

# **GA-H61M-USB3-B3**

## **User's Manual**

Rev. 2001

12ME-H61MB3B-2001R

Declaration of Conformity

We, Manufacturer/Importer  
G.B.T. Technology Trading GmbH  
Bültenkoppl 16, 22047 Hamburg, Germany  
declare that the product  
Motherboard  
GA-H61M-USB3-B3  
is in conformity with the EMC Directive 2004/108/E  
(reference to the specification under which conformity is declared)  
in accordance with the EMC Directive 2004/108/E

<input type="checkbox"/> EN 55011	Limits and methods of measurement of radio disturbance characteristics of radio transmitting apparatus and high frequency equipment	<input checked="" type="checkbox"/> EN 61000-3-2	Disturbances in supply systems caused by harmonics in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations"
<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 55024	Information Technology equipment-Immunity characteristics-Limits and methods of measurement
<input type="checkbox"/> EN 55014-1	Limits and methods of measurement of radio disturbance characteristics of portable tools and similar electrical apparatus	<input type="checkbox"/> EN 55022-1	Generic immunity standard Part 1: Residential, commercial and light industry
		<input type="checkbox"/> EN 55022-2	Generic immunity standard Part 2: Industrial environment
<input type="checkbox"/> EN 55015	Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaires	<input type="checkbox"/> EN 55014-2	Immunity requirements for household appliances tools and similar apparatus
<input type="checkbox"/> EN 55020	Immunity from radio interference of broadcast receivers and associated equipment	<input type="checkbox"/> EN 55021-2	EMC requirements for uninterruptible power systems (UPS)
<input checked="" type="checkbox"/> EN 55022	Limits and methods of measurement of radio disturbance characteristics of information technology equipment		
<input type="checkbox"/> DIN VDE 0855 part 10	Cabled distribution systems; Equipment for receiving and/or distribution from central and television signals		
<input type="checkbox"/> CE marking			(CE conformity marking)

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with the LVD Directive 2006/95/EC

<input type="checkbox"/> EN 60005	Safety requirements for mains operated electronic and related apparatus for household and similar general use	<input checked="" type="checkbox"/> EN 60950	Safety for information technology equipment including electrical business equipment
<input type="checkbox"/> EN 60335	Safety of household and similar electrical appliances	<input type="checkbox"/> EN 50081-1	General and Safety requirements for uninterruptible power systems (UPS)

Manufacturer/Importer

(Stamp)

Date: Sept. 6, 2011

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: 17388 Railroad Street

City of Industry, CA 91748

Phone/Fax No: (818) 854-9336/ (818) 854-9339

hereby declares that the product

Product Name: Motherboard

Model Number:GA-H61M-USB3-B3

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 inference received, including that may cause undesired operation.

Representative Person's Name: ERIC LU

Signature: Eric Lu

Date: Sept. 6, 2011

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## **Disclaimer**

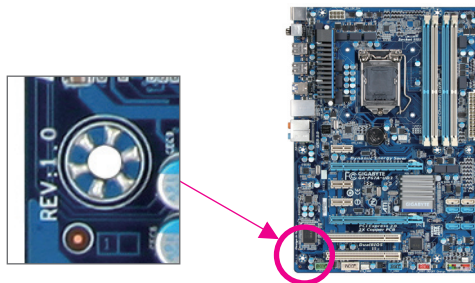
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- In order to assist in the use of this product, carefully read the User's Manual.
- For product-related information, check on our website at: <http://www.gigabyte.com>

## **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:

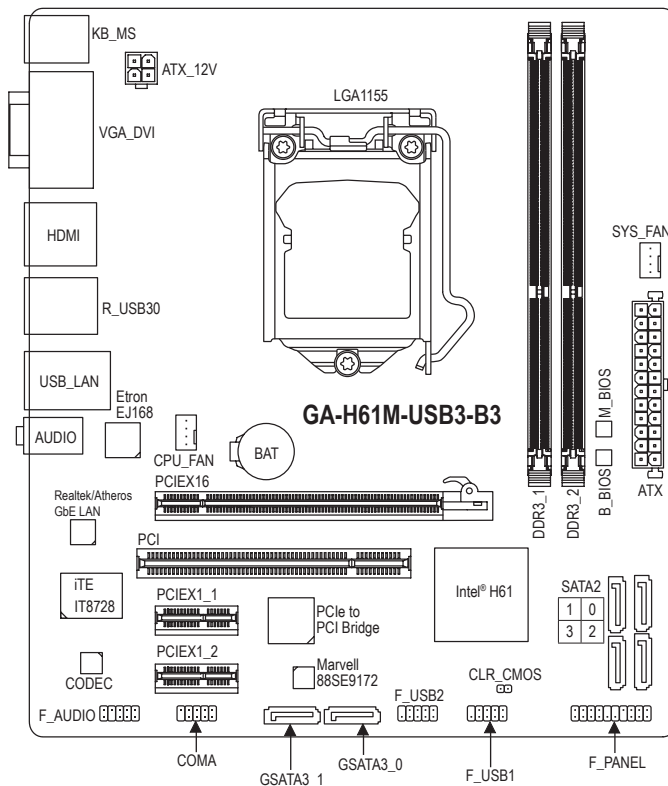


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# GA-H61M-USB3-B3 Motherboard Layout

