

# GA-78LMT-S2 R2

## User's Manual

Rev. 1001



For more product details, please visit GIGABYTE's website.



To reduce the impacts on global warming, the packaging materials of this product are recyclable and reusable. GIGABYTE works with you to protect the environment.

### Declaration of Conformity

We, Manufacturer/Importer,

G.B.T. Technology Trading GmbH

Address: **Bullenkoppel 16, 22047 Hamburg, Germany**

Declare that the product

Product Type: **Motherboard**

Product Name: **GA-78LMT-S2 R2**

conforms with the essential requirements of the following directives:

**EMC Directive 2014/30/EU:**

- |  |                           |
|--|---------------------------|
| <input checked="" type="checkbox"/> Conduction & Radiated Emissions: | EN 55022:2010/AC2011      |
| <input checked="" type="checkbox"/> Immunity:                        | EN 55024:2010             |
| <input checked="" type="checkbox"/> Power-line harmonics:            | EN 61000-3-2:2006+A2:2009 |
| <input checked="" type="checkbox"/> Power-line flicker:              | EN 61000-3-3:2013         |

**Low Voltage Directive 2014/35/EU:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Safety: | EN60950-1:2006+A11:2009+A12:2011+A2:2013 |
|---|--|

**RoHS Directive 2011/65/EU**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Restriction of use of certain substances in electronic equipment: | This product does not contain any of the restricted substances listed in Annex II, in concentrations and applications banned by the directive. |
|---|--|

**CE marking**



Signature: Timmy Huang

(stamp)

Date: Sept 20, 2017

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: **(626) 854-9338/ (626) 854-9326**

hereby declares that the product

**Product Name: Motherboard**

**Model Number: GA-78LMT-S2 R2**

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: Sept. 20, 2017

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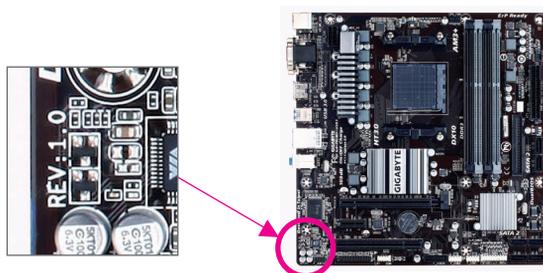
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- In order to assist in the use of this product, carefully read the User's Manual.
- For product-related information, check on our website at: <http://www.gigabyte.com>

## 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.

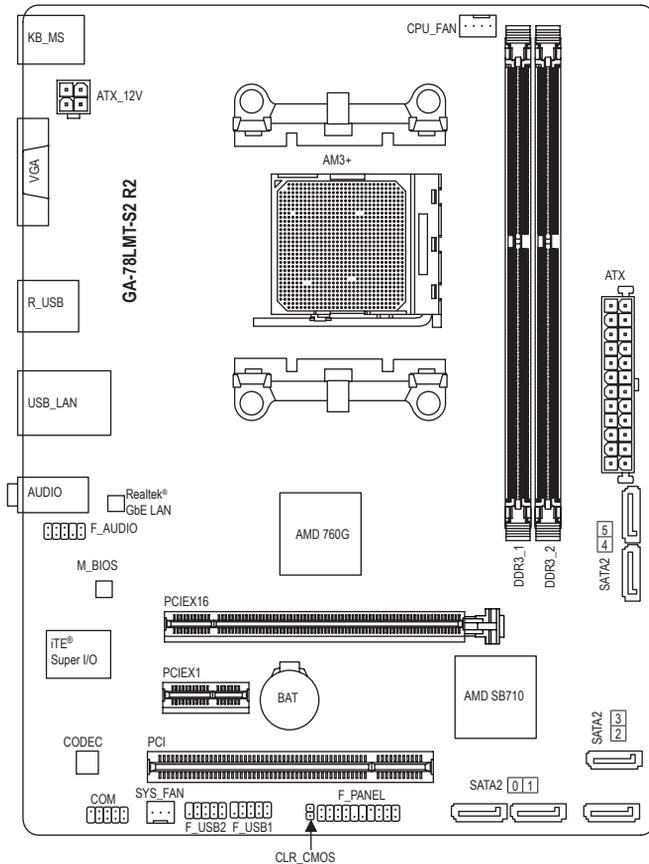
Example:



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# GA-78LMT-S2 R2 Motherboard Layout



## Box Contents

- GA-78LMT-S2 R2 motherboard
- Motherboard driver disk
- User's Manual
- 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.

# 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, make sure the chassis is suitable for the motherboard.
- 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 connecting or 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 or wet 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.
- If you use an adapter, extension power cable, or power strip, ensure to consult with its installation and/or grounding instructions.

