

# GA-F2A88XM-D3HP

## User's Manual

Rev. 1002

12ME-F288MHP-1002R



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-F2A88XM-D3HP**

conforms with the essential requirements of the following directives:

- EMC Directive 2004/108/EC (until 2016/04/19), 2014/530/EU (after 2016/04/20):**
  - Conduction & Radiated Emissions: EN 55022:2010/AC2011
  - Immunity: EN 55024:2010
  - Power-line harmonics: EN 61000-3-2:2006+A2:2009
  - Power-line flicker: EN 61000-3-3:2013

- Low Voltage Directive 2006/95/EC (until 2016/04/19), 2014/35/EU (after 2016/04/20):**
  - Safety: EN60950-1:2006+A11:2009+A12:2011+A2:2013

- RoHS Directive 2011/65/EU**
  - 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: Nov. 27, 2015

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-F2A88XM-D3HP**

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: Nov. 27, 2015

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## **Documentation Classifications**

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

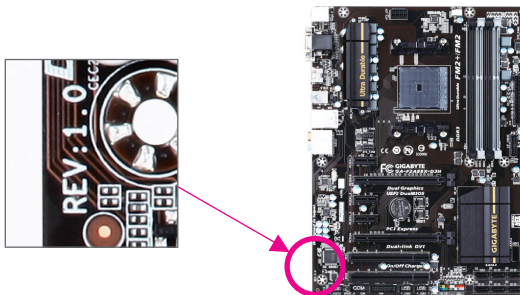
- For quick set-up of the product, read the Quick Installation Guide included with the product.
- For detailed product information, carefully read the User's Manual.

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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## Box Contents

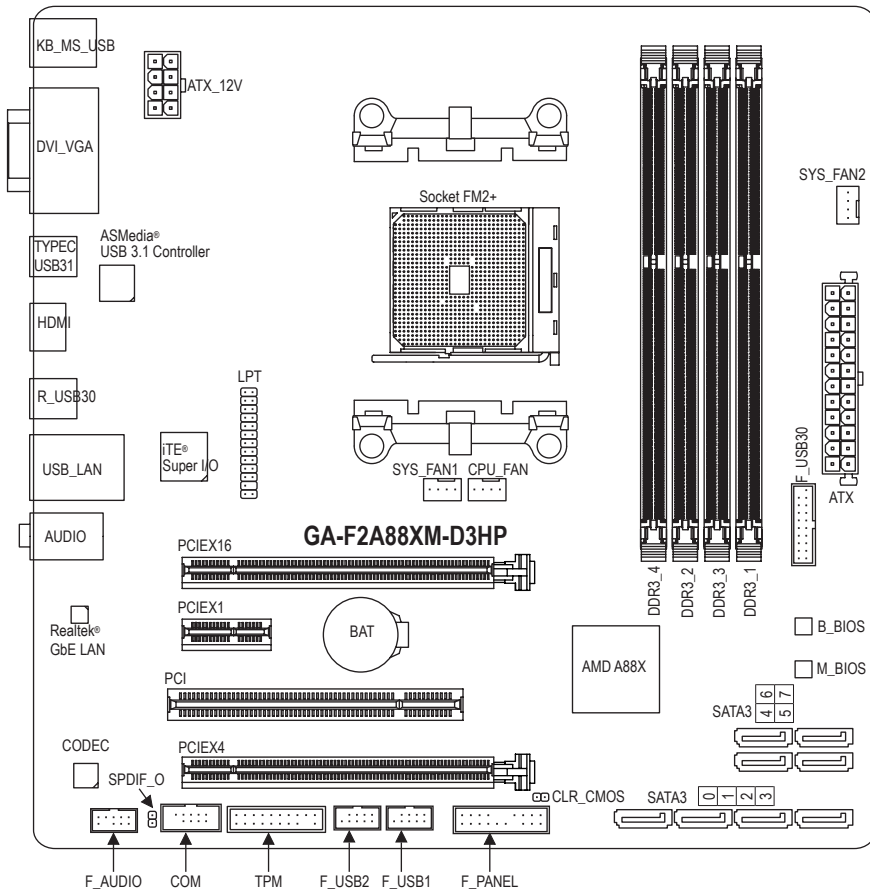
- GA-F2A88XM-D3HP motherboard
- Motherboard driver disk
- User's Manual
- Quick Installation Guide
- Four SATA cables
- I/O Shield

\* 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.

## Optional Items

- 2-port USB 2.0 bracket (Part No. 12CR1-1UB030-6\*R)
- eSATA bracket (Part No. 12CF1-3SATPW-4\*R)
- 3.5" Front Panel with 2 USB 3.0/2.0 ports (Part No. 12CR1-FPX582-2\*R)
- HDMI-to-DVI adapter (Part No. 12CT2-HDMI01-1\*R)
- LPT port cable (Part No. 12CF1-1LP001-0\*R)
- COM port cable (Part No. 12CF1-1CM001-3\*R)

# GA-F2A88XM-D3HP Motherboard Layout












# 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 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

	APU	<ul style="list-style-type: none"> <li>◆ FM2+ Socket:               <ul style="list-style-type: none"> <li>- AMD A series processors</li> <li>- AMD Athlon™ series processors</li> </ul> </li> </ul> <p>(Go to GIGABYTE's website for the latest APU support list.)</p>
	Chipset	<ul style="list-style-type: none"> <li>◆ AMD A88X</li> </ul>
	Memory	<ul style="list-style-type: none"> <li>◆ 4 x DDR3 DIMM sockets supporting up to 64 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 2133/1866/1600/1333 MHz memory modules</li> <li>◆ Support for AMD Memory Profile (AMP)/Extreme Memory Profile (XMP) memory modules</li> </ul> <p>(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)</p>
	Onboard Graphics	<ul style="list-style-type: none"> <li>◆ Integrated Graphics Processor:               <ul style="list-style-type: none"> <li>* To use the onboard graphics ports, you must install an AMD APU with integrated graphics.</li> <li>- 1 x D-Sub port, supporting a maximum resolution of 1920x1200</li> <li>- 1 x DVI-D port, supporting a maximum resolution of 2560x1600                   <ul style="list-style-type: none"> <li>* Support for 2560x1600 resolution requires both a monitor and cable that support Dual Link DVI.</li> <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 4096x2160                   <ul style="list-style-type: none"> <li>* The resolution of 4096x2160 can be supported when using an FM2+ APU; the maximum resolution supported is 1920x1200 when using an FM2 APU.</li> <li>* Support for HDMI 1.4a version.</li> </ul> </li> </ul> </li> <li>◆ Support for up to 3 displays at the same time</li> <li>◆ Maximum shared memory of 2 GB</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> <li>◆ Support for S/PDIF Out</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 (PCIEX16)               <ul style="list-style-type: none"> <li>* For optimum performance, if only one PCI Express graphics card is to be installed, be sure to install it in the PCIEX16 slot.</li> </ul> <p>(The PCIEX16 slot conforms to PCI Express 3.0 standard.)</p> <ul style="list-style-type: none"> <li>* To support PCI Express 3.0, you must install an FM2+ APU.</li> </ul> </li> <li>◆ 1 x PCI Express x16 slot, running at x4 (PCIEX4)</li> <li>◆ 1 x PCI Express x1 slot</li> </ul> <p>(The PCIEX4 and PCI Express x1 slots conform to PCI Express 2.0 standard.)</p> <ul style="list-style-type: none"> <li>◆ 1 x PCI slot</li> </ul>

