stays in a low power mode. The system can be resumed at any time.

▶▶ S3(STR) Enables the system to enter the ACPI S3 (Suspend to RAM) sleep state (default). In S3 sleep state, the system appears to be off and consumes less power than in the S1 state. When signaled by a wake-up device or event, the system resumes to its working state exactly where it was left off.

#### ☞ **Soft-Off by PWR-BTTN**

Configures the way to turn off the computer in MS-DOS mode using the power button.

▶▶ Instant-Off Press the power button and then the system will be turned off instantly. (Default)

▶▶ Delay 4 Sec. Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode.

#### ☞ **PME Event Wake Up**

Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a PCI or PCIe device. Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead. (Default: Enabled)

#### ☞ **Power On by Ring**

Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a modem that supports wake-up function. (Default: Enabled)

#### ☞ **Resume by Alarm**

Determines whether to power on the system at a desired time. (Default: Disabled)

If enabled, set the date and time as following:

▶▶ Date (of Month) Alarm: Turn on the system at a specific time on each day or on a specific day in a month.

▶▶ Time (hh: mm: ss) Alarm: Set the time at which the system will be powered on automatically.

Note: When using this function, avoid inadequate shutdown from the operating system or removal of the AC power, or the settings may not be effective.

#### ☞ **HPET Support** <sup>(Note)</sup>

Enables or disables High Precision Event Timer (HPET) for Windows 7/Vista operating system. (Default: Enabled)

#### ☞ **HPET Mode** <sup>(Note)</sup>

Allows you to select the HPET mode for your Windows 7/Vista operating system. This item is configurable only if the **HPET Support** is set to **Enabled**. (Default: 32-bit mode)

#### ☞ **Power On By Mouse**

Allows the system to be turned on by a PS/2 mouse wake-up event. (Default: Disabled)

Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead.

▶▶ Double Click Double click on left button on the PS/2 mouse to turn on the system.

#### ☞ **Power On By Keyboard**

Allows the system to be turned on by a PS/2 keyboard wake-up event. (Default: Disabled)

Note: you need an ATX power supply providing at least 1A on the +5VSB lead.

▶▶ Password Set a password with 1~5 characters to turn on the system.

▶▶ Keyboard 98 Press POWER button on the Windows 98 keyboard to turn on the system.

#### ☞ **KB Power ON Password**

Set the password when **Power On by Keyboard** is set to **Password**. Press <Enter> on this item and set a password with up to 5 characters and then press <Enter> to accept. To turn on the system, enter the password and press <Enter>.

(Note) Supported on Windows 7/Vista operating system only.



### ☞ **Current Voltage(V) Vcore/DDR18V/+3.3V/+12V**

Displays the current system voltages.

### ☞ **Current CPU Temperature**

Displays current CPU temperature.

### ☞ **Current CPU/SYSTEM FAN Speed (RPM)**

Displays current CPU/system fan speed.

### ☞ **CPU Warning Temperature**

Sets the warning threshold for CPU temperature. When CPU temperature exceeds the threshold, BIOS will emit warning sound. Options are: Disabled (default), 60°C/140°F, 70°C/158°F, 80°C/176°F, 90°C/194°F.

### ☞ **CPU/SYSTEM FAN Fail Warning**

Allows the system to emit warning sound if the CPU/system fan is not connected or fails. Check the fan condition or fan connection when this occurs. (Default: Disabled)

### ☞ **CPU Smart FAN Control**

Enables or disables the CPU fan speed control function. **Enabled** allows the CPU fan to run at different speed according to the CPU temperature. You can adjust the fan speed with EasyTune based on system requirements. If disabled, the CPU fan runs at full speed. (Default: Enabled)

## 2-9 MB Intelligent Tweaker(M.I.T.)

CMOS Setup Utility-Copyright (C) 1984-2009 Award Software  
MB Intelligent Tweaker(M.I.T.)