## 1-2 Product Specifications

 CPU	<ul style="list-style-type: none"> <li>◆ AM3+ Socket:               <ul style="list-style-type: none"> <li>- AMD AM3+ processor</li> <li>- AMD AM3 Phenom™ II processor/ AMD Athlon™ II processor</li> </ul>               (Go to GIGABYTE's website for the latest CPU support list.)             </li> </ul>
 HyperTransport Bus	<ul style="list-style-type: none"> <li>◆ HyperTransport™ 3.0</li> <li>◆ Support for up to 5200 MT/s</li> </ul>
 Chipset	<ul style="list-style-type: none"> <li>◆ North Bridge: AMD 760G</li> <li>◆ South Bridge: AMD SB710</li> </ul>
 Memory	<ul style="list-style-type: none"> <li>◆ 2 x DDR3 DIMM sockets supporting up to 16 GB of system memory               <ul style="list-style-type: none"> <li>* Due to a 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 the size of the physical memory installed.</li> </ul> </li> <li>◆ Dual channel memory architecture</li> <li>◆ Support for DDR3 1333+ (O.C.)/1066 MHz memory modules (Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)</li> </ul>
 Onboard Graphics	<p>North Bridge:</p> <ul style="list-style-type: none"> <li>- 1 x D-Sub port, supporting a maximum resolution of 1920x1200</li> </ul>
 Audio	<ul style="list-style-type: none"> <li>◆ Realtek® ALC887 codec</li> <li>◆ High Definition Audio</li> <li>◆ 2/4/5.1/7.1-channel               <ul style="list-style-type: none"> <li>* 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.</li> </ul> </li> </ul>
 LAN	<ul style="list-style-type: none"> <li>◆ Realtek® 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>◆ 1 x PCI Express x1 slot</li> </ul> <p>(All of the PCI Express slots conform to PCI Express 2.0 standard.)</p> <ul style="list-style-type: none"> <li>◆ 1 x PCI slot</li> </ul>
 Storage Interface	<ul style="list-style-type: none"> <li>◆ South Bridge:               <ul style="list-style-type: none"> <li>- 6 x SATA 3Gb/s connectors</li> <li>- Support for RAID 0, RAID 1, RAID 10, and JBOD</li> </ul> </li> </ul>
 USB	<ul style="list-style-type: none"> <li>◆ Chipset:               <ul style="list-style-type: none"> <li>- 8 x USB 2.0/1.1 ports (4 ports on the back panel, 4 ports available through 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>◆ 6 x SATA 3Gb/s connectors</li> <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 Clear CMOS jumper</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 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, Mic In)</li> </ul>
 I/O Controller	<ul style="list-style-type: none"> <li>◆ iTE® I/O Controller 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 fan speed control function is supported will depend on the cooler you install.</li> </ul> </li> </ul>
 BIOS	<ul style="list-style-type: none"> <li>◆ 1 x 32 Mbit flash</li> <li>◆ Use of licensed AWARD BIOS</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 Auto Green</li> <li>◆ Support for Download Center</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 ON/OFF Charge</li> <li>◆ Support for Q-Flash</li> <li>◆ Support for Smart Recovery2</li> <li>◆ Support for Xpress BIOS Rescue</li> <li>◆ Support for Xpress Install</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 Windows 7/XP</li> </ul>
 Form Factor	<ul style="list-style-type: none"> <li>◆ Micro ATX Form Factor; 24.4cm x 18.8cm</li> </ul>

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



Please visit GIGABYTE's website for support lists of CPU, memory modules, and SSDs.



Please visit the **SupportUtility List** page on GIGABYTE's website to download the latest version of apps.

## 1-3 Installing the CPU



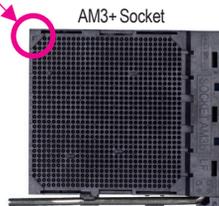
Read the following guidelines before you begin to install the CPU:

- 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.
- 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

Locate the pin one (denoted by a small triangle) of the CPU socket and the CPU.

A Small Triangle  
Marking Denotes Pin  
One of the Socket



A Small Triangle  
Marking Denotes CPU  
Pin One



## 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 one memory socket 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.

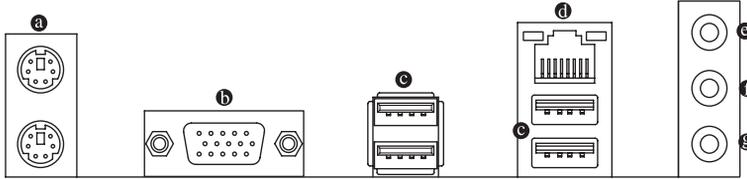
## 1-5 Installing an Expansion Card



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 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 D-Sub Port

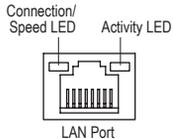
The D-Sub port supports a 15-pin D-Sub connector and supports a maximum resolution of 1920x1200 (the actual resolutions supported depend on the monitor being used). Connect a monitor that supports D-Sub connection to this port.

### c USB 2.0/1.1 Port

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

### d 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:

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

### e Line In (Blue)

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

### f Line Out (Green)

The 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.