	Multi-Graphics Technology	<ul style="list-style-type: none"> <li>◆ Support for AMD 2-Way CrossFire™ technology</li> <li>◆ Support for AMD Dual Graphics technology <ul style="list-style-type: none"> <li>* Only A series APUs support AMD Dual Graphics.</li> </ul> </li> <li>◆ Support for AMD Eyefinity technology</li> </ul>
	Storage Interface	<ul style="list-style-type: none"> <li>◆ Chipset: <ul style="list-style-type: none"> <li>- 8 x SATA 6Gb/s connectors</li> <li>- Support for RAID 0, RAID 1, RAID 5, RAID 10, and JBOD</li> </ul> </li> </ul>
	USB	<ul style="list-style-type: none"> <li>◆ ASMedia® USB 3.1 Controller: <ul style="list-style-type: none"> <li>- 1 x USB Type-C™ port on the back panel, with USB 3.1 support</li> <li>- 1 x USB 3.1 Type-A port (red) on the back panel</li> </ul> </li> <li>◆ Chipset: <ul style="list-style-type: none"> <li>- 4 x USB 3.0/2.0 ports (2 ports on the back panel, 2 ports available through the internal USB header)</li> <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 8-pin ATX 12V power connector</li> <li>◆ 8 x SATA 6Gb/s connectors</li> <li>◆ 1 x APU fan header</li> <li>◆ 2 x system fan headers</li> <li>◆ 1 x front panel header</li> <li>◆ 1 x front panel audio header</li> <li>◆ 1 x S/PDIF Out header</li> <li>◆ 1 x USB 3.0/2.0 header</li> <li>◆ 2 x USB 2.0/1.1 headers</li> <li>◆ 1 x serial port header</li> <li>◆ 1 x parallel port header</li> <li>◆ 1 x Clear CMOS jumper</li> <li>◆ 1 x Trusted Platform Module (TPM) header</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 3.0/2.0 ports</li> <li>◆ 1 x USB 3.1 Type-A port (red)</li> <li>◆ 1 x USB Type-C™ port, with USB 3.1 support</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>◆ APU/System temperature detection</li> <li>◆ APU/System fan speed detection</li> <li>◆ APU overheating warning</li> </ul>

 Hardware Monitor	<ul style="list-style-type: none"> <li>◆ APU/System fan fail warning</li> <li>◆ APU/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>◆ 2 x 64 Mbit flash</li> <li>◆ Use of licensed AMI UEFI BIOS</li> <li>◆ Support for DualBIOS™</li> <li>◆ PnP 1.0a, DMI 2.7, WfM 2.0, SM BIOS 2.7, ACPI 5.0</li> </ul>
 Unique Features	<ul style="list-style-type: none"> <li>◆ Support for APP Center <ul style="list-style-type: none"> <li>* Available applications in APP Center may vary by motherboard model. Supported functions of each application may also vary depending on motherboard specifications.</li> <li>- @BIOS</li> <li>- Cloud Station</li> <li>- EasyTune</li> <li>- Smart TimeLock</li> <li>- Game Controller</li> <li>- Smart Recovery 2</li> <li>- System Information Viewer</li> <li>- USB Blocker</li> </ul> </li> <li>◆ Support for Q-Flash</li> <li>◆ Support for ON/OFF Charge</li> <li>◆ Support for Smart Switch</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 10/8.1 64-bit</li> <li>◆ Support for Windows 7 32-bit/64-bit <ul style="list-style-type: none"> <li>* Please download the "Windows USB Installation Tool" from GIGABYTE's website and install it before installing Windows 7.</li> </ul> </li> </ul>
 Form Factor	<ul style="list-style-type: none"> <li>◆ Micro ATX Form Factor; 24.4cm x 24.4cm</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 APU and APU Cooler

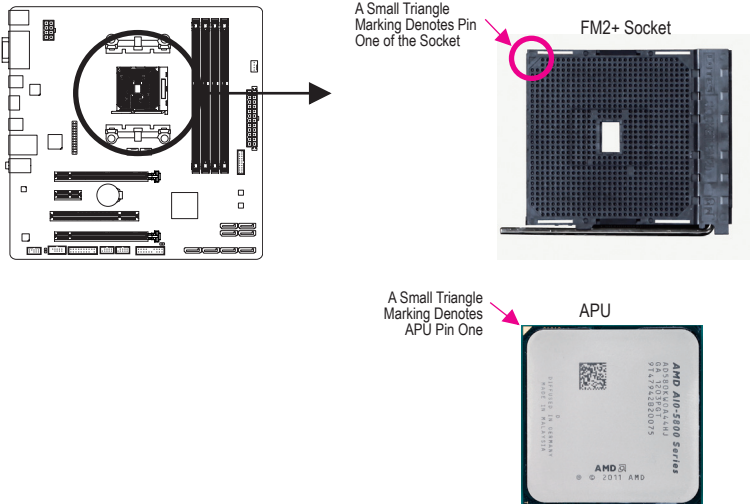


Read the following guidelines before you begin to install the APU:

- Make sure that the motherboard supports the APU.  
(Go to GIGABYTE's website for the latest APU support list.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the APU to prevent hardware damage.
- Locate the pin one of the APU. The APU cannot be inserted if oriented incorrectly.
- Apply an even and thin layer of thermal grease on the surface of the APU.
- Do not turn on the computer if the APU cooler is not installed, otherwise overheating and damage of the APU may occur.
- Set the APU host frequency in accordance with the APU 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 APU, graphics card, memory, hard drive, etc.

### 1-3-1 Installing the APU

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

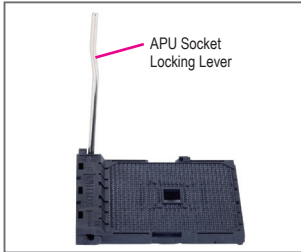


Please visit GIGABYTE's website for details on hardware installation.

B. Follow the steps below to correctly install the APU into the motherboard APU socket.



- Before installing the APU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the APU.
- Do not force the APU into the APU socket. The APU cannot fit in if oriented incorrectly. Adjust the APU orientation if this occurs.



Step 1:

Completely lift up the APU socket locking lever.



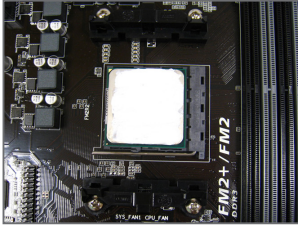
Step 2:

Align the APU pin one (small triangle marking) with the triangle mark on the APU socket and gently insert the APU into the socket. Make sure that the APU pins fit perfectly into their holes.

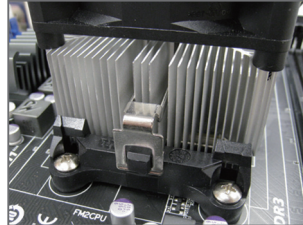
Once the APU is positioned into its socket, place one finger down on the middle of the APU, lowering the locking lever and latching it into the fully locked position.

### 1-3-2 Installing the APU Cooler

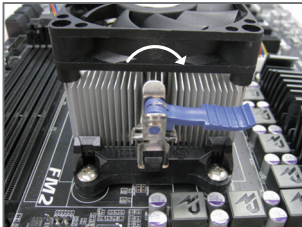
Follow the steps below to correctly install the APU cooler on the motherboard.