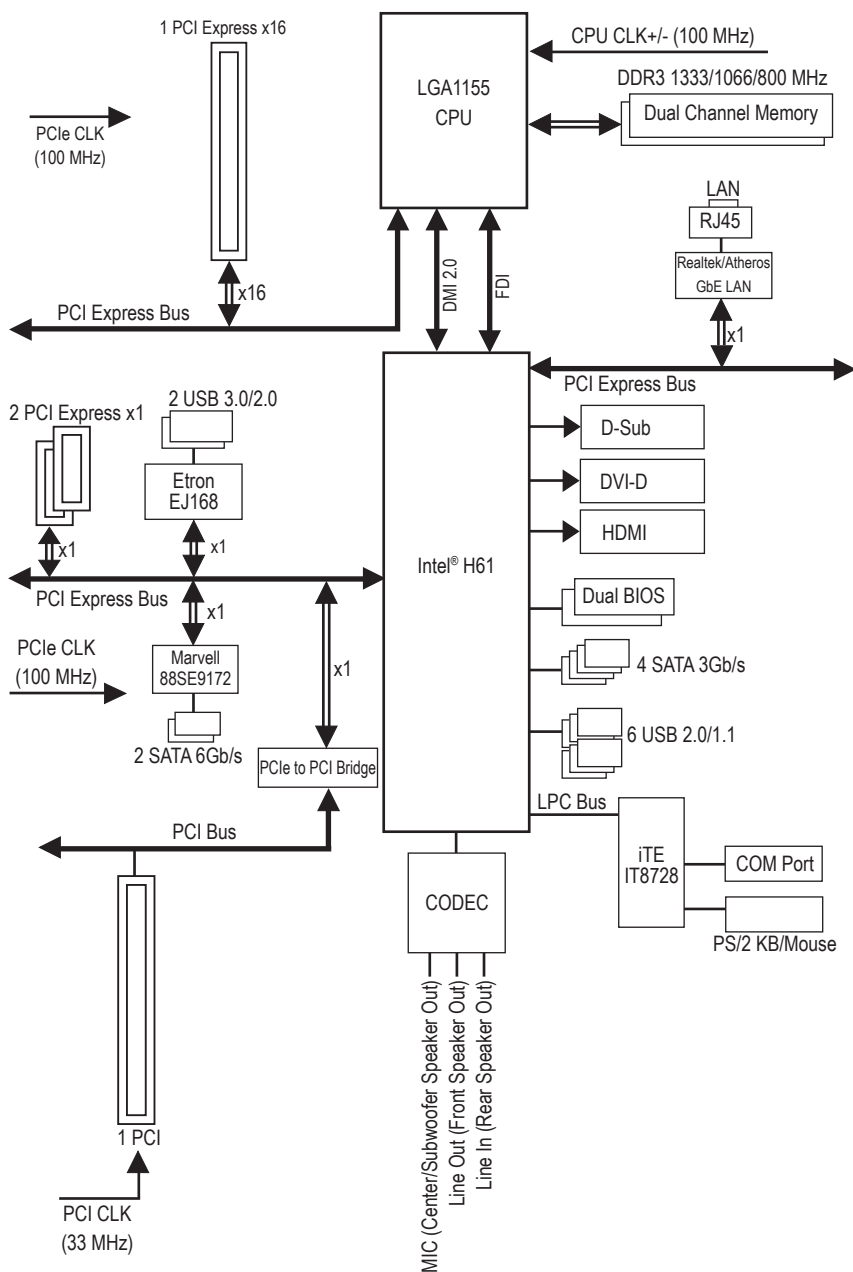


## Box Contents

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> GA-H61M-USB3-B3 motherboard | <input checked="" type="checkbox"/> Motherboard driver disk |
| <input checked="" type="checkbox"/> User's Manual               | <input checked="" type="checkbox"/> Two SATA cables         |
| <input checked="" type="checkbox"/> I/O Shield                  |   |

The box contents above are for reference only and the actual items shall depend on the product package you obtain.

# GA-H61M-USB3-B3 Motherboard Block Diagram













# 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 Intel® Core™ i7 processors/Intel® Core™ i5 processors/Intel® Core™ i3 processors/Intel® Pentium® processors/Intel® Celeron® processors in the LGA1155 package (Go to GIGABYTE's website for the latest CPU support list.)</li> <li>L3 cache varies with CPU</li> </ul>
 Chipset	<ul style="list-style-type: none"> <li>Intel® H61 Express Chipset</li> </ul>
 Memory	<ul style="list-style-type: none"> <li>2 x 1.5V DDR3 DIMM sockets supporting up to 16 GB of system memory <ul style="list-style-type: none"> <li>* Due to Windows 32-bit operating system limitation, when more than 4 GB of physical memory is installed, the actual memory size displayed will be less than 4 GB.</li> </ul> </li> <li>Dual channel memory architecture</li> <li>Support for DDR3 1333/1066/800 MHz memory modules</li> <li>Support for non-ECC 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 Graphics Processor: <ul style="list-style-type: none"> <li>1 x D-Sub port</li> <li>1 x DVI-D port, supporting a maximum resolution of 1920x1200 <ul style="list-style-type: none"> <li>* The DVI-D port does not support D-Sub connection by adapter.</li> </ul> </li> <li>1 x HDMI port, supporting a maximum resolution of 1920x1200</li> </ul> </li> </ul>
 Audio	<ul style="list-style-type: none"> <li>Realtek/VIA HD audio codec</li> <li>High Definition Audio</li> <li>2/4/5.1/7.1-channel</li> </ul>
 LAN	<ul style="list-style-type: none"> <li>1 x Realtek/Atheros GbE LAN chip (10/100/1000 Mbit)</li> </ul>
 Expansion Slots	<ul style="list-style-type: none"> <li>1 x PCI Express x16 slot, running at x16</li> <li>2 x PCI Express x1 slots (All PCI Express slots conform to PCI Express 2.0 standard.)</li> <li>1 x PCI slot</li> </ul>
 Storage Interface	<ul style="list-style-type: none"> <li>Chipset: <ul style="list-style-type: none"> <li>4 x SATA 3Gb/s connectors (SATA2 0~3) supporting up to 4 SATA 3Gb/s devices</li> </ul> </li> <li>Marvell 88SE9172 chip: <ul style="list-style-type: none"> <li>2 x SATA 6Gb/s connectors (GSATA3_0, GSATA3_1) supporting up to 2 SATA 6Gb/s devices</li> <li>Support for SATA RAID 0 and RAID 1</li> </ul> </li> </ul>
 USB	<ul style="list-style-type: none"> <li>Chipset: <ul style="list-style-type: none"> <li>Up to 6 USB 2.0/1.1 ports (2 on the back panel, 4 via the USB brackets connected to the internal USB headers)</li> </ul> </li> <li>Etron EJ168 chip: <ul style="list-style-type: none"> <li>Up to 2 USB 3.0/2.0 ports on the back panel</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>2 x SATA 6Gb/s connectors</li> <li>4 x SATA 3Gb/s connectors</li> </ul>

	Internal Connectors	<ul style="list-style-type: none"> <li>♦ 1 x CPU fan header</li> <li>♦ 1 x system fan header</li> <li>♦ 1 x front panel header</li> <li>♦ 1 x front panel audio header</li> <li>♦ 2 x USB 2.0/1.1 headers</li> <li>♦ 1 x serial port header</li> <li>♦ 1 x clearing CMOS jumper</li> </ul>
	Back Panel Connectors	<ul style="list-style-type: none"> <li>♦ 1 x PS/2 keyboard/mouse port</li> <li>♦ 1 x D-Sub port</li> <li>♦ 1 x DVI-D port</li> <li>♦ 1 x HDMI port</li> <li>♦ 2 x USB 2.0/1.1 ports</li> <li>♦ 2 x USB 3.0/2.0 ports</li> <li>♦ 1 x RJ-45 port</li> <li>♦ 3 x audio jacks (Line In/Line Out/Microphone)</li> </ul>
	I/O Controller	<ul style="list-style-type: none"> <li>♦ iTE IT8728 chip</li> </ul>
	Hardware Monitor	<ul style="list-style-type: none"> <li>♦ System voltage detection</li> <li>♦ CPU/System temperature detection</li> <li>♦ CPU/System fan speed detection</li> <li>♦ CPU overheating warning</li> <li>♦ CPU/System fan fail warning</li> <li>♦ CPU/System fan speed control <ul style="list-style-type: none"> <li>* Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.</li> </ul> </li> </ul>
	BIOS	<ul style="list-style-type: none"> <li>♦ 2 x 32 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 <ul style="list-style-type: none"> <li>* Available functions in EasyTune may differ by motherboard model.</li> </ul> </li> <li>♦ Support for Smart 6™</li> <li>♦ Support for Auto Green</li> <li>♦ Support for ON/OFF Charge</li> <li>♦ Support for Cloud OC</li> <li>♦ Support for 3TB+ Unlock</li> <li>♦ Support for TouchBIOS</li> <li>♦ Support for Q-Share</li> </ul>