### g Mic In (Pink)

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

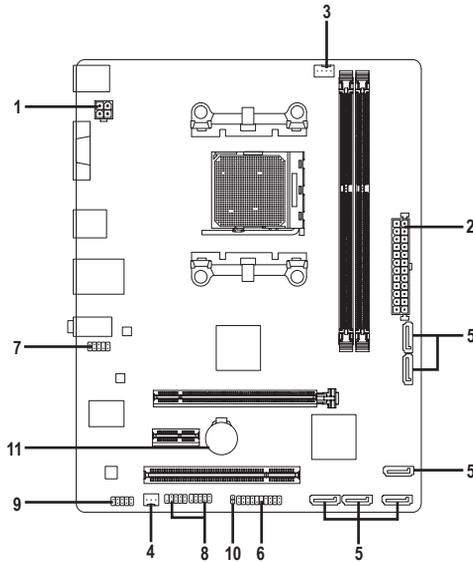


To configure 7.1-channel audio, you have to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.



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



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.

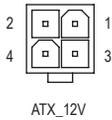
### 1/2) ATX\_12V/ATX (2x2 12V Power Connector and 2x12 Main Power Connector)

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.

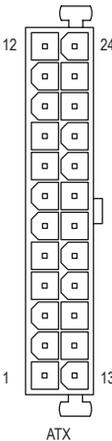


To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.



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	NC
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 system fan header (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 speed control function requires the use of a 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
3	Sense
4	Speed Control



SYS\_FAN:

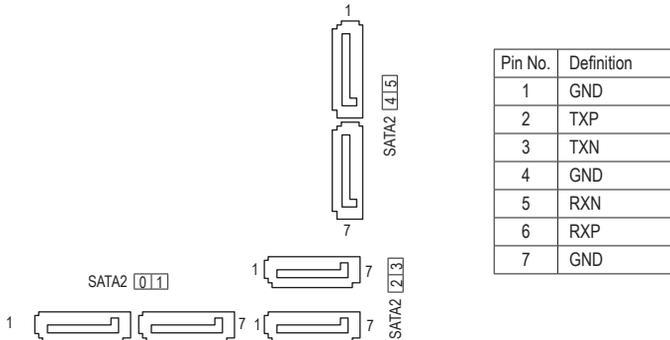
Pin No.	Definition
1	GND
2	+12V
3	Sense



- 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) SATA2 0/1/2/3/4/5 (SATA 3Gb/s Connectors)

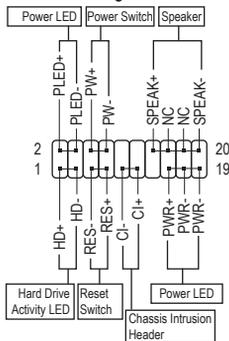
The SATA connectors conform to SATA 3Gb/s standard and are compatible with SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device. The AMD controller supports RAID 0, RAID 1, RAID 10, and JBOD. Refer to Chapter 3, "Configuring a RAID Set," for instructions on configuring a RAID array.



 To enable hot-plugging for the SATA ports, refer to Chapter 2, "BIOS Setup," "Integrated Peripherals\ OnChip SATA Port as ESP," for more information.

## 6) 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.



- PLED/PWR Power LED:** 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," 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.
- 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.

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

The front panel audio header supports 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	Sense
7	FAUDIO_JD
8	No Pin
9	LINE2_L
10	Sense

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.

## 8) F\_USB1/F\_USB2 (USB 2.0/1.1 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	Pin No.	Definition
1	Power (5V)	6	USB DY+
2	Power (5V)	7	GND
3	USB DX-	8	GND
4	USB DY-	9	No Pin
5	USB DX+	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.

## 9) COM (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	Pin No.	Definition
1	NCCD-	6	NDSR-
2	NSIN	7	NRTS-
3	NSOUT	8	NCTS-
4	NDTR-	9	NRI-
5	GND	10	No Pin

## 10) CLR\_CMOS (Clear CMOS Jumper)

Use this jumper to clear the BIOS configuration 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).

## 11) 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. Damage to your devices may occur 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.

# Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features.

When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on. 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.

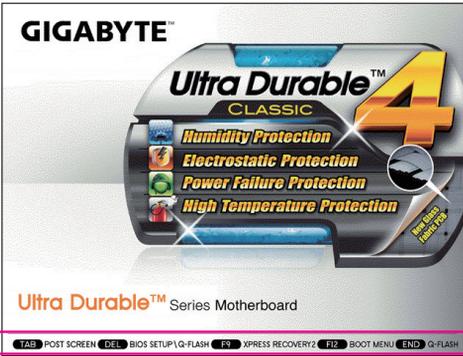


- Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the 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/clear CMOS jumper in Chapter 1 for how to clear the CMOS values.)

## 2-1 Startup Screen

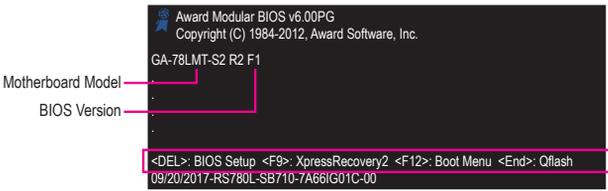
The following screens may appear when the computer boots.