**Step 1:**  
Apply an even and thin layer of thermal grease on the surface of the installed APU.



**Step 2:**  
Hook the APU cooler clip to the mounting lug on one side of the retention frame. On the other side, push straight down on the APU cooler clip to hook it to the mounting lug on the retention frame.



**Step 3:**  
Turn the cam handle from the left side to the right side (as the picture above shows) to lock into place. (Refer to your APU cooler installation manual for instructions on installing the cooler.)



**Step 4:**  
Finally, attach the power connector of the APU cooler to the APU fan header (CPU\_FAN) on the motherboard.



Use extreme care when removing the APU cooler because the thermal grease/tape between the APU cooler and APU may adhere to the APU. Inadequately removing the APU cooler may damage the APU.

## 1-4 Installing the Memory



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

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

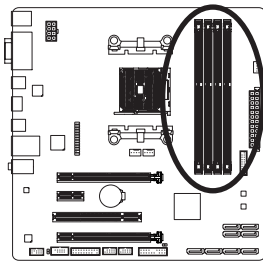
### 1-4-1 Dual Channel Memory Configuration

This motherboard provides four 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 four DDR3 memory sockets are divided into two channels and each channel has two memory sockets as following:

▶▶ Channel A: DDR3\_2, DDR3\_4

▶▶ Channel B: DDR3\_1, DDR3\_3



▶▶ Dual Channel Memory Configurations Table:


	DDR3_4	DDR3_2	DDR3_3	DDR3_1
Two Modules	--	DS/SS	--	DS/SS
	DS/SS	--	DS/SS	--
Four Modules	DS/SS	DS/SS	DS/SS	DS/SS

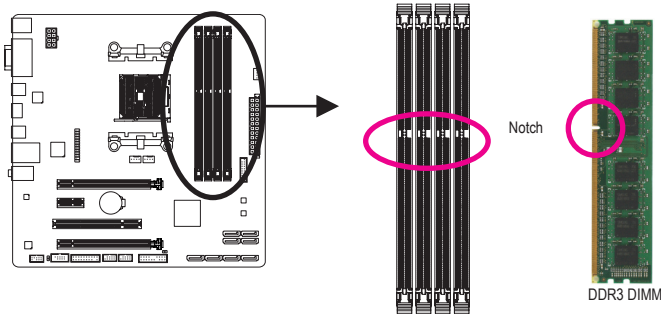
(SS=Single-Sided, DS=Double-Sided, "--"=No Memory)

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

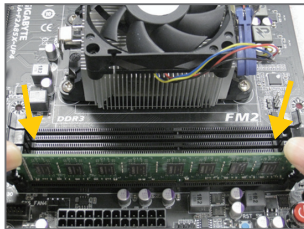
1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
2. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used and installed in the same colored DDR3 sockets. For optimum performance, when enabling Dual Channel mode with two memory modules, we recommend that you install them in the DDR3\_1 and DDR3\_2 sockets.

## 1-4-2 Installing a Memory

 Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. DDR3 and DDR2 DIMMs are not compatible to each other or DDR DIMMs. Be sure to install DDR3 DIMMs on this motherboard.

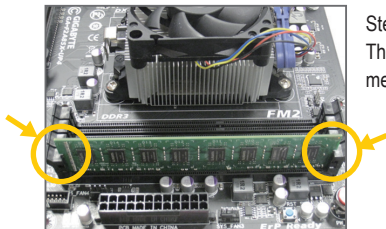


A DDR3 memory module has a notch, so it can only fit in one direction. Follow the steps below to correctly install your memory modules in the memory sockets.



### Step 1:

Note the orientation of the memory module. Spread the retaining clips at both ends of the memory socket. Place the memory module on the socket. As indicated in the picture on the left, place your fingers on the top edge of the memory, push down on the memory and insert it vertically into the memory socket.



### Step 2:

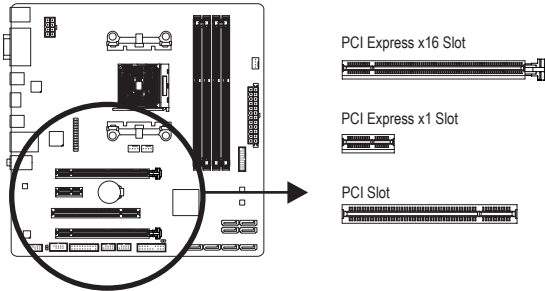
The clips at both ends of the socket will snap into place when the memory module is securely inserted.

## 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.



Follow the steps below to correctly install your expansion card in the expansion slot.

1. Locate an expansion slot that supports your card. Remove the metal slot cover from the chassis back panel.
2. Align the card with the slot, and press down on the card until it is fully seated in the slot.
3. Make sure the metal contacts on the card are completely inserted into the slot.
4. Secure the card's metal bracket to the chassis back panel with a screw.
5. After installing all expansion cards, replace the chassis cover(s).
6. Turn on your computer. If necessary, go to BIOS Setup to make any required BIOS changes for your expansion card(s).
7. Install the driver provided with the expansion card in your operating system.

Example: Installing and Removing a PCI Express Graphics Card:



- **Installing a Graphics Card:**  
Gently push down on the top edge of the card until it is fully inserted into the PCI Express slot. Make sure the card is securely seated in the slot and does not rock.



- **Removing the Card:**  
Gently push back on the lever on the slot and then lift the card straight out from the slot.

## 1-6 Setup of the AMD Dual Graphics Configuration

Combining the onboard GPU with a discrete graphics card, AMD's Dual Graphics technology can provide significantly advanced display performance for AMD platform. Read the following instructions on configuring a Dual Graphics system.

### A. System Requirements

- AMD A series processor
- Windows 8.1/7 operating system
- An AMD Dual Graphics technology-supported motherboard and correct driver
- A graphics card that supports AMD Dual Graphics technology (for more details, please visit AMD's official website) and correct driver

### B. Installing the Graphics Cards and Configuring BIOS Setup

Step 1:

Observe the steps in "1-5 Installing an Expansion Card" and install an AMD Dual Graphics technology-supported graphics card on the PCIEX16 slot. Plug the monitor cable into the graphics card and start up your computer.

Step 2:

Enter BIOS Setup to set the following items under the **Peripherals\GFX Configuration** menu:

- Set **Integrated Graphics** to **Force**.
- Set **UMA Frame Buffer Size** to **512M** or above.

Save the settings and exit BIOS Setup. Restart your computer.

### C. Configuring the Graphics Card Driver

After installing the graphics card driver in the operating system, go to the **AMD VISION Engine Control Center**. Browse to **Performance\AMD Radeon™ Dual Graphics** and ensure the **Enable AMD Radeon Dual Graphics** check box is selected.

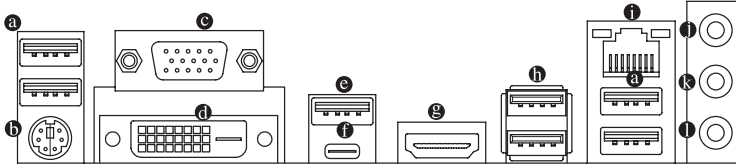


(Note) Make sure the drivers for the Chipset, onboard graphics, and external graphics card are properly installed.