 Bundled Software	♦ Norton Internet Security (OEM version)
 Operating System	♦ Support for Microsoft® Windows 7/Vista/XP
 Form Factor	♦ Micro ATX Form Factor; 24.4cm x 20.5cm

\* GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

## 1-3 Installing the CPU

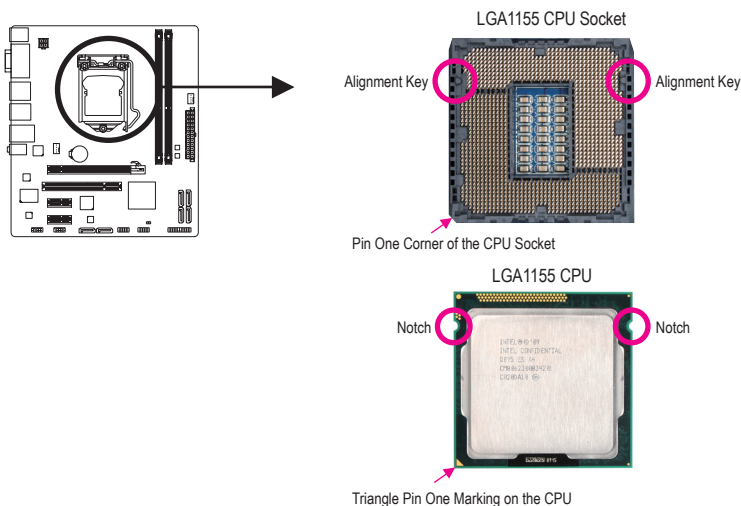


Read the following guidelines before you begin to install the CPU:

- 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.

### 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.

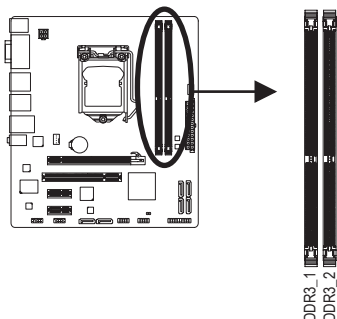
### Dual Channel Memory Configuration

This motherboard provides two DDR3 memory sockets and supports Dual Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth.

The two DDR3 memory sockets are divided into two channels and each channel has two memory sockets as following:

Channel 0: DDR3\_1

Channel 1: DDR3\_2



Due to CPU limitations, read the following guidelines before installing the memory in Dual Channel mode.

1. Dual Channel mode cannot be enabled if only one DDR3 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 for optimum performance.

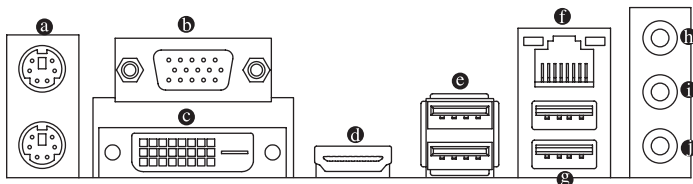
## 1-5 Installing an Expansion Card



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/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) 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.

### (c) DVI-D Port (Note)

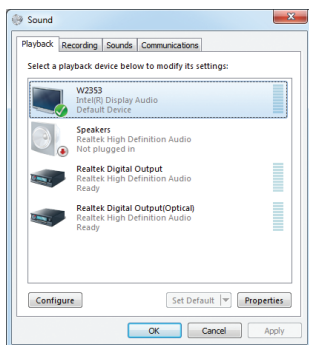
The DVI-D port conforms to the DVI-D specification and supports a maximum resolution of 1920x1200 (the actual resolutions supported depend on the monitor being used). Connect a monitor that supports DVI-D connection to this port.

### (d) HDMI Port

**HDMI**™ (High-Definition Multimedia Interface) is an all-digital audio/video interface capable of transmitting uncompressed audio/video signals. The HDMI port is HDCP compliant and supports Dolby TrueHD and DTS HD Master Audio formats. It also supports up to 192KHz/24bit 8-channel LPCM audio output. You can use this port to connect your HDMI-supported audio/video device. The maximum supported resolution is 1920x1200, but the actual resolutions supported are dependent on the monitor being used.



After installing the HDMI device, make sure to set the default sound playback device to HDMI. (The item name may differ depending on your operating system. Refer to the screenshot below.)



In Windows 7, select Start>Control Panel>Hardware and Sound>Sound>Playback, set **Intel(R) Display Audio** to the default playback device.

(Note) The DVI-D port does not support D-Sub connection by adapter.



Dual Display Configurations for the Onboard Graphics:

This motherboard provides three video output ports: D-Sub, DVI-D, and HDMI.  
Dual monitor configurations are supported in operating system environment only, but not during the BIOS Setup or POST process.

USB 3.0/2.0 Port


The USB 3.0 port supports the USB 3.0 specification and is compatible to 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.

RJ-45 LAN Port

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

Activity LED



LAN Port

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

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.

Line In Jack (Blue)

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

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 4/5.1/7.1-channel audio configuration.

Mic In Jack (Pink)

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

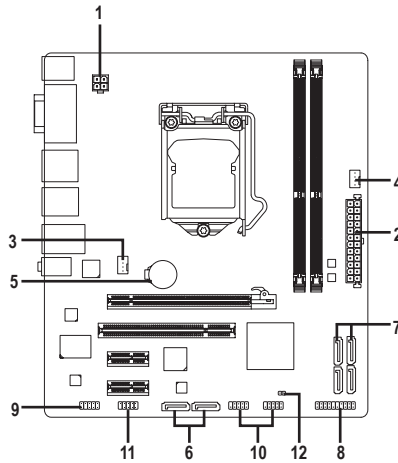


To configure 7.1-channel audio, you have to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.



- 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	7) SATA2 0/1/2/3
2) ATX	8) F_PANEL
3) CPU_FAN	9) F_AUDIO
4) SYS_FAN	10) F_USB1/F_USB2
5) BAT	11) COMA
6) GSATA3_0/1	12) CLR_CMOS




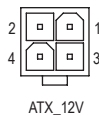
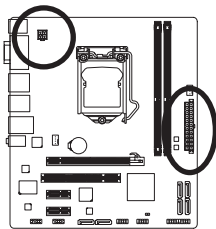
Read the following guidelines before connecting external devices:

- 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)

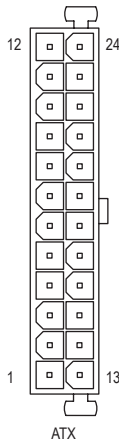
With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. 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

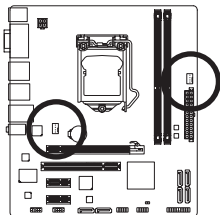


ATX:

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 4-pin (SYS\_FAN). 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.