		Item Help
Robust Graphics Booster	[Auto]	Menu Level ▶
CPU Clock Ratio <sup>(Note)</sup>	[12X]	
CPU Frequency	2.40GHz ( 200x12)	
CPU Host Clock Control	[Disabled]	
CPU Host Frequency (Mhz)	200	
PCI Express Frequency (Mhz)	[Auto]	
Performance Enhance	[Standard]	
System Memory Multiplier (SPD)	[Auto]	
Memory Frequency (Mhz)	667 667	
***** System Voltage Optimized *****		
System Voltage Control	[Manual]	
DDR2 OverVoltage Control	[Normal]	
FSB OverVoltage Control	[Normal]	
CPU Voltage Control	[Normal]	
Normal CPU Vcore	1.32500V	

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



- Whether the system will work stably with the overclock/overvoltage settings you made is dependent on your overall system configurations. Incorrectly doing overclock/overvoltage may result in damage to CPU, chipset, or memory and reduce the useful life of these components. This page is for advanced users only and we recommend you not to alter the default settings to prevent system instability or other unexpected results. (Inadequately altering the settings may result in system's failure to boot. If this occurs, clear the CMOS values and reset the board to default values.)
- When the **System Voltage Optimized** item blinks in red, it is recommended that you set the **System Voltage Control** item to **Auto** to optimize the system voltage settings.

(Note) This item appears only if you install a CPU that supports this feature.

### ☞ **Robust Graphics Booster**

Robust Graphics Booster (R.G.B.) helps to enhance the performance of the graphics chip and memory.

**Auto** allows the BIOS to automatically set the R.G.B. mode based on system configurations. Options are: Auto (default), Fast, Turbo.

### ☞ **CPU Clock Ratio** <sup>(Note)</sup>

Allows you to alter the clock ratio for the installed CPU.

The item is present only if a CPU with unlocked clock ratio is installed.

### ☞ **CPU Frequency**

Displays the current operating CPU frequency.

### ☞ **CPU Host Clock Control**

Enables or disables the control of CPU host clock. **Enabled** will allow the **CPU Host Frequency** item below to be configurable. Note: If your system fails to boot after overclocking, please wait for 20 seconds to allow for automated system reboot, or clear the CMOS values to reset the board to default values. (Default: Disabled)

### ☞ **CPU Host Frequency (Mhz)**

Allows you to manually set the CPU host frequency. The adjustable range is from 100 MHz to 700 MHz. This item is configurable only if the **CPU Host Clock Control** option is enabled.

**Important:** It is highly recommended that the CPU frequency be set in accordance with the CPU specifications.

### ☞ **PCI Express Frequency (Mhz)**

Allows you to manually set the PCIe clock frequency. The adjustable range is from 90 MHz to 150 MHz.

**Auto** sets the PCIe clock frequency to standard 100 MHz. (Default: Auto)

### ☞ **Performance Enhance**

Allows the system to operate at three different performance levels.

▶▶ Standard Lets the system operate at its basic performance level. (Default)

▶▶ Turbo Lets the system operate at its good performance level.

▶▶ Extreme Lets the system operate at its best performance level.

### ☞ **System Memory Multiplier (SPD)**

Allows you to set the system memory multiplier. Options are dependent on CPU FSB. **Auto** sets memory multiplier according to memory SPD data. (Default: Auto)

### ☞ **Memory Frequency (Mhz)**

The first memory frequency value is the normal operating frequency of the memory being used; the second is the memory frequency that is automatically adjusted according to the **CPU Host Frequency (Mhz)** and **System Memory Multiplier** settings.

### ☞ **System Voltage Control**

Determines whether to manually set the system voltages. **Auto** lets BIOS automatically set the system voltages as required. **Manual** allows all voltage control items below to be configurable. (Default: Manual)

### ☞ **DDR2 OverVoltage Control**

Allows you to set memory voltage.

▶▶ Normal Supplies the memory voltage as required. (Default)

▶▶ +0.1V ~ +0.4V The adjustable range is from 0.1V to 0.4V.

Note: Increasing memory voltage may result in damage to the memory.

(Note) This item appears only if you install a CPU that supports this feature.

## FSB OverVoltage Control

Allows you to set the Front Side Bus voltage.