### A. The LOGO Screen (Default)



Function Keys

### B. The POST Screen

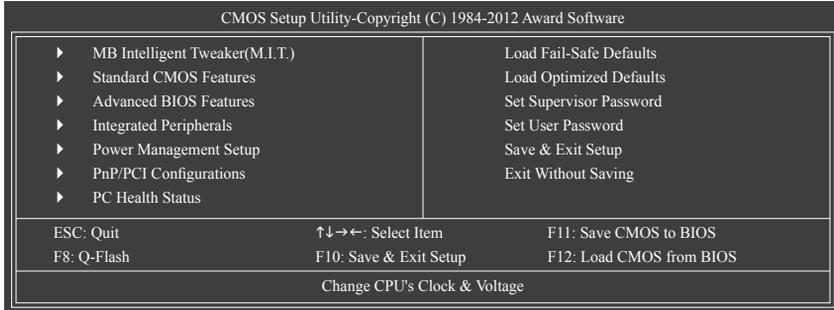


Function Keys

## 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: F1c)



- 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)

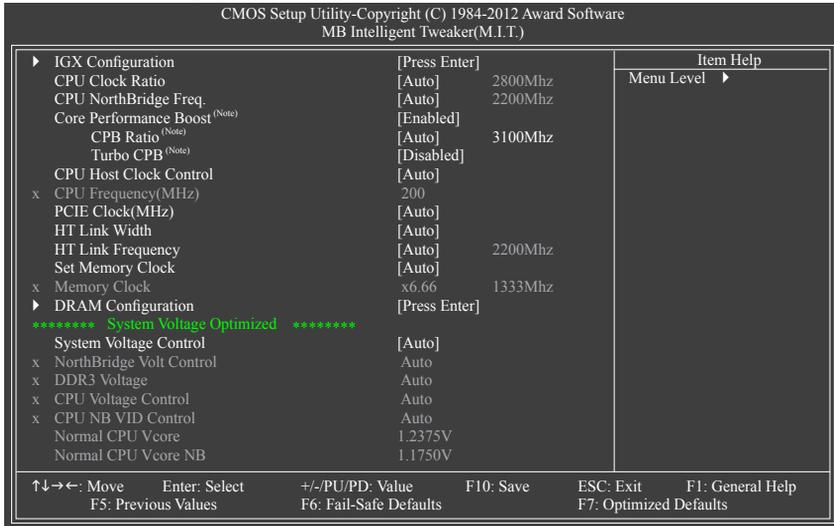
#### ▶ F11: Save CMOS to BIOS

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 and then press <Enter> to complete.

## 2-3 MB Intelligent Tweaker(M.I.T.)



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.)

### ▶ IGX Configuration

#### ☞ Internal Graphics Mode

Allows you to determine whether to allocate system memory for the onboard graphics controller.

- ▶ Disabled      Disables the onboard graphics controller.
- ▶ UMA            Allocates memory for the onboard graphics controller from the system memory. (Default)

#### ☞ UMA 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: Auto (default), 128MB, 256MB, 512MB, 1024MB.

#### ☞ Surround View

Enables or disables the Surround View function. This option is configurable only when **Init Display First** under **Advanced BIOS Features** is set to **PEG** and an AMD graphics card is installed. (Default: Disabled)

#### ☞ VGA Core Clock control

Allows you to determine whether to manually set the VGA Core clock. (Default: Auto)

#### ☞ VGA Core Clock(MHz)

Allows you to set the onboard graphics clock. The adjustable range is from 200 MHz to 2000 MHz. This item is configurable only if the **VGA Core Clock control** option is set to **Manual**.

(Note) This item is present only when you install a CPU that supports this feature.

- ☞ **CPU Clock Ratio**  
Allows you to alter the clock ratio for the installed CPU. The adjustable range is dependent on the CPU being installed.
- ☞ **CPU NorthBridge Freq.**  
Allows you to alter the North Bridge controller frequency for the installed CPU. The adjustable range is dependent on the CPU being installed.
- ☞ **Core Performance Boost** <sup>(Note)</sup>  
Allows you to determine whether to enable the Core Performance Boost (CPB) technology, a CPU performance-boost technology. (Default: Enabled)
- ☞ **CPB Ratio** <sup>(Note)</sup>  
Allows you alter the ratio for the CPB. The adjustable range is dependent on the CPU being installed. (Default: Auto)
- ☞ **Turbo CPB** <sup>(Note)</sup>  
Allows you to determine whether to improve CPU performance. (Default: Disabled)
- ☞ **CPU Host Clock Control**  
Enables or disables the control of CPU host clock. Auto (default) allows the BIOS to automatically adjust the CPU host frequency. Manual allows the CPU Frequency (MHz) 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: Auto)
- ☞ **CPU Frequency(MHz)**  
Allows you to manually set the CPU host frequency. The adjustable range is from 200 MHz to 500 MHz. This option is configurable only when **CPU Host Clock Control** is set to **Manual**.  
**Important:** It is highly recommended that the CPU frequency be set in accordance with the CPU specifications.
- ☞ **PCIe Clock(MHz)**  
Allows you to manually set the PCIe clock frequency. The adjustable range is from 100 MHz to 150 MHz. **Auto** sets the PCIe clock frequency to standard 100 MHz. (Default: Auto)
- ☞ **HT Link Width**  
Allows you to manually set the width for the HT Link between the CPU and chipset.