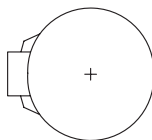
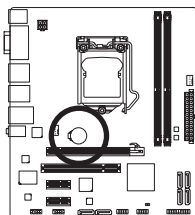
Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control



- 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) 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:

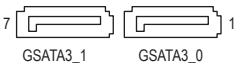
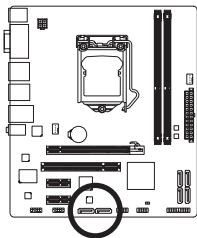
1. Turn off your computer and unplug the power cord.
2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.)
3. Replace the battery.
4.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

6) **GSATA3\_0/1 (SATA 6Gb/s Connectors, Controlled by Marvell 88SE9172 Chip)**

The SATA connector conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device. The Marvell 88SE9172 chip supports RAID 0 and RAID 1. Refer to Chapter 4, "Configuring SATA Hard Drive(s)," for instructions on configuring a RAID array.



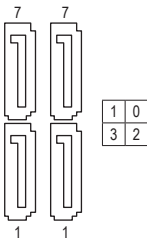
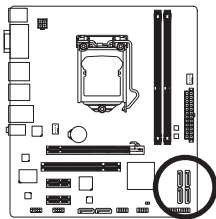
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



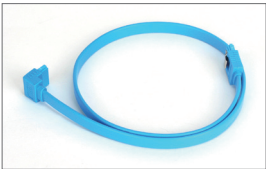
A RAID 0 or RAID 1 configuration requires two hard drives.

7) **SATA2\_0/1/2/3 (SATA 3Gb/s Connectors, Controlled by Intel H61 Chipset)**

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.



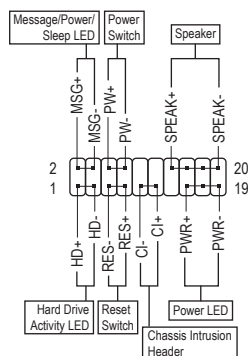
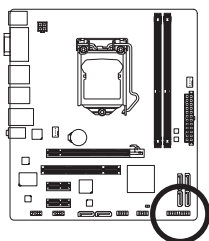
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



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

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

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



- **MSG/PWR** (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.

- **CI** (Chassis Intrusion Header):

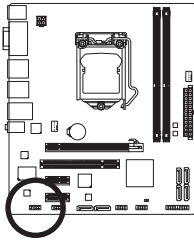
Connects to the chassis intrusion switch/sensor on the chassis that can detect if the chassis cover has been removed. This function requires a chassis with a chassis intrusion switch/sensor.



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.

## 9) 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:

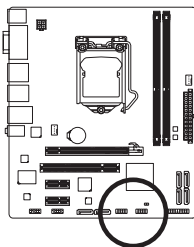
Pin No.	Definition
1	MIC
2	GND
3	MIC Power
4	NC
5	Line Out (R)
6	NC
7	NC
8	No Pin
9	Line Out (L)
10	NC



- 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.

## 10) 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.



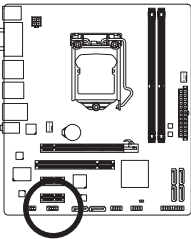
Pin No.	Definition
1	Power (5V)
2	Power (5V)
3	USB DX-
4	USB DY-
5	USB DX+
6	USB DY+
7	GND
8	GND
9	No Pin
10	NC



- Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB 2.0/1.1 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.

11) COMA (Serial Port Header)

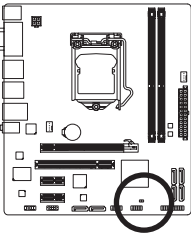
The COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.



Pin No.	Definition
1	NDCCD-
2	NSIN
3	NSOUT
4	NDTR-
5	GND
6	NDSR-
7	NRTS-
8	NCTS-
9	NRI-
10	No Pin

12) 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, 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 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).



## 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

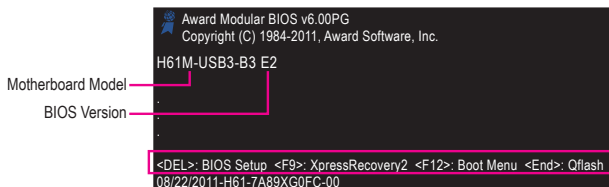
The following screens may appear when the computer boots.

#### A. The LOGO Screen (Default)



Function Keys

#### B. The POST Screen

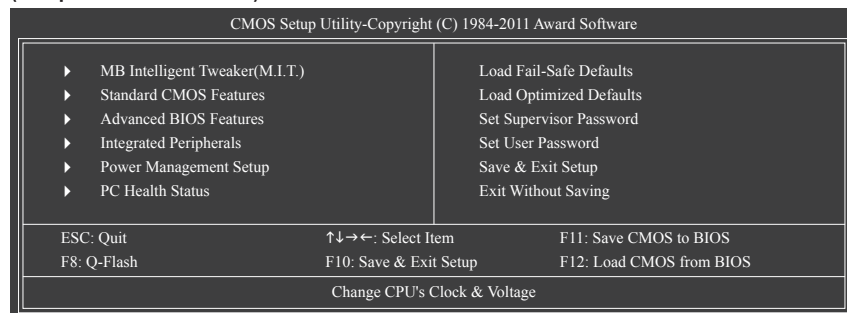


Function Keys

## 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: E2)



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

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software MB Intelligent Tweaker(M.I.T.)		
▶ M.I.T Current Status	[Press Enter]	Item Help
▶ Advanced Frequency Settings	[Press Enter]	Menu Level ▶
▶ Advanced Memory Settings	[Press Enter]	
▶ Advanced Voltage Settings	[Press Enter]	
▶ Miscellaneous Settings	[Press Enter]	
BIOS Version	E2	
BCLK	99.80 MHz	
CPU Frequency	3094.12 MHz	
Memory Frequency	1064.51 MHz	
Total Memory Size	1024 MB	
CPU Temperature	45°C	
Vcore	1.280V	
DRAM Voltage	1.512V	
↑↓→←: Move	Enter: Select	+/-/PU/PD: Value
F5: Previous Values	F6: Fail-Safe Defaults	F10: Save
		ESC: Exit
		F1: General Help
		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.)

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software MB Intelligent Tweaker(M.I.T.)		
▶ M.I.T Current Status	[Press Enter]	Item Help
▶ Advanced Frequency Settings	[Press Enter]	Menu Level ▶
▶ Advanced Memory Settings	[Press Enter]	
▶ Advanced Voltage Settings	[Press Enter]	
▶ Miscellaneous Settings	[Press Enter]	
BIOS Version	E2	
BCLK	99.80 MHz	
CPU Frequency	3094.12 MHz	
Memory Frequency	1064.51 MHz	
Total Memory Size	1024 MB	
CPU Temperature	45°C	
Vcore	1.280V	
DRAM Voltage	1.512V	
↑↓→←: Move	Enter: Select	+/-/PU/PD: Value
F5: Previous Values	F6: Fail-Safe Defaults	F10: Save
		ESC: Exit
		F1: General Help
		F7: Optimized Defaults

This section provides information on the BIOS version, CPU base clock, CPU frequency, memory frequency, total memory size , CPU temperature, Vcore, and memory voltage.