▶ Normal Supplies the FSB voltage as required. (Default)

▶ +0.1V ~ +0.3V The adjustable range is from 0.1V to 0.3V.

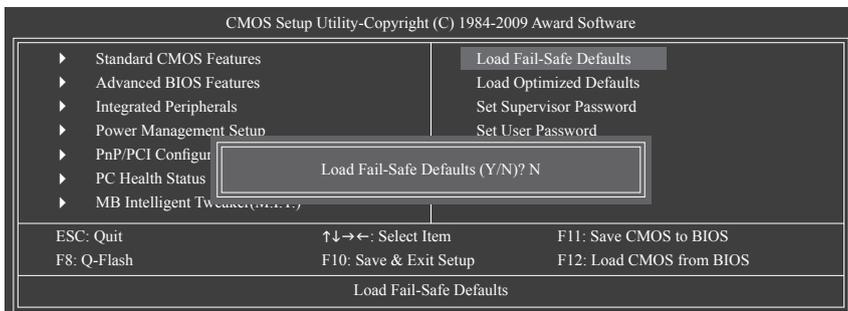
## CPU Voltage Control

Allows you to set the CPU voltage. **Normal** sets the CPU voltage as required. The adjustable range is dependent on the CPU being installed. (Default: Normal) Note: Increasing CPU voltage may result in damage to your CPU or reduce the useful life of the CPU.

## Normal CPU Vcore

Displays the normal operating voltage of your CPU.

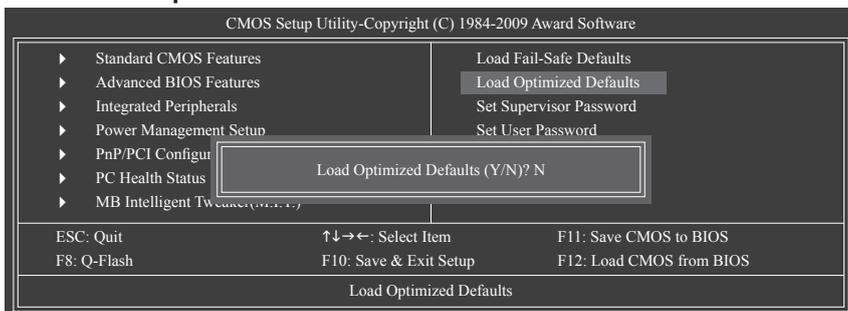
## 2-10 Load Fail-Safe Defaults



Press <Enter> on this item and then press the <Y> key to load the safest BIOS default settings.

In case system instability occurs, you may try to load Fail-Safe defaults, which are the safest and most stable BIOS settings for the motherboard.

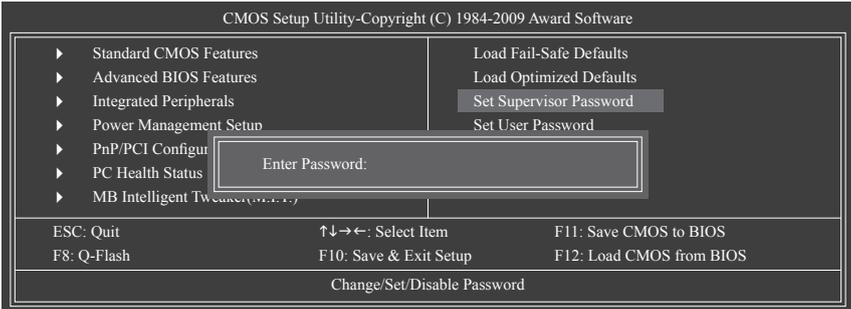
## 2-11 Load Optimized Defaults



Press <Enter> on this item and then press the <Y> key to load the optimal BIOS default settings.

The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

## 2-12 Set Supervisor/User Password



Press <Enter> on this item and type the password with up to 8 characters and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>.