  - ☞ Auto BIOS will automatically adjust the HT Link Width. (Default)
  - ☞ 8 bit Sets HT Link Width to 8 bit.
  - ☞ 16 bit Sets HT Link Width to 16 bit.
- ☞ **HT Link Frequency**  
Allows you to manually set the frequency for the HT Link between the CPU and chipset.

  - ☞ Auto BIOS will automatically adjust the HT Link Frequency. (Default)
  - ☞ x1~x10 Sets HT Link Frequency to x1~x10 (200 MHz~2.0 GHz).
- ☞ **Set Memory Clock**  
Determines whether to manually set the memory clock. **Manual** allows the memory clock control item below to be configurable.

  - ☞ Auto Auto lets BIOS automatically set the memory clock as required. (Default)
  - ☞ Manual allows the memory clock control item below to be configurable.
- ☞ **Memory Clock**  
This option is configurable only when **Set Memory Clock** is set to **Manual**. Options are: X4.00, X5.33, X6.66, X8.00.

(Note) This item is present only when you install a CPU that supports this feature.

## ▶ DRAM Configuration

### ☞ DCTs Mode

Allows you to set memory control mode.

- ▶ Ganged      Sets memory control mode to single dual-channel.
- ▶ Unganged    Sets memory control mode to two single-channel. (Default)

### ☞ DDR3 Timing Items

**Manual** allows all DRAM timing control items below to be configurable.

Options are: Auto (default), Manual.

### ☞ 1T/2T Command Timing

Options are: Auto (default), 1T, 2T.

### ☞ CAS# latency

Options are: Auto (default), 4T~12T.

### ☞ RAS to CAS R/W Delay

Options are: Auto (default), 5T~12T.

### ☞ Row Precharge Time

Options are: Auto (default), 5T~12T.

### ☞ Minimum RAS Active Time

Options are: Auto (default), 15T~30T.

### ☞ TwTr Command Delay

Options are: Auto (default), 4T~7T.

### ☞ Trfc0 for DIMM1, DIMM3

Options are: Auto (default), 90ns, 110ns, 160ns, 300ns, 350ns.

### ☞ Trfc1 for DIMM2, DIMM4

Options are: Auto (default), 90ns, 110ns, 160ns, 300ns, 350ns.

### ☞ Write Recovery Time

Options are: Auto (default), 5T~8T, 10T, 12T.

### ☞ Precharge Time

Options are: Auto (default), 4T~7T.

### ☞ Row Cycle Time

Options are: Auto (default), 11T~42T.

### ☞ RAS to RAS Delay

Options are: Auto (default), 4T~7T.

### ☞ 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. (Default: Enabled)

### ☞ 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. (Default: Enabled)

### ☞ DQS Training Control

Enables or disables memory DQS training each time the system restarts. (Default: Skip DQS)

### ☞ Memclock tri-stating

Determines whether to enable memory clock tri-stating in CPU C3 or Alt VID mode. (Default: Disabled)

\*\*\*\*\* System Voltage Optimized \*\*\*\*\*

☞ **System Voltage Control**

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

☞ **DDR3 Voltage**

Allows you to set memory voltage.

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

▶▶ 1.500V ~ 1.900V The adjustable range is from 1.500V to 1.900V.

Note: Increasing memory voltage may result in damage to the memory or reduce the useful life of the memory.

☞ **CPU Voltage Control**

Allows you to set the CPU voltage. **Auto** 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.

☞ **CPU NB VID Control**

Allows you to set the CPU North Bridge VID voltage. **Auto** sets the CPU North Bridge VID 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.

☞ **Normal CPU Vcore NB**

Displays the normal operating voltage of your CPU North Bridge.

## 2-4 Standard CMOS Features

CMOS Setup Utility-Copyright (C) 1984-2012 Award Software  
Standard CMOS Features

Date (mm:dd:yy)	Mon, Oct 2 2017	Item Help
Time (hh:mm:ss)	3:10:24 PM	Menu Level ▶
▶ IDE Channel 0 Master	[None]	
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master	[None]	
▶ IDE Channel 1 Slave	[None]	
▶ IDE Channel 2 Master	[None]	
▶ IDE Channel 2 Slave	[None]	
Halt On	[All, But Keyboard]	
Base Memory	640K	
Extended Memory	766M	

↑↓→←: 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, 1, 2 Master/Slave

☛ IDE Channel 0, 1, 2 Master/Slave; Extended IDE Drive

Options are:

- 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.
  - Auto Lets the BIOS automatically detect IDE/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.
- ☛ Capacity Approximate capacity of the currently installed hard drive.