### ▶ M.I.T. Current Status

This screen provides information on CPU/memory frequencies/parameters.



### ☞ **Core Current Limit (Amps)**

Allows you to set a current limit for CPU Turbo mode. When the CPU current exceeds the specified current limit, the CPU will automatically reduce the core frequency in order to reduce the current.

**Auto** sets the current limit according to the CPU specifications. (Default: Auto)

### ☞ **CPU Cores Enabled** <sup>(Note)</sup>

Allows you to determine whether to enable all CPU cores.

- » All Enables all CPU cores. (Default)
- » 1 Enables only one CPU core.
- » 2 Enables only two CPU cores.
- » 3 Enables only three CPU cores.

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

Allows you to determine whether to enable multi-threading technology when using an Intel CPU that supports this function. This feature only works for operating systems that support multi-processor mode. (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. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

### ☞ **C3/C6 State Support** <sup>(Note)</sup>

Allows you to determine whether to let the CPU enter C3/C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C3/C6 state is a more enhanced power-saving state than C1. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

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

Enables or disables Intel CPU Thermal Monitor function, a CPU overheating protection function. When enabled, the CPU core frequency and voltage will be reduced when the CPU is overheated. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

### ☞ **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. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

### ☞ **Bi-Directional PROCHOT** <sup>(Note)</sup>

- » Auto Lets the BIOS automatically configure this setting. (Default)
- » Enabled When the CPU or chipset detects that an overheating is occurring, PROCHOT signals will be emitted to lower CPU performance to decrease heat production.
- » Disabled Only allows the CPU to detect whether an overheating is occurring to emit PROCHOT signals.

## >>>> **Standard Clock Control**

### ☞ **BCLK/DMI/PEG Clock Control**

Enables or disables the control of CPU base clock and DMI/PCIe bus frequency. **Enabled** will allow the **BCLK/DMI/PEG Frequency(0.1MHz)** 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)

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

### ☞ **BCLK/DMI/PEG Frequency(0.1MHz)**

Allows you to manually set the CPU base clock and DMI/PCIe bus frequency. The adjustable range is from 800 MHz to 2000 MHz. This item is configurable only when the **BCLK/DMI/PEG Clock Control** option is enabled.

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

Allows you to set the system memory multiplier. **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 **System Memory Multiplier** settings.

### ☞ **Internal Graphics Clock**

Allows you to set the onboard graphics clock. The adjustable range is from 400 MHz to 3000 MHz. (Default: Auto)

## ▶ **Advanced Memory Settings**

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software Advanced Memory Settings					
System Memory Multiplier (SPD) [Auto] 1333 Memory Frequency (Mhz) 1333 Performance Enhance [Turbo] DRAM Timing Selectable (SPD) [Auto] Profile DDR Voltage 1.5V Profile VTT Voltage 1.05V x Channel Interleaving Auto x Rank Interleaving Auto >>>>> Channel A ▶ Channel A Timing Settings [Press Enter] >>>>> Channel B ▶ Channel B Timing Settings [Press Enter]			Item Help		
			Menu Level ▶▶		
↑↓→←: Move Enter: Select		+/-/PU/PD: Value F10: Save		ESC: Exit F1: General Help	
F5: Previous Values		F6: Fail-Safe Defaults		F7: Optimized Defaults	

### ☞ **System Memory Multiplier (SPD), Memory Frequency(Mhz)**

The settings under the two items above are synchronous to those under the same items on the **Advanced Frequency Settings** menu.

### ☞ **Performance Enhance**

Allows the system to operate at three different performance levels.

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

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

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

### ☞ **DRAM Timing Selectable (SPD)**

**Quick** and **Expert** allows the **Channel Interleaving**, **Rank Interleaving**, **Channel A Timing Settings**, and **Channel B Timing Settings** items to be configurable. Options are: Auto (default), Quick, Expert.

### ☞ **Profile DDR Voltage**

Displays the memory voltage as **1.5V**.

### ☞ **Profile VTT Voltage**

The value displayed here is dependent on the CPU being used.

### ☞ Channel Interleaving

Enables or disables memory channel interleaving. **Enabled** allows the system to simultaneously access different channels of the memory to increase memory performance and stability. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

### ☞ Rank Interleaving

Enables or disables memory rank interleaving. **Enabled** allows the system to simultaneously access different ranks of the memory to increase memory performance and stability. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

## >>>> Channel A/B Timing Settings

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software					
Channel A Timing Settings					
>>>> Channel A Standard Timing Control				Item Help	
x	CAS Latency Time	8	Auto	Menu Level >>>	
x	tRCD	8	Auto		
x	tRP	8	Auto		
x	tRAS	20	Auto		
>>>> Channel A Advanced Timing Control					
x	tRC	27	Auto		
x	tRRD	4	Auto		
x	tWTR	4	Auto		
x	tWR	8	Auto		
x	tWTP	19	Auto		
x	tWL	7	Auto		
x	tRFC	60	Auto		
x	tRTP	4	Auto		
x	tFAW	16	Auto		
x	Command Rate (CMD)	1	Auto		
>>>> Channel A Misc Timing Control					
x	IO Latency	1	Auto		
x	Round Trip Latency	29	Auto		
↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help					
F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults					

## >>>> Channel A/B Standard Timing Control

### ☞ CAS Latency Time

Options are: Auto (default), 5~15.

### ☞ tRCD

Options are: Auto (default), 1~15.

### ☞ tRP

Options are: Auto (default), 1~15.

### ☞ tRAS

Options are: Auto (default), 1~40.

## >>>> Channel A/B Advanced Timing Control

### ☞ tRC

Options are: Auto (default), 1~63.

### ☞ tRRD

Options are: Auto (default), 1~15.

### ☞ tWTR

Options are: Auto (default), 1~15.

### ☞ tWR

Options are: Auto (default), 1~16.

### ☞ tWTP

Options are: Auto (default), 1~31.

- ☞ **tWL**  
Options are: Auto (default), 1~12
- ☞ **tRFC**  
Options are: Auto (default), 1~255.
- ☞ **tRTP**  
Options are: Auto (default), 1~15.
- ☞ **tFAW**  
Options are: Auto (default), 1~63.
- ☞ **Command Rate(CMD)**  
Options are: Auto (default), 1~3.
- >>>> **Channel A/B Misc Timing Control**
- ☞ **IO Latency**  
Options are: Auto (default), 1~31.
- ☞ **Round Trip Latency**  
Options are: Auto (default), 1~255.

## ▶ Advanced Voltage Settings

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software			
Advanced Voltage Settings			
***** Mother Board Voltage Control *****			Item Help
Voltage Types	Normal	Current	Menu Level ▶▶
>>> CPU			
Dynamic Vcore(DVID)	+0.000V	[Auto]	
QPI/Vtt Voltage	1.050V	[Auto]	
>>> DRAM			
DRAM Voltage	1.500V	[Auto]	
↑↓→←: Move    Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults			

- >>> **CPU**
- ☞ **Dynamic Vcore(DVID)**  
The default is **Auto**.
- ☞ **QPI/Vtt Voltage**  
The default is **Auto**.
- >>> **DRAM**
- ☞ **DRAM Voltage**  
The default is **Auto**.