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

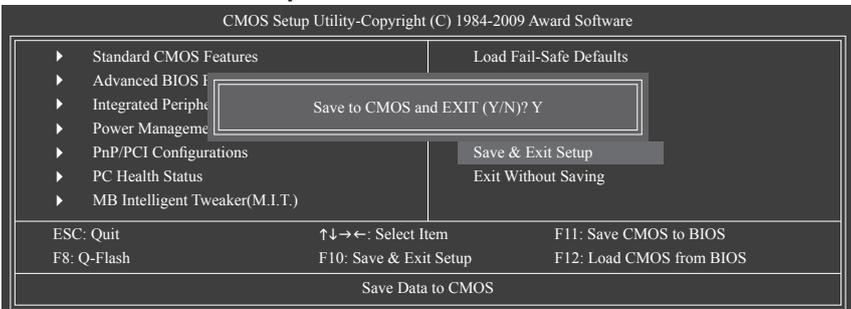
- ☞ **Supervisor Password-** When a system password is set and the Password Check item in Advanced BIOS Features is set to Setup, you must enter the supervisor password for entering BIOS Setup and making BIOS changes.

When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup and when entering BIOS Setup.

- ☞ **User Password-** When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup to continue system boot. In BIOS Setup, you must enter the supervisor password if you wish to make changes to BIOS settings. The user password only allows you to view the BIOS settings but not to make changes.

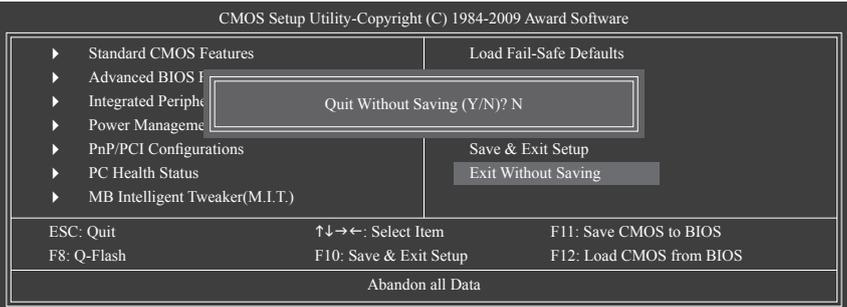
To clear the password, press <Enter> on the password item and when requested for the password, press <Enter> again. The message "PASSWORD DISABLED" will appear, indicating the password has been cancelled.

## 2-13 Save & Exit Setup



Press <Enter> on this item and press the <Y> key. This saves the changes to the CMOS and exits the BIOS Setup program. Press <N> or <Esc> to return to the BIOS Setup Main Menu.

## 2-14 Exit Without Saving



Press <Enter> on this item and press the <Y> key. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Press <N> or <Esc> to return to the BIOS Setup Main Menu.

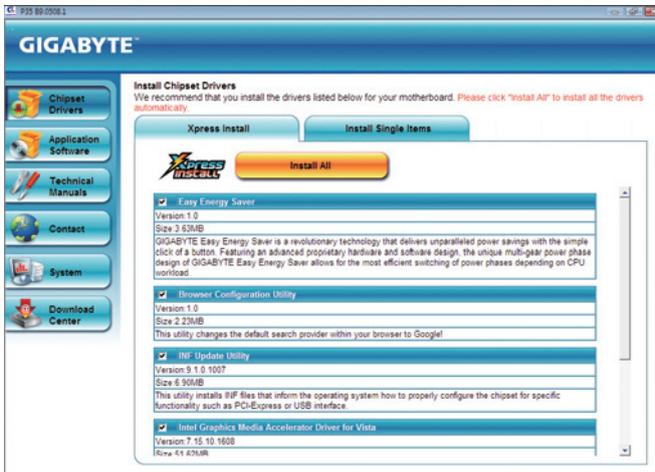
## Chapter 3 Drivers Installation



- Before installing the drivers, first install the operating system.
- After installing the operating system, insert the motherboard driver disk into your optical drive. The driver Autorun screen is automatically displayed which looks like that shown in the screen shot below. (If the driver Autorun screen does not appear automatically, go to My Computer, double-click the optical drive and execute the Run.exe program.)

### 3-1 Installing Chipset Drivers

After inserting the driver disk, "Xpress Install" will automatically scan your system and then list all the drivers that are recommended to install. You can click the **Install All** button and "Xpress Install" will install all the recommended drivers. Or click **Install Single Items** to manually select the drivers you wish to install.