## ☞ 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) 1984-2012 Award Software  
Advanced BIOS Features

		Item Help
▶ IGX Configuration	[Press Enter]	
Load Line Control	[Auto]	Menu Level ▶
AMD C1E Support	[Disabled]	
AMD C6 Support <small>(Note)</small>	[Enabled]	
Virtualization	[Disabled]	
AMD K8 Cool&Quiet control	[Auto]	
AMD APM Master Mode <small>(Note)</small>	[Auto]	
CPU core Control <small>(Note)</small>	[Auto]	
x One Core Per Compute Unit <small>(Note)</small>	Disabled	
x CPU core 1-2 <small>(Note)</small>	Enabled	
x CPU core 3-4 <small>(Note)</small>	Enabled	
▶ Hard Disk Boot Priority	[Press Enter]	
EFI CD/DVD Boot Option	[Auto]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[USB-HDD]	
Password Check	[Setup]	
HDD S.M.A.R.T. Capability	[Disabled]	
Away Mode	[Disabled]	
Full Screen LOGO Show	[Enabled]	
Backup BIOS Image to HDD	[Disabled]	
Init Display First	[PCI Slot]	

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

## ☞ IGX Configuration

The settings in this submenu are synchronous to those under the same items on the **MB Intelligent Tweaker(M.I.T.)** main menu.

## ☞ Load Line Control

Enables or disables Load Line control. This item allows you to adjust Vdroop at different levels. Enabling Load-Line Calibration may keep the CPU voltage more constant under light and heavy CPU load. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

(Note) This item is present only when you install a CPU that supports this feature.

- ☞ **AMD C1E Support**  
 Enables or disables the C1E CPU power-saving function in system halt state. When enabled, the power consumption will be reduced during system halt state.

  - ▶▶ Enabled If a CPU that supports hardware C1E is installed, the BIOS will automatically enable the hardware C1E function. If not, the BIOS will enable the software C1E function.
  - ▶▶ Disabled Disables this function. (Default)
- ☞ **AMD C6 Support** <sup>(Note)</sup>  
 Allows you to determine whether to let the CPU enter C6 mode in system halt state. When enabled, the CPU core frequency will be reduced during system halt state to decrease power consumption. The C6 state is a more enhanced power-saving state than C1. (Default: Enabled)
- ☞ **Virtualization**  
 Virtualization enhanced by 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: Disabled)
- ☞ **AMD K8 Cool&Quiet control**

  - ▶▶ Auto Lets the AMD Cool'n'Quiet driver dynamically adjust the CPU clock and VID to reduce heat output from your computer and its power consumption. (Default)
  - ▶▶ Disabled Disables this function.
- ☞ **AMD APM Master Mode** <sup>(Note)</sup>

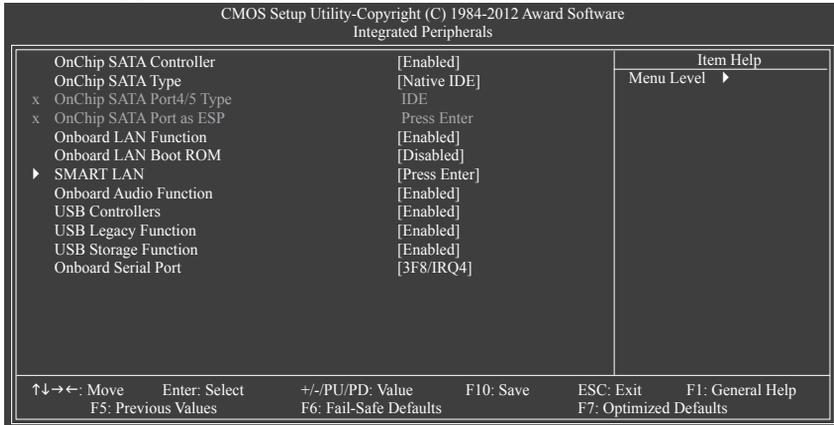
  - ▶▶ Auto Lets the BIOS automatically configure this setting. (Default)
  - ▶▶ Enabled Dynamically monitors the power consumption of the CPU cores and automatically optimizes the CPU to its best performance level.
  - ▶▶ Disabled Disables this function.
- ☞ **CPU core Control**  
 Allows you to determine whether to manually enable/disable CPU cores.