## ► Miscellaneous Settings

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software					
Miscellaneous Settings					
Isochronous Support		[Enabled]		Item Help	
Virtualization Technology <sup>(Note)</sup>		[Enabled]		Menu Level ►►	
↑↓→←: Move		+/-/PU/PD: Value		ESC: Exit	
Enter: Select		F10: Save		F1: General Help	
F5: Previous Values		F6: Fail-Safe Defaults		F7: Optimized Defaults	

### ☞ Isochronous Support

Determines whether to enable specific streams within the CPU and Chipset. (Default: Enabled)

### ☞ 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)

## 2-4 Standard CMOS Features

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software		
Standard CMOS Features		
Date (mm:dd:yy)	Wed, Aug 24 2011	Item Help
Time (hh:mm:ss)	22:31:24	Menu Level ►
► IDE Channel 0 Master	[None]	
► IDE Channel 1 Master	[None]	
► IDE Channel 2 Master	[None]	
► IDE Channel 3 Master	[None]	
► IDE Channel 4 Master	[None]	
► IDE Channel 4 Slave	[None]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	1022M	
Total Memory	1024M	
↑↓→←: Move		ESC: Exit
Enter: Select		F1: General Help
F5: Previous Values		F7: Optimized Defaults
+/-/PU/PD: Value		F10: Save
F6: Fail-Safe Defaults		

### ☞ Date (mm:dd:yy)

Sets the system date.

### ☞ Time (hh:mm:ss)

Sets the system time.

### ☞ IDE Channel 0, 1 Master

►► IDE Channel 0, 1 Master

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

- None If no 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.
  - Auto Lets the BIOS automatically detect SATA devices during the POST. (Default)
  - Manual Allows you to manually enter the specifications of the hard drive when the hard drive access mode is set to **CHS**.
- Access Mode Sets the hard drive access mode. Options are: Auto (default), CHS, LBA, Large.

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

## ☞ IDE Channel 2, 3 Master, 4 Master/Slave

### » Extended IDE Drive

Configure your SATA devices by using one of the two methods below:

- Auto Lets the BIOS automatically detect SATA devices during the POST. (Default)
  - None If no 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.
- » Access Mode Sets the hard drive access mode. Options are: Auto (default), Large.

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.

## ☞ 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)

## ☞ Memory

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

## 2-5 Advanced BIOS Features

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software Advanced BIOS Features		
▶ Hard Disk Boot Priority	[Press Enter]	Item Help
Quick Boot	[Disabled]	Menu Level ▶
EFI CD/DVD Boot Option	[Auto]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[USB-FDD]	
Password Check	[Setup]	
HDD S.M.A.R.T. Capability	[Disabled]	
Limit CPUID Max. to 3 <sup>(Note)</sup>	[Disabled]	
No-Execute Memory Protect <sup>(Note)</sup>	[Enabled]	
Delay For HDD (Secs)	[0]	
Full Screen LOGO Show	[Enabled]	
Init Display First	[PCIe x16]	
Onboard VGA	[Enable If No Ext PEG]	
On-Chip Frame Buffer Size	[64MB+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

## ☞ Hard Disk Boot Priority

Specifies the sequence of loading the operating system from the installed hard drives. Use the up or down arrow key to select a hard drive, then press the plus key <+> (or <PageUp>) or the minus key <-> (or <PageDown>) to move it up or down on the list. Press <Esc> to exit this menu when finished.

## ☞ Quick Boot

Enables or disables the quick boot function to speed up the system boot-up process to shorten the waiting time for entering the operating system and to deliver greater efficiency for daily use. The settings here synchronize with the settings of the SMART QuickBoot of Smart 6™. (Default: Disabled)

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

### ☞ **EFI CD/DVD Boot Option**

Set this item to **EFI** if you want to install the operating system to a hard drive larger than 2.2 TB. Make sure the operating system to be installed supports booting from a GPT partition, such as Windows 7 64-bit and Windows Server 2003 64-bit. **Auto** lets the BIOS automatically configure this setting depending on the hard drive you install. (Default: Auto)

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

Specifies the boot order from the available devices. Use the up or down arrow key to select a device and press <Enter> to accept. Options are: Hard Disk, CDROM, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, Legacy LAN, Disabled.

### ☞ **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: Disabled)

### ☞ **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)

### ☞ **Delay For HDD (Secs)**

Allows you to set a delay time for the BIOS to initialize the hard drive as the system boots up. The adjustable range is from 0 to 15 seconds. (Default: 0)

### ☞ **Full Screen LOGO Show**

Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** displays normal POST message. (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.

➤ Onboard Sets the onboard graphics as the first display.

➤ PCIe x16 Sets the PCI Express graphics card on the PCIEX16 slot as the first display. (Default)

### ☞ **Onboard VGA**

Enables or disables the onboard graphics function.

➤ Enable If No Ext PEG

Activates the onboard graphics only when no PCI Express graphics card is installed. (Default)

➤ Always Enable

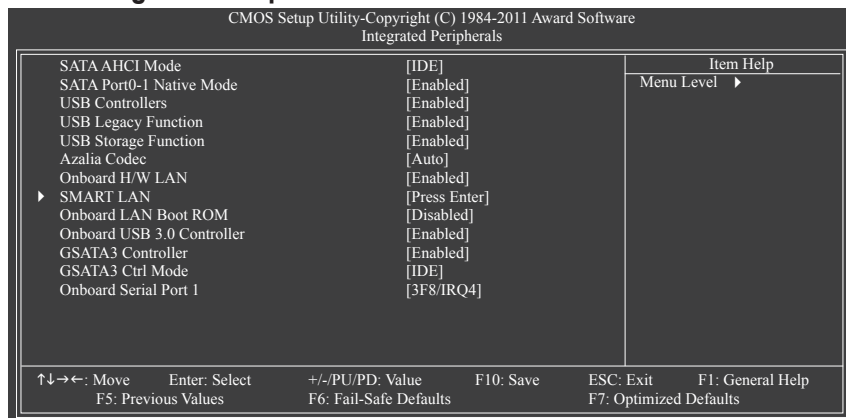
Always activates the onboard graphics, whether or not a PCI Express graphics card is installed. If you wish to set up a dual view configuration, set this item to **Always Enable**.

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

### ☞ 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:32MB+2MB for GTT~480MB+2MB for GTT. (Default: 64MB+2MB for GTT)

## 2-6 Integrated Peripherals



### ☞ SATA AHCI Mode (Intel H61 Chipset)

Allows you to decide whether to configure the SATA controller integrated in the Intel H61 Chipset to AHCI mode.

- ▶ IDE                      Configures the SATA controller to IDE mode. (Default)
- ▶ AHCI                    Configures the 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.

### ☞ SATA Port0-1 Native Mode (Intel H61 Chipset)

Specifies the operating mode of the integrated SATA controllers.