Procedure and driver screen for enabling the AMD Dual Graphics technology may differ by graphics card and driver version. Refer to the manual that came with your graphics card for more information.

## 1-7 Back Panel Connectors



### a USB 2.0/1.1 Port

The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices.

### b PS/2 Keyboard/Mouse Port

Use this port to connect a PS/2 mouse or keyboard.

### c 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.

### d DVI-D Port (Note 1)

The DVI-D port conforms to the DVI-D specification and supports a maximum resolution of 2560x1600. Connect a monitor that supports DVI-D connection to this port. Please note that the actual resolutions supported are dependent on the monitor being used and support for 2560x1600 resolution requires both a monitor and cable that support Dual Link DVI.

### e USB 3.1 Type A Port (Red)

The USB 3.1 port supports the USB 3.1 specification and is compatible to the USB 3.0/2.0/1.1 specification. Use this port for USB devices.

### f USB Type-C™ Port

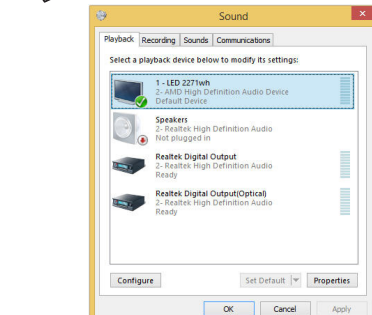
The reversible USB port supports the USB 3.1 specification and is compatible to the USB 3.0/2.0 specification. Use this port for USB devices.

### g HDMI Port

**HDMI™** HIGH-DEFINITION MULTIMEDIA INTERFACE The HDMI port is HDCP compliant and supports Dolby True HD 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 monitor. The maximum supported resolution is 4096x2160 (Note 2), 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.)



In Windows 8.1, select Start>Control Panel>Hardware and Sound>Sound>Playback, set **AMD High Definition Audio Device** to the default playback device.

(Note 1) The DVI-D port does not support D-Sub connection by adapter.

(Note 2) The resolution of 4096x2160 can be supported when using an FM2+ APU; the maximum resolution supported is 1920x1200 when using an FM2 APU.



## A. Triple Display Configurations:

Triple-display configurations are supported after you install motherboard drivers in OS. Only dual-display configurations are supported during the BIOS Setup or POST process.

## B. Playback of Blu-ray Disc™:

In order to get better playback quality, when playing the Blu-ray Disc™, refer to the recommended system requirements (or better) below.


- AMD A series processors
- Memory: At least two 1 GB DDR3 1333 MHz memory modules with dual channel mode enabled
- BIOS Setup: At least 512 MB of UMA Frame Buffer Size (refer to Chapter 2, "BIOS Setup," "Peripherals\GFX Configuration," for more information)
- Playback software: CyberLink PowerDVD 10.0 or later (Note: Please ensure Hardware Acceleration is enabled. Whether Hardware Acceleration can be enabled for 3D Blu-ray discs is dependent on the APU being used.)
- HDCP compliant monitor(s)

### ④ 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.

### ④ 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	Connection/Speed LED:		Activity LED:	
		State	Description	State	Description
		Orange	1 Gbps data rate	Blinking	Data transmission or receiving is occurring
		Green	100 Mbps data rate	Off	No data transmission or receiving is occurring
		Off	10 Mbps data rate		

### ④ Line In Jack (Blue)

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

### ④ Line Out Jack (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.

### ④ Mic In Jack (Pink)

The Mic in jack.

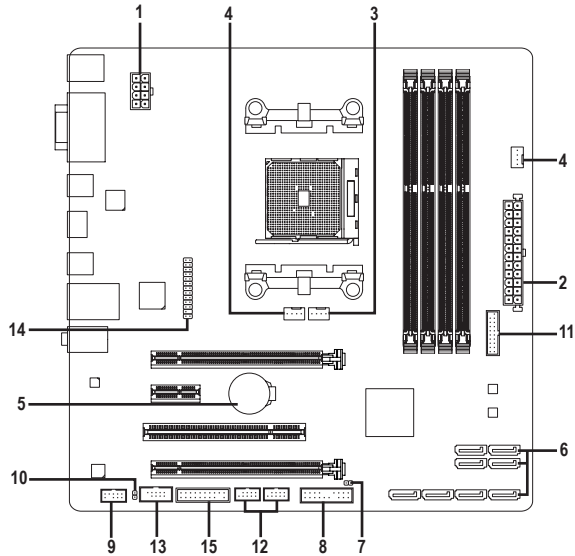


To configure 7.1-channel audio, you have to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver. Refer to the instructions on setting up a 2/4/5.1/7.1-channel audio configuration in Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio."



- 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.

## 1-8 Internal Connectors



1) ATX_12V	9) F_AUDIO
2) ATX	10) SPDIF_O
3) CPU_FAN	11) F_USB30
4) SYS_FAN1/2	12) F_USB1/F_USB2
5) BAT	13) COM
6) SATA3 0/1/2/3/4/5/6/7	14) LPT
7) CLR_CMOS	15) TPM
8) 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.

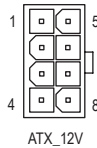
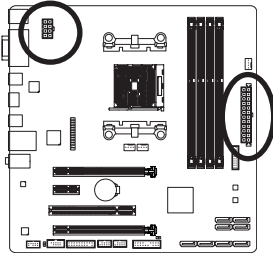
## 1/2) ATX\_12V/ATX (2x4 12V Power Connector and 2x12 Main Power Connector)

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 APU. If the 12V power connector is not connected, the computer will not start.

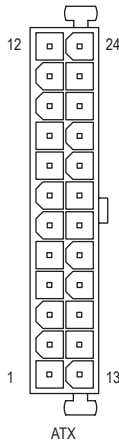


To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.



ATX\_12V:

Pin No.	Definition
1	GND (Only for 2x4-pin 12V)
2	GND (Only for 2x4-pin 12V)
3	GND
4	GND
5	+12V (Only for 2x4-pin 12V)
6	+12V (Only for 2x4-pin 12V)
7	+12V
8	+12V

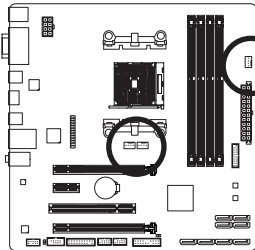


ATX:

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\_FAN1/SYS\_FAN2 (Fan Headers)

All fan headers on this motherboard are 4-pin. 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\_FAN1/2:

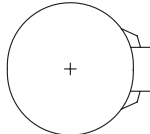
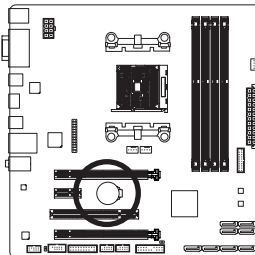
Pin No.	Definition
1	GND
2	Speed Control
3	Sense
4	Reserve



- Be sure to connect fan cables to the fan headers to prevent your APU and system from overheating. Overheating may result in damage to the APU 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:

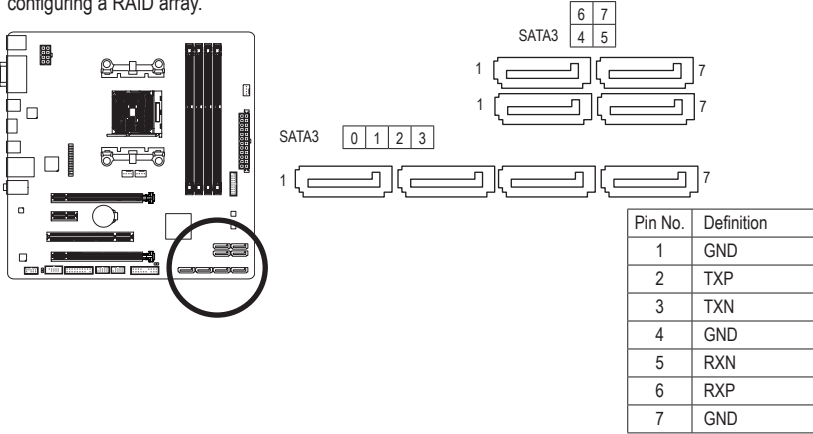
1. Turn off your computer and unplug the power cord.
2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.)
3. Replace the battery.
4. 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) SATA3 0/1/2/3/4/5/6/7 (SATA 6Gb/s Connectors)

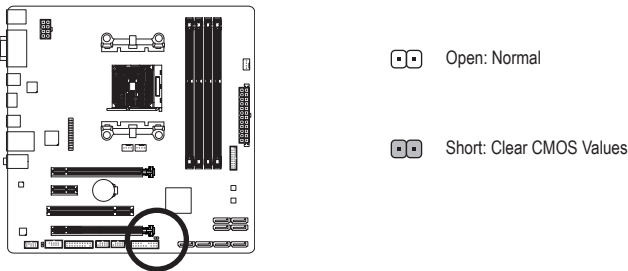
The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device. The AMD Chipset supports RAID 0, RAID 1, RAID 5, RAID 10, and JBOD. Refer to Chapter 3, "Configuring a RAID Set," for instructions on configuring a RAID array.



To enable hot-plugging for the SATA ports, refer to Chapter 2, "BIOS Setup," "Peripherals\SATA Configuration," for more information.

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

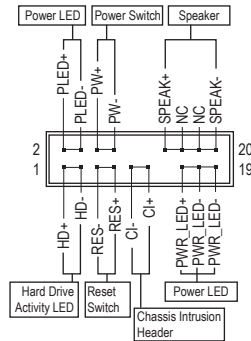
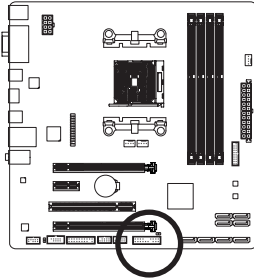
Use this jumper to clear the BIOS configuration and reset the CMOS values to factory defaults. To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds.



- Always turn off your computer 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).

## 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.



- **PLED/PWR\_LED** (Power LED, Yellow/Purple):

System Status	LED
S0	On
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 is off when the system is in S3/S4 sleep state or powered off (S5).

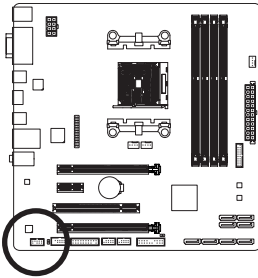
- **PW** (Power Switch, Red):  
Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch (refer to Chapter 2, "BIOS Setup," "Power Management," for more information).
- **SPEAK** (Speaker, Orange):  
Connects to the speaker on the 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.
- **HD** (Hard Drive Activity LED, Blue):  
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, Green):  
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, Gray):  
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.

## 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	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

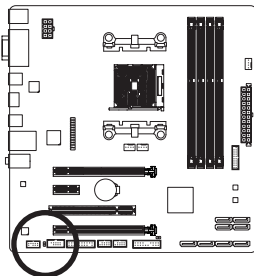


- The front panel audio header supports HD audio by default. If your chassis provides an AC'97 front panel audio module, refer to the instructions on how to activate AC'97 functionality via the audio software in Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio."
- Audio signals will be present on both of the front and back panel audio connections simultaneously. If you want to mute the back panel audio (only supported when using an HD front panel audio module), refer to Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio."
- 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) SPDIF\_O (S/PDIF Out Header)

This header supports digital S/PDIF Out and connects a S/PDIF digital audio cable (provided by expansion cards) for digital audio output from your motherboard to certain expansion cards like graphics cards and sound cards. For example, some graphics cards may require you to use a S/PDIF digital audio cable for digital audio output from your motherboard to your graphics card if you wish to connect an HDMI display to the graphics card and have digital audio output from the HDMI display at the same time.

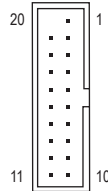
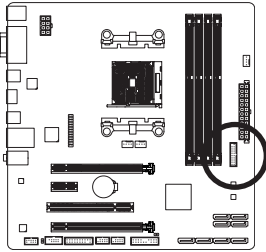
For information about connecting the S/PDIF digital audio cable, carefully read the manual for your expansion card.



Pin No.	Definition
1	SPDIFO
2	GND

### 11) F\_USB30 (USB 3.0/2.0 Header)

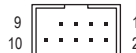
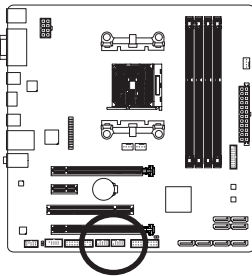
The header conforms to USB 3.0/2.0 specification and can provide two USB ports. For purchasing the optional 3.5" front panel that provides two USB 3.0/2.0 ports, please contact the local dealer.



Pin No.	Definition	Pin No.	Definition
1	VBUS	11	D2+
2	SSRX1-	12	D2-
3	SSRX1+	13	GND
4	GND	14	SSTX2+
5	SSTX1-	15	SSTX2-
6	SSTX1+	16	GND
7	GND	17	SSRX2+
8	D1-	18	SSRX2-
9	D1+	19	VBUS
10	NC	20	No Pin

### 12) 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
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

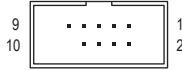
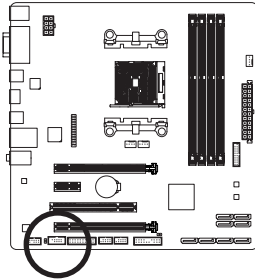


- Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB 2.0/1.1 header.
- Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket.



### 13) COM (Serial Port Header)

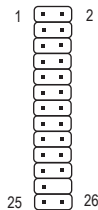
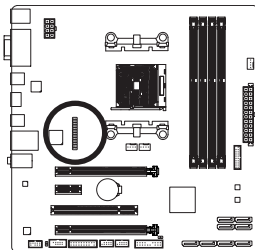
The COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.



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

### 14) LPT (Parallel Port Header)

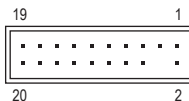
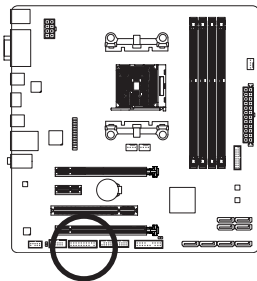
The LPT header can provide one parallel port via an optional LPT port cable. For purchasing the optional LPT port cable, please contact the local dealer.