# Regulatory Statements

## Regulatory Notices

This document must not be copied without our written permission, and the contents there of must not be imparted to a third party nor be used for any unauthorized purpose. Contravention will be prosecuted. We believe that the information contained herein was accurate in all respects at the time of printing. GIGABYTE cannot, however, assume any responsibility for errors or omissions in this text. Also note that the information in this document is subject to change without notice and should not be construed as a commitment by GIGABYTE.

## Our Commitment to Preserving the Environment

In addition to high-efficiency performance, all GIGABYTE motherboards fulfill European Union regulations for RoHS (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) and WEEE (Waste Electrical and Electronic Equipment) environmental directives, as well as most major worldwide safety requirements. To prevent releases of harmful substances into the environment and to maximize the use of our natural resources, GIGABYTE provides the following information on how you can responsibly recycle or reuse most of the materials in your "end of life" product.

## Restriction of Hazardous Substances (RoHS) Directive Statement

GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE and PBB). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals.

## Waste Electrical & Electronic Equipment (WEEE) Directive Statement

GIGABYTE will fulfill the national laws as interpreted from the 2002/96/EC WEEE (Waste Electrical and Electronic Equipment) directive. The WEEE Directive specifies the treatment, collection, recycling and disposal of electric and electronic devices and their components. Under the Directive, used equipment must be marked, collected separately, and disposed of properly.

## WEEE Symbol Statement



The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

■ The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

- ◆ When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.
- ◆ If you need further assistance in recycling, reusing in your "end of life" product, you may contact us at the Customer Care number listed in your product's user's manual and we will be glad to help you with your effort.

Finally, we suggest that you practice other environmentally friendly actions by understanding and using the energy-saving features of this product (where applicable), recycling the inner and outer packaging (including shipping containers) this product was delivered in, and by disposing of or recycling used batteries properly. With your help, we can reduce the amount of natural resources needed to produce electrical and electronic equipment, minimize the use of landfills for the disposal of "end of life" products, and generally improve our quality of life by ensuring that potentially hazardous substances are not released into the environment and are disposed of properly.

## China Restriction of Hazardous Substances Table

The following table is supplied in compliance with China's Restriction of Hazardous Substances (China RoHS) requirements:



关于符合中国《电子信息产品污染控制管理办法》的声明  
Management Methods on Control of Pollution from Electronic Information Products  
(China RoHS Declaration)

产品中有毒有害物质或元素的名称及含量  
Hazardous Substances Table

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substances)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB板 PCB	○	○	○	○	○	○
结构件及风扇 Mechanical parts and Fan	×	○	○	○	○	○
芯片及其他主动零件 Chip and other Active components	×	○	○	○	○	○
连接器 Connectors	×	○	○	○	○	○
被动电子元器件 Passive Components	×	○	○	○	○	○
线材 Cables	○	○	○	○	○	○
焊接金属 Soldering metal	○	○	○	○	○	○
助焊剂, 散热膏, 标签及其他耗材 Flux, Solder Paste, Label and other Consumable Materials	○	○	○	○	○	○
○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下。 Indicates that this hazardous substance contained in all homogenous materials of this part is below the limit requirement SJ/T 11363-2006						
×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。 Indicates that this hazardous substance contained in at least one of the homogenous materials of this part is above the limit requirement in SJ/T 11363-2006						
对销售之日的所发售产品, 本表显示我公司供应链的电子信息产品可能包含这些物质。注意: 在所售产品中可能会也可能不会含有所有列出的部件。 This table shows where these substances may be found in the supply chain of our electronic information products, as of the date of the sale of the enclosed products. Note that some of the component types listed above may or may not be a part of the enclosed product.						



## Contact Us

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WEB address (Chinese): <http://www.gigabyte.tw>

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You may go to the GIGABYTE website, select your language in the language list on the top right corner of the website.

- **GIGABYTE Global Service System**



To submit a technical or non-technical (Sales/Marketing) question, please link to:

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Then select your language to enter the system.