- ▶ Disabled                Allows the SATA controllers to operate in Legacy IDE mode.  
In Legacy mode the SATA controllers use dedicated IRQs that cannot be shared with other device. Set this option to **Disabled** if you wish to install operating systems that do not support Native mode.
- ▶ Enabled                Allows the SATA controllers to operate in Native IDE mode. Enable Native IDE mode if you wish to install operating systems that support Native mode. (Default)

### ☞ USB Controllers

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

**Disabled** will turn off all of the USB functionalities below.

### ☞ USB Legacy Function

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

### ☞ USB Storage Function

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. (Default: Auto)

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

### ☞ 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)

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software SMART LAN					
Start detecting at Port.....				Item Help	
Part1-2 Status = Open	/	Length =	0m	Menu Level ▶▶	
Part3-6 Status = Open	/	Length =	0m		
Part4-5 Status = Open	/	Length =	0m		
Part7-8 Status = Open	/	Length =	0m		
↑↓→←: Move	Enter: Select	+/-/PU/PD: Value	F10: Save	ESC: Exit	F1: General Help
F5: Previous Values		F6: Fail-Safe Defaults		F7: Optimized Defaults	

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 USB 3.0 Controller (Etron EJ168 USB Controller)

Enables or disables the Etron EJ168 USB controller. (Default: Enabled)

### ☞ GSATA3 Controller (Marvell 88SE9172 Chip, GSATA3\_0 and GSATA3\_1 Connectors)

Enables or disables the SATA controller integrated in the Marvell 88SE9172 chip. (Default: Enabled)

### ☞ GSATA3 Ctrl Mode (Marvell 88SE9172 Chip, GSATA3\_0 and GSATA3\_1 Connectors)

Enables or disables RAID for the SATA controller integrated in the Marvell 88SE9172 chip or configures the SATA controller to AHCI mode.

- ▶▶ IDE Disables RAID for the SATA controllers and configures the SATA controllers to IDE mode. (Default)
- ▶▶ RAID Enables RAID for the SATA controllers.
- ▶▶ AHCI Configures the SATA controllers 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.

### ☞ 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.



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

Allows you to select the HPET mode for your Windows 7/Vista operating system. Select **32-bit mode** when you install 32-bit Windows 7/Vista; select **64-bit mode** when you install 64-bit Windows 7/Vista. This item is configurable only when 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: To cancel the password, press <Enter> on this item. When prompted for the password, press <Enter> again without entering the password to clear the password settings.

#### ☞ **AC Back Function**

Determines the state of the system after the return of power from an AC power loss.

▶▶ Soft-Off The system stays off upon the return of the AC power. (Default)

▶▶ Full-On The system is turned on upon the return of the AC power.

▶▶ Memory The system returns to its last known awake state upon the return of the AC power.

#### ☞ **ErP Support**

Determines whether to let the system consume less than 1W power in S5 (shutdown) state. (Default: Disabled)

Note: When this item is set to Enabled, the following four functions will become unavailable:

PME event wake up, power on by mouse, power on by keyboard, and wake on LAN.

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

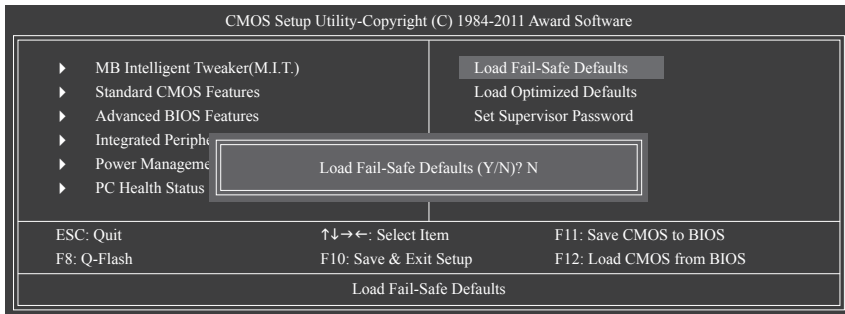




## Slope PWM

Allows you to control the CPU fan speed. This item is configurable only when **CPU Smart FAN Control** is set to **Manual**. Options are: 0.75 PWM value /°C ~ 2.50 PWM value /°C.

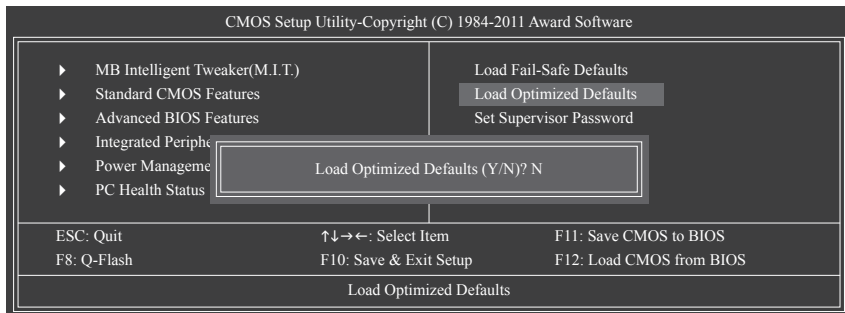
## 2-9 Load Fail-Safe Defaults



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.

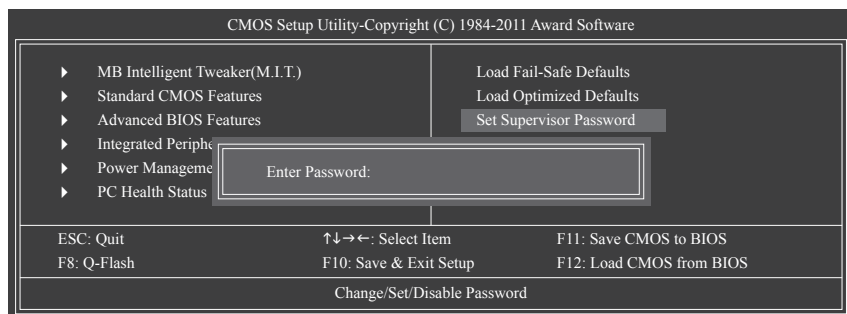
## 2-10 Load Optimized Defaults



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.

## 2-11 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.

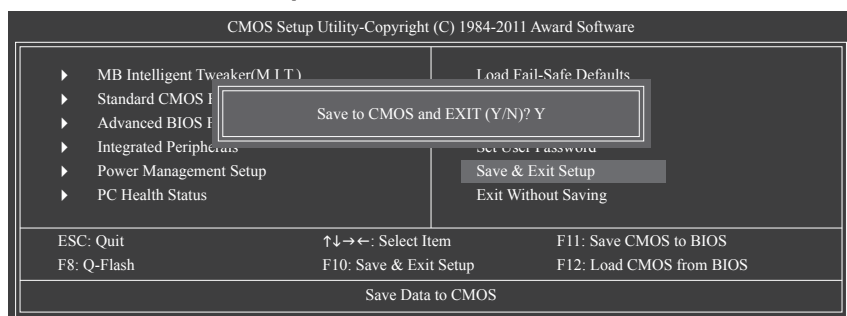
When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup and when entering BIOS Setup.