Pin No.	Definition	Pin No.	Definition
1	STB-	14	GND
2	AFD-	15	PD6
3	PD0	16	GND
4	ERR-	17	PD7
5	PD1	18	GND
6	INIT-	19	ACK-
7	PD2	20	GND
8	SLIN-	21	BUSY
9	PD3	22	GND
10	GND	23	PE
11	PD4	24	No Pin
12	GND	25	SLCT
13	PD5	26	GND

## 15) TPM (Trusted Platform Module Header)

You may connect a TPM (Trusted Platform Module) to this header.



Pin No.	Definition	Pin No.	Definition
1	LCLK	11	LAD0
2	GND	12	GND
3	LFRAME	13	NC
4	No Pin	14	NC
5	LRESET	15	SB3V
6	NC	16	SERIRQ
7	LAD3	17	GND
8	LAD2	18	NC
9	VCC3	19	NC
10	LAD1	20	SUSCLK

## 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.

For instructions on using the Q-Flash and @BIOS utilities, refer to Chapter 5, "BIOS Update Utilities."



- 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 startup Logo screen will appear when the computer boots.



### Function Keys:

#### <DEL>: BIOS SETUP/Q-FLASH

Press the <Delete> key to enter BIOS Setup or to access the Q-Flash utility in BIOS Setup.

#### <F9>: SYSTEM INFORMATION

Press the <F9> key to display your system information.

#### <F12>: BOOT MENU

Boot Menu allows you to set the first boot device without entering BIOS Setup. In Boot Menu, use the up arrow key <↑> or the down arrow key <↓> to select the first boot device, then press <Enter> to accept. The system will boot from the device immediately.

Note: The setting in Boot Menu is effective for one time only. After system restart, the device boot order will still be based on BIOS Setup settings.

#### <END>: Q-FLASH

Press the <End> key to access the Q-Flash utility directly without having to enter BIOS Setup first.

## 2-2 The Main Menu

On the main menu of the BIOS Setup program, press arrow keys to move among the items and press <Enter> to accept or enter a sub-menu. Or you can use your mouse to select the item you want.

(Sample BIOS Version: D13)



### BIOS Setup Program Function Keys

<←><→>	Move the selection bar to select a setup menu
<↑><↓>	Move the selection bar to select an configuration item on a menu
<Enter>	Execute command or enter a menu
<+></Page Up>	Increase the numeric value or make changes
<-></Page Down>	Decrease the numeric value or make changes
<F1>	Show descriptions of the function keys
<F5>	Restore the previous BIOS settings for the current submenus
<F7>	Load the Optimized BIOS default settings for the current submenus
<F8>	Access the Q-Flash utility
<F9>	Display system information
<F10>	Save all the changes and exit the BIOS Setup program
<F12>	Capture the current screen as an image and save it to your USB drive
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu



- 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.

## 2-3 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.)



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.

▶ **Advanced Frequency Settings**



☞ **CPU Clock Control**

Allows you to manually set the CPU base clock and PCIe bus frequency in 1 MHz increments. (Default: Auto)

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

☞ **Processor Graphics Clock**

Allows you to set the onboard graphics clock. The adjustable range is from 300 MHz to 2000 MHz.

☞ **CPU NorthBridge Frequency**

Allows you to manually set the CPU North Bridge frequency. The adjustable range is from 800 MHz to 6000 MHz.

☞ **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 Frequency**

Displays the current operating CPU frequency.

## ▶ Advanced CPU Core Features



- ☞ **CPU Clock Ratio, CPU Frequency**  
The settings above are synchronous to those under the same items on the **Advanced Frequency Settings** menu.
- ☞ **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: Auto)
- ☞ **Turbo Performance Boost Ratio**  
Allows you to determine whether to improve CPU performance. (Default: Disabled)
- ☞ **Core Performance Boost Ratio**  
Allows you alter the ratio for the CPB. The adjustable range is dependent on the CPU being installed. (Default: Auto)
- ☞ **AMD Cool&Quiet function**
  - ▶▶ Enabled 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.
- ☞ **cTDP function**  
Allows you to set the TDP consumption. Options are Disabled, 45W, 60W. (Default: Disabled)
- ☞ **SVM Mode**  
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: Enabled)
- ☞ **C6 Mode**  
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)

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



☞ **CPU core Control**

Allows you to determine whether to manually enable/disable CPU cores. **Automatic mode** allows the BIOS to enable all CPU cores (number of cores available depends on the CPU being used). (Default: Automatic mode)

☞ **APM**

Enables or disables Application Power Management. (Default: Enabled)

☞ **Extreme Memory Profile (X.M.P.)** <sup>(Note)</sup>

Allows the BIOS to read the SPD data on XMP memory module(s) to enhance memory performance when enabled.

▶▶ Disabled      Disables this function. (Default)

▶▶ Profile1      Uses Profile 1 settings.

▶▶ Profile2 <sup>(Note)</sup>      Uses Profile 2 settings.

☞ **AMD Memory Profile (A.M.P.)** <sup>(Note)</sup>

Allows the BIOS to read the SPD data on AMP memory module(s) to enhance memory performance when enabled. (Default: Disabled)

☞ **System Memory Multiplier**

Allows you to set the system memory multiplier. **Auto** sets memory multiplier according to memory SPD data. (Default: Auto)

☞ **Memory Frequency (MHz)**

This value is automatically adjusted according to the **CPU Clock Control** and **System Memory Multiplier** settings.

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

## ▶ Advanced Memory Settings



☞ **Extreme Memory Profile (X.M.P.)** <sup>(Note)</sup>, **System Memory Multiplier**, **Memory Frequency(MHz)**  
The settings above are synchronous to those under the same items on the **Advanced Frequency Settings** menu.

### ☞ **Memory Timing Mode**

**Manual** and **Advanced Manual** allows the **Channel Interleaving**, **Rank Interleaving**, and memory timing settings below to be configurable. Options are: Auto (default), Manual, Advanced Manual.

### ☞ **Profile DDR Voltage**

When using a non-XMP memory module or **Extreme Memory Profile (X.M.P.)** is set to **Disabled**, the value is displayed according to your memory specification. When **Extreme Memory Profile (X.M.P.)** is set to **Profile1** or **Profile2**, the value is displayed according to the SPD data on the XMP memory.

### ☞ **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 Memory Sub Timings**

This sub-menu provides memory timing settings for each channel of memory. The respective timing setting screens are configurable only when **Memory Timing Mode** is set to **Manual** or **Advanced Manual**. Note: Your system may become unstable or fail to boot after you make changes on the memory timings. If this occurs, please reset the board to default values by loading optimized defaults or clearing the CMOS values.

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

## ▶ Advanced Voltage Settings



This sub-menu allows you to set CPU, chipset and memory voltages.

## ► PC Health Status



### 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 Open

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.

- ☞ **CPU Vcore/DRAM Voltage/+3.3V/+5V/+12V**  
 Displays the current system voltages.
- ☞ **CPU/System Temperature**  
 Displays current CPU/system temperature.
- ☞ **CPU/System Fan Speed**  
 Displays current CPU/system fan speeds.
- ☞ **CPU Temperature Warning**  
 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 CPU fan or system fan are not connected or fail. Check the fan condition or fan connection when this occurs. (Default: Disabled)
- ☞ **CPU Fan Speed Control**  
 Allows you to determine whether to enable the fan speed control function and adjust the fan speed.