  - ▶▶ Auto Lets the BIOS to enable all CPU cores (number of cores available depends on the CPU being used). (Default)
  - ▶▶ Manual Allows you to individually enable/disable CPU Core.
- ☞ **One Core Per Compute Unit** <sup>(Note)</sup>  
 Enables or disables one core of each Compute Unit. If set to **Enabled**, each Compute Unit will operate with only one core and the **CPU core 3-4** items will become unconfigurable. This item is configurable only when **CPU core Control** is set to **Manual**. (Default: Disabled)
- ☞ **CPU core 1-2** <sup>(Note)</sup>  
 This setting is fixed. CPU Core 1-2 is always enabled.
- ☞ **CPU core 3-4** <sup>(Note)</sup>  
 Allows you to enable/disable each Compute Unit respectively. If set to **Disabled**, both cores of the CPU Unite will be disabled. This item is configurable only when **One Core Per Compute Unit** is set to **Disabled**. (Default: Enabled)
- ☞ **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.
- ☞ **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)

(Note) This item is present only when you install a CPU that supports this feature.

- ☞ **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: LS120, Hard Disk, CDROM, ZIP, 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)
- ☞ **Away Mode**  
Enables or disables Away Mode in Windows XP Media Center operating system. Away Mode allows the system to silently perform unattended tasks while in a low-power mode that appears off. (Default: Disabled)
- ☞ **Full Screen LOGO Show**  
Allows you to determine whether to display the GIGABYTE Logo at system startup. Disabled displays normal POST message. (Default: Enabled)
- ☞ **Backup BIOS Image to HDD**  
Allows the system to copy the BIOS image file to the hard drive. If the system BIOS is corrupted, it will be recovered from this image file. (Default: Disabled)
- ☞ **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 Slot           Sets the PCI graphics card as the first display. (Default)
  - ▶▶ OnChipVGA       Sets the onboard graphics as the first display.
  - ▶▶ PEG               Sets the PCI Express graphics card on the PCIEX16 slot as the first display.

## 2-6 Integrated Peripherals



### OnChip SATA Controller

Enables or disables the integrated SATA controllers. (Default: Enabled)

### OnChip SATA Type (SATA2 0~SATA2 3 connectors)

Configures the operating mode of the integrated SATA controller.

- ▶▶ Native IDE    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)
- ▶▶ RAID    Enables RAID for the SATA controller.
- ▶▶ 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.

### OnChip SATA Port4/5 Type (SATA2 4/SATA2 5 connectors)

This option is configurable only when **OnChip SATA Type** is set to **RAID** or **AHCI**. Configures the operating mode of the integrated SATA3 4~SATA3 5 connectors.

- ▶▶ IDE    Disables RAID for the SATA controller and configures the SATA controller to PATA mode. (Default)
- ▶▶ As SATA Type    The mode depends on the **OnChip SATA Type** settings.

### OnChip SATA Port as ESP

#### Port0 as ESP/Port1 as ESP/Port2 as ESP/Port3 as ESP

This option is configurable only when **OnChip SATA Type** is set to **AHCI**. **Enabled** will speed up the hot plug detection of the connected SATA device. (Default: Disabled)

#### Port4 as ESP/Port5 as ESP

This option is configurable only when **OnChip SATA Type** is set to **AHCI** and **OnChip SATA Type Port4/5** is set to **As SATA Type**. **Enabled** will speed up the hot plug detection of the connected SATA device. (Default: Disabled)

### Onboard LAN Function

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**.

☞ **Onboard LAN Boot ROM**

Allows you to decide whether to activate the boot ROM integrated with the onboard LAN chip. (Default: 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 Audio Function**

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

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

☞ **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)

☞ **Onboard Serial Port**

Enables or disables the onboard 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.



### ☞ **Power On By Keyboard**

Allows the system to be turned on by a PS/2 keyboard wake-up event.

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

- ▶▶ Disabled Disables this function. (Default)
- ▶▶ Password Set a password with 1~5 characters to turn on the system.
- ▶▶ Any KEY Press any key on the keyboard 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.

### ☞ **Power-On 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.
- ▶▶ Resume Time (hh: mm: ss): 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.

### ☞ **ErP Support**

Determines whether to let the system consume least power in S5 (shutdown) state. (Default: Disabled)

Note: When this item is set to **Enabled**, the following functions will become unavailable: Power-On by Alarm, PME event wake up, power on by mouse and power on by keyboard.

## 2-8 PnP/PCI Configurations

CMOS Setup Utility-Copyright (C) 1984-2012 Award Software					
PnP/PCI Configurations					
PCI1 IRQ Assignment				[Auto]	
				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	

### ☞ PCI1 IRQ Assignment

- ▶ Auto BIOS auto-assigns IRQ to the first PCI slot. (Default)
- ▶ 3,4,5,7,9,10,11,12,14,15 Assigns IRQ 3,4,5,7,9,10,11,12,14,15 to the first PCI slot.