### 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.

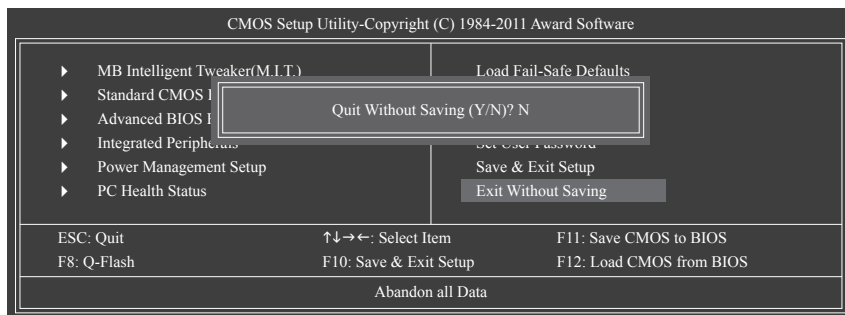
To clear the password, press <Enter> on the password item and when requested for the password, press <Enter> again. The message "PASSWORD DISABLED" will appear, indicating the password has been cancelled.

## 2-12 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.

## 2-13 Exit Without Saving



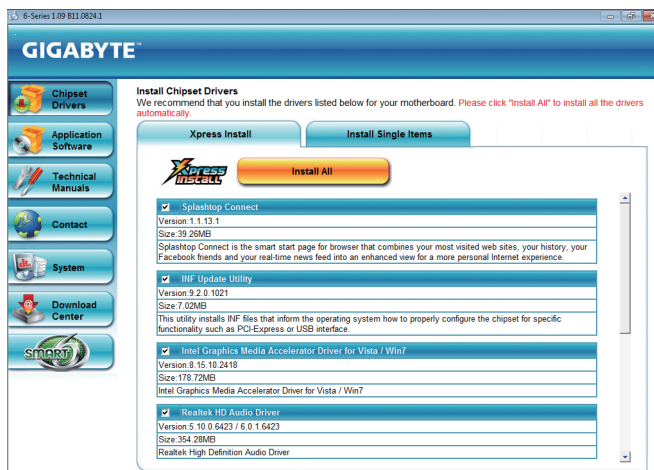
Press <Enter> on this item and press the <Y> key. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Press <N> or <Esc> to return to the BIOS Setup Main Menu.

## 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.)

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.



## Chapter 4 Appendix

### 4-1 Configuring SATA Hard Drive(s)

#### Before you begin

Please prepare:

- At least 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, you may prepare only one hard drive.
- Windows 7/Vista/XP setup disk.
- Motherboard driver disk.
- A USB floppy disk drive (needed during Windows XP installation)
- An empty formatted floppy disk (needed during Windows XP installation)

#### Configuring the Onboard SATA Controller

##### A. 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 port on the motherboard. Then connect the power connector from your power supply to the hard drive.

##### B. Configuring SATA controller mode in BIOS Setup

Make sure to configure the SATA controller mode correctly in system BIOS Setup. For the BIOS Setup menus, refer to Chapter 2, "BIOS Setup," "Integrated Peripherals."

Steps:

1. Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). In BIOS Setup, go to **Integrated Peripherals**. To enable RAID, set **GSATA3 Controller** to **Enabled** and set **GSATA3 Ctrl Mode** to **RAID**.
2. Save changes and exit BIOS Setup.



The BIOS Setup menus described in this section may differ from 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.

##### C. Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. After the POST memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue". Press <Ctrl> + <M> to enter the RAID setup utility. On the main screen of the RAID setup utility, use the left or right arrow key to move through tabs. Press <Enter> on the **RAID** tab. Then the **RAID Config** menu appears. Press <Enter> on the **Create VD** item. In the following procedure, we'll create RAID 0 as an example.

Steps:

1. The next screen displays the two hard drives you installed. Press <Enter> or <Space> on the two hard drives respectively to add them into the RAID array. Selected hard drives are marked with an asterisk. Then press <Enter> on **NEXT**.
2. On the **Create VD** menu, use the up or down arrow key to move the selection bar to select an item and press <Enter> to display options. Set the required items in sequence and press the down arrow key to proceed to the next item.

Sequence:

- a. **RAID Level:** Select a RAID level. Options include RAID 0 (Stripe) and RAID 1 (Mirror).

- b. **Stripe Size:** Select the stripe block size. Options include 32 KB, 64 KB, and 128 KB.
  - c. **Quick Init:** Select whether to quickly erase old data on the hard drives when creating the array.
  - d. **Cache Mode:** Select write-back or write-through cache.
  - e. **VD Name:** Enter an array name with 1~10 letters (letters cannot be special characters).
3. After completing the settings above, move to **NEXT** and press <Enter> to begin creating the array. When prompted to confirm, press <Y> to confirm or <N> to cancel.
  4. When completed, the **RAID** tab will display the new array.

To exit the RAID BIOS utility, press <Esc> on the main screen and press <Y> to confirm.  
Now, you can proceed to install the operating system.

## Making a SATA RAID/AHCI Driver Diskette

Before installing Windows XP, connect a USB floppy disk drive to your computer first because you need to install the SATA RAID/AHCI driver from a floppy disk that contains the driver during the OS installation. For the RAID mode, copy all files in the **\BootDrv\Marvell\RAID\Floppy32** folder to your floppy disk. To install Windows 64-Bit, copy the files in the **Floppy64** folder. For AHCI mode, depending on whether you want to install the 32- or 64-bit version, copy the files in the **AHCI\Floppy32** or **AHCI\Floppy64** folder.

## Installing the SATA RAID/AHCI Driver and Operating System

### A. Installing Windows XP

Restart your system to boot from the Windows XP setup disk and press <F6> as soon as you see the message "Press F6 if you need to install a 3rd party SCSI or RAID driver." Insert the floppy disk containing the SATA RAID/AHCI driver. Follow the on-screen instructions to install the driver that suits your operating system. When completed, proceed with the Windows XP installation.

### B. Installing Windows 7/Vista

Restart your system to boot from the Windows 7/Vista setup disk and perform standard OS installation steps. Select **Load Driver**. Insert the motherboard driver disk and then browse to the location of the driver. Then follow the on-screen instructions to load the driver. The locations of the drivers for Windows 7 are as follows:

RAID driver for Windows 32-bit: **\BootDrv\Marvell\RAID\i386**

RAID driver for Windows 64-bit: **\BootDrv\Marvell\RAID\amd64**

AHCI driver for Windows 32-bit: **\BootDrv\Marvell\AHCI\Floppy32**

AHCI driver for Windows 64-bit: **\BootDrv\Marvell\AHCI\Floppy64**

After loading the driver, continue the OS installation.

## 4-2 Regulatory Statements

### Regulatory Notices

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### 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.

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## Contact Us

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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:

<http://ggts.gigabyte.com.tw>

Then select your language to enter the system.