  - ☞ Normal            Allows the fan to run at different speeds according to the CPU temperature. You can adjust the fan speed with System Information Viewer based on your system requirements. (Default)
  - ☞ Silent             Allows the fan to run at slow speeds.
  - ☞ Manual            Allows you to control the fan speed under the **Fan Speed Percentage** item.
  - ☞ Full Speed        Allows the fan to run at full speeds.
- ☞ **Fan Speed Percentage**  
 Allows you to control the fan speed. This item is configurable only when **CPU Fan Speed Control** is set to **Manual**. Options are: 0.75 PWM value /°C ~ 2.50 PWM value /°C.
- ☞ **1st System Fan Speed Control (SYS\_FAN1 Connector)**  
 Allows you to determine whether to enable the fan speed control function and adjust the fan speed.

  - ☞ Normal            Allows the fan to run at different speeds according to the system temperature. You can adjust the fan speed with System Information Viewer based on your system requirements. (Default)
  - ☞ Silent             Allows the fan to run at slow speeds.
  - ☞ Manual            Allows you to control the fan speed under the **Fan Speed Percentage** item.
  - ☞ Full Speed        Allows the fan to run at full speeds.
- ☞ **Fan Speed Percentage**  
 Allows you to control the fan speed. This item is configurable only when **1st System Fan Speed Control** is set to **Manual**. Options are: 0.75 PWM value /°C ~ 2.50 PWM value /°C.
- ☞ **2nd System Fan Speed Control (SYS\_FAN2 Connector)**  
 Allows you to determine whether to enable the fan speed control function and adjust the fan speed.

  - ☞ Normal            Allows the fan to run at different speeds according to the system temperature. You can adjust the fan speed with System Information Viewer based on your system requirements. (Default)
  - ☞ Silent             Allows the fan to run at slow speeds.
  - ☞ Manual            Allows you to control the fan speed under the **Fan Speed Percentage** item.
  - ☞ Full Speed        Allows the fan to run at full speeds.
- ☞ **Fan Speed Percentage**  
 Allows you to control the fan speed. This item is configurable only when **2nd System Fan Speed Control** is set to **Manual**. Options are: 0.75 PWM value /°C ~ 2.50 PWM value /°C.

## ► Miscellaneous Settings



### ☞ PCIe Slot Configuration

Allows you to set the operation mode of the PCI Express slots to Gen 1, Gen 2, or Gen 3. Actual operation mode is subject to the hardware specification of each slot. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

### ☞ 3DMark01 Boost

Allows you to determine whether to enhance some legacy benchmark performance. (Default: Disabled)

## 2-4 System Information



This section provides information on your motherboard model and BIOS version. You can also select the default language used by the BIOS and manually set the system time.

### System Language

Selects the default language used by the BIOS.

### System Date

Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value.

### System Time

Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:00:00. Use <Enter> to switch between the Hour, Minute, and Second fields and use the <Page Up> or <Page Down> key to set the desired value.

### Access Level

Displays the current access level depending on the type of password protection used. (If no password is set, the default will display as **Administrator**.) The Administrator level allows you to make changes to all BIOS settings; the User level only allows you to make changes to certain BIOS settings but not all.

## 2-5 BIOS Features



### Boot Option Priorities

Specifies the overall boot order from the available devices. For example, you can set hard drive as the first priority (**Boot Option #1**) and DVD ROM drive as the second priority (**Boot Option #2**). The list only displays the device with the highest priority for a specific type. For example, only hard drive defined as the first priority on the **Hard Drive BBS Priorities** submenu will be presented here.

Removable storage devices that support GPT format will be prefixed with "UEFI:" string on the boot device list. To boot from an operating system that supports GPT partitioning, select the device prefixed with "UEFI:" string.

Or if you want to install an operating system that supports GPT partitioning such as Windows 7 64-bit, select the optical drive that contains the Windows 7 64-bit installation disk and is prefixed with "UEFI:" string.



- ☞ **Hard Drive/CD/DVD ROM Drive/Floppy Drive/Network Device BBS Priorities**  
 Specifies the boot order for a specific device type, such as hard drives, optical drives, floppy disk drives, and devices that support Boot from LAN function, etc. Press <Enter> on this item to enter the submenu that presents the devices of the same type that are connected. This item is present only if at least one device for this type is installed.
- ☞ **Bootup NumLock State**  
 Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: Enabled)
- ☞ **Security Option**  
 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 **Administrator Password/User Password** item.

  - ▶▶ Setup                      A password is only required for entering the BIOS Setup program.
  - ▶▶ System                     A password is required for booting the system and for entering the BIOS Setup program. (Default)
- ☞ **Full Screen LOGO Show**  
 Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** skips the GIGABYTE Logo when the system starts up. (Default: Enabled)
- ☞ **Fast Boot**  
 Enables or disables Fast Boot to shorten the OS boot process. **Ultra Fast** provides the fastest bootup speed. (Default: Disabled)
- ☞ **VGA Support**  
 Allows you to select which type of operating system to boot.

  - ▶▶ Auto                         Enables legacy option ROM only.
  - ▶▶ EFI Driver                  Enables EFI option ROM. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled** or **Ultra Fast**.
- ☞ **USB Support**

  - ▶▶ Disabled                    All USB devices are disabled before the OS boot process completes.
  - ▶▶ Full Initial                 All USB devices are functional in the operating system and during the POST. (Default)
  - ▶▶ Partial Initial             Part of the USB devices are disabled before the OS boot process completes.

This item is configurable only when **Fast Boot** is set to **Enabled**. This function is disabled when **Fast Boot** is set to **Ultra Fast**.
- ☞ **PS2 Devices Support**

  - ▶▶ Disabled                    All PS/2 devices are disabled before the OS boot process completes.
  - ▶▶ Enabled                     All PS/2 devices are functional in the operating system and during the POST. (Default)

This item is configurable only when **Fast Boot** is set to **Enabled**. This function is disabled when **Fast Boot** is set to **Ultra Fast**.
- ☞ **NetWork Stack Driver Support**

  - ▶▶ Disabled                    Disables booting from the network. (Default)
  - ▶▶ Enabled                     Enables booting from the network.

This item is configurable only when **Fast Boot** is set to **Enabled** or **Ultra Fast**.
- ☞ **Windows 8 Features**  
 Allows you to select the operating system to be installed. (Default: Other OS)

### ☞ **CSM Support**

Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

- ▶▶ Always                      Enables UEFI CSM. (Default)
- ▶▶ Never                        Disables UEFI CSM and supports UEFI BIOS boot process only.

This item is configurable only when **Windows 8 Features** is set to **Windows 8** or **Windows 8 WHQL**.

### ☞ **Boot Mode Selection**

Allows you to select which type of operating system to boot.

- ▶▶ UEFI and Legacy        Allows booting from operating systems that support legacy option ROM or UEFI option ROM. (Default)
- ▶▶ Legacy Only             Allows booting from operating systems that only support legacy Option ROM.
- ▶▶ UEFI Only                Allows booting from operating systems that only support UEFI Option ROM.

This item is configurable only when **CSM Support** is set to **Always**.

### ☞ **LAN PXE Boot Option ROM**

Allows you to select whether to enable the legacy option ROM for the LAN controller. (Default: Disabled)

This item is configurable only when **CSM Support** is set to **Always**.

### ☞ **Storage Boot Option Control**

Allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller.

- ▶▶ Disabled                 Disables Option ROM.
- ▶▶ Legacy Only             Enables legacy option ROM only. (Default)
- ▶▶ UEFI Only                Enables UEFI option ROM only.
- ▶▶ Legacy First            Enables legacy option ROM first.
- ▶▶ UEFI First                Enables UEFI option ROM first.

This item is configurable only when **CSM Support** is set to **Always**.

### ☞ **Other PCI Device ROM Priority**

Allows you to select whether to enable the UEFI or Legacy option ROM for the PCI device controller other than the LAN, storage device, and graphics controllers.

- ▶▶ Legacy OpROM        Enables legacy option ROM only.
- ▶▶ UEFI OpROM            Enables UEFI option ROM only. (Default)

This item is configurable only when **CSM Support** is set to **Always**.

### ☞ **Network stack**

Disables or enables booting from the network to install a GPT format OS, such as installing the OS from the Windows Deployment Services server. (Default: Disabled)

### ☞ **Ipv4 PXE Support**

Enables or disables IPv4 PXE Support. This item is configurable only when **Network stack** is enabled.

### ☞ **Ipv6 PXE Support**

Enables or disables IPv6 PXE Support. This item is configurable only when **Network stack** is enabled.

### ☞ **PXE boot wait time**

Allows you to configure how long to wait before you can press <Esc> to abort the PXE boot. This item is configurable only when **Network stack** is enabled.

↳ **Administrator Password**

Allows you to configure an administrator password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. Differing from the user password, the administrator password allows you to make changes to all BIOS settings.

↳ **User Password**

Allows you to configure a user password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. However, the user password only allows you to make changes to certain BIOS settings but not all.

To cancel the password, press <Enter> on the password item and when requested for the password, enter the correct one first. When prompted for a new password, press <Enter> without entering any password. Press <Enter> again when prompted to confirm.

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

## 2-6 Peripherals



- **IOMMU**  
Enables or disables AMD IOMMU support. (Default: Disabled)
- **OnChip USB Controller**  
Enables or disables the integrated USB controller. (Default: Enabled)
- **HD Audio Azalia Device**  
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**.
- **Legacy USB Support**  
Allows USB keyboard/mouse to be used in MS-DOS. (Default: Enabled)
- **XHCI Hand-off**  
Determines whether to enable XHCI Hand-off feature for an operating system without XHCI Hand-off support. (Default: Enabled)
- **EHCI Hand-off**  
Determines whether to enable EHCI Hand-off feature for an operating system without EHCI Hand-off support. (Default: Disabled)
- **Port 60/64 Emulation**  
Enables or disables emulation of I/O ports 64h and 60h. This should be enabled for full legacy support for USB keyboards/mice in MS-DOS or in operating system that does not natively support USB devices. (Default: Disabled)
- **USB Storage Devices**  
Displays a list of connected USB mass storage devices. This item appears only when a USB storage device is installed.
- **Onboard LAN Controller**  
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 USB3.1 Controller (ASMedia® USB 3.1 Controller)**  
Enables or disables the ASMedia® USB 3.1 controller. (Default: Enabled)

## ▶ **GFX Configuration**

### ☞ **Primary Video Device**

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

- ▶▶ IGD Video            Sets the onboard graphics as the first display.
- ▶▶ NB PCIe Slot Video    Sets the graphics card on the PCIe slot controlled by the CPU as the first display. (Default)
- ▶▶ SB PCIe Slot Video    Sets the graphics card on the PCIe/PCI slot controlled by the Chipset as the first display.

### ☞ **Integrated Graphics**

Enables or disables the onboard graphics function.

- ▶▶ Auto                    The BIOS will automatically enable or disable the onboard graphics depending on the graphics card being installed. (Default)
- ▶▶ Disabled                Disables the onboard graphics.
- ▶▶ Force                    Always activates the onboard graphics, whether or not a PCI Express card is installed.

### ☞ **UMA Frame Buffer Size**

This item is configurable only when **Integrated Graphics** is set to **Force**. 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), 32M, 64M, 128M, 256M, 512M, 1G, 2G.

## ▶ **SATA Configuration**

### ☞ **OnChip SATA Channel**

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

### ☞ **OnChip SATA Type**

Enables or disables RAID for the SATA controllers integrated in the Chipset or configures the SATA controllers to AHCI mode.

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

### ☞ **OnChip SATA Port4-7 Type (SATA3 4~SATA3 7 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 7 connectors.

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

### ☞ **PORT0 Hot Plug~PORT7 Hot Plug**

Enables or disable the hot plug capability for each SATA port. (Default: Disabled)

### ☞ **SATA Power on PORT0~SATA Power on PORT7**

Enables or disables each SATA port. (Default: Enabled)

## ▶ **Super IO Configuration**

This section provides information on the super I/O chip and allows you to configure the serial port and parallel port.

### ☞ **Serial Port A**

Enables or disables the onboard serial port. (Default: Enabled)

### ☞ **Parallel Port**

Enables or disables the onboard parallel port. (Default: Enabled)

### ☞ **Device Mode**

This item is configurable only when **Parallel Port** is set to **Enabled**. Selects an operating mode for the onboard parallel (LPT) port. Options are: Standard Parallel Port Mode (Default), EPP Mode (Enhanced Parallel Port), ECP Mode (Extended Capabilities Port), EPP Mode & ECP Mode.

## 2-7 Power Management



### Resume by Alarm

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

If enabled, set the date and time as following:

- ▶▶ Wake up day: Turn on the system at a specific time on each day or on a specific day in a month.
- ▶▶ Wake up hour/minute/second: Set the time at which the system will be powered on automatically.

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

### HPET Timer

Enables or disables High Precision Event Timer (HPET) for Windows 10/8.1/7 operating system. (Default: Enabled)

### Soft-Off by PWR-BTTN

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

- ▶▶ Instant-Off: Press the power button and then the system will be turned off instantly. (Default)
- ▶▶ Delay 4 Sec.: Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode.

### AC BACK

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

- ▶▶ Memory: The system returns to its last known awake state upon the return of the AC power.
- ▶▶ Always On: The system is turned on upon the return of the AC power.
- ▶▶ Always Off: The system stays off upon the return of the AC power. (Default)

### 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.
- ▶▶ Keyboard 98: Press POWER button on the Windows 98 keyboard to turn on the system.
- ▶▶ Any key: Press any key to turn on the system.

☞ **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.

☞ **Power On By Mouse**

Allows the system to be turned on by a PS/2 mouse 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)
- ▶▶ Move          Move the mouse to turn on the system.
- ▶▶ Double Click    Double click on left button on the mouse to turn on the system.

☞ **ErP**

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

## 2-8 Save & Exit



### Save & Exit Setup

Press <Enter> on this item and select **Yes**. This saves the changes to the CMOS and exits the BIOS Setup program. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### Exit Without Saving

Press <Enter> on this item and select **Yes**. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### Load Optimized Defaults

Press <Enter> on this item and select **Yes** 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.

### Boot Override

Allows you to select a device to boot immediately. Press <Enter> on the device you select and select **Yes** to confirm. Your system will restart automatically and boot from that device.

### Save Profiles

This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles and save as Setup Profile 1~ Setup Profile 8. Press <Enter> to complete. Or you can select **Select File in HDD/USB/FDD** to save the profile to your storage device.

### Load