## 2-9 PC Health Status

CMOS Setup Utility-Copyright (C) 1984-2012 Award Software					
PC Health Status					
Hardware Thermal Control				[Enabled]	
Reset Case Open Status				[Disabled]	
Case Opened				No	
Vcore				1.280V	
DDR3 1.5V				1.500V	
+12V				12.168V	
+3.3V				3.397V	
Current System Temperature				37°C	
Current CPU Temperature				37°C	
Current CPU FAN Speed				1264 RPM	
Current SYSTEM FAN Speed				0 RPM	
CPU Warning Temperature				[Disabled]	
CPU FAN Fail Warning				[Disabled]	
SYSTEM FAN Fail Warning				[Disabled]	
CPU Smart FAN Control				[Enabled]	
↑↓→←: Move	Enter: Select	+/-/PU/PD: Value	F10: Save	ESC: Exit	F1: General Help
F5: Previous Values		F6: Fail-Safe Defaults		F7: Optimized Defaults	

### ☞ Hardware Thermal Control

Enables or disables the CPU overheating protection function. When enabled, the CPU core voltage and ratio will be reduced when the CPU is overheated. (Default: Enabled)

### ☞ Reset Case Open Status

- ▶ Disabled Keeps or clears the record of previous chassis intrusion status. (Default)
- ▶ Enabled Clears the record of previous chassis intrusion status and the **Case Open** field will show "No" at next boot.

### ☞ Case Opened

Displays the detection status of the chassis intrusion detection device attached to the motherboard CI header. If the system chassis cover is removed, this field will show "Yes", otherwise it will show "No". To clear the chassis intrusion status record, set **Reset Case Open Status** to **Enabled**, save the settings to the CMOS, and then restart your system.

### ☞ Current Voltage(V) Vcore/DDR3 1.5V/+12V/+3.3V

Displays the current system voltages.

### ☞ Current System/CPU Temperature

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

## 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.

NOTE: Before setting the User Password, be sure to set the Administrator Password first.

## 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 Appendix

### 3-1 Configuring a RAID Set

#### RAID Levels

	RAID 0	RAID 1	RAID 10
Minimum Number of Hard Drives	≥2	2	4
Array Capacity	Number of hard drives * Size of the smallest drive	Size of the smallest drive	(Number of hard drives/2) * Size of the smallest drive
Fault Tolerance	No	Yes	Yes

#### Before you begin

- 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 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). Ensure **OnChip SATA Controller** is enabled under **Integrated Peripherals**. To enable RAID for the SATA2 0/1/2/3 connectors, set **OnChip SATA Type** to **RAID**. To enable RAID for the SATA2 4/SATA2 5 connectors, set **OnChip SATA Type** to **RAID** and set **OnChip SATA Port4/5 Type** to **As SATA Type**.
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 a RAID array 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-F> to enter RAID Option ROM Utility". Press <Ctrl> + <F> to enter the RAID BIOS setup utility. To create a new array, press <2> to enter the **Define LD Menu** window, use the up or down arrow key to move to an item for further configuration. In the following procedure, we'll create RAID 0 as an example.

Steps:

1. Under the **RAID Mode** section, press the <SPACE> key to select **RAID 0**.
2. Set the **Stripe Block** size. 64 KB is the default.
3. Under the **Drives Assignments** section, press the up or down arrow key to highlight a drive.
4. Press the <SPACE> key or <Y> to change the **Assignment** option to **Y**. This action adds the drive to the disk array. The **Total Drv** section will show the number of disks assigned.
5. Press <Ctrl>+<Y> keys to save the information. The message in Figure 1 will appear. Press <Ctrl>+<Y> to clear the MBR or press other keys to ignore this option.

Fast Initialization Option has been selected  
It will erase the MBR data of the disk.  
<Press Ctrl-Y Key if you are sure to erase it>  
<Press any other key to ignore this option>

Figure 1

6. Then, the window below will appear. Press <Ctrl>+<Y> to set the capacity of the RAID array or press other keys to set the array to its maximum capacity.

Press Ctrl-Y to Modify Array Capacity or press any other key to use maximum capacity...

Figure 2

7. After the creation is complete, the screen will return to **Define LD Menu** where you will see the newly-created array.
8. Press <Esc> to return to **Main Menu** and press <Esc> again if you want to exit the RAID BIOS utility.

## 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. To copy the RAID/AHCI driver for Windows XP, copy all files in the **\BootDrv\SBxxx\86** folder in the motherboard driver disk to your floppy disk. To install Windows 64-Bit, copy the files in the **x64** 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

Restart your system to boot from the Windows 7 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\SBxxxW7\RAID\W7

RAID driver for Windows 64-bit: \BootDrv\SBxxxW7\RAID\W764A

AHCI driver for Windows 32-bit: \BootDrv\SBxxxW7\AHCI\Win7x86

AHCI driver for Windows 64-bit: \BootDrv\SBxxxW7\AHCI\Win7x64

After loading the driver, continue the OS installation.

## 3-2 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. (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.

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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.

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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.

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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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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ◆ Consult a dealer or experienced TV/radio technician for help.

### **Canada, Industry Canada (IC) Notices / Canada, avis d'Industry Canada (IC)**

- ◆ This Class B digital apparatus complies with Canadian ICES-003 and RSS-210.
- ◆ Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
- ◆ Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.
- ◆ Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.





## Contact Us

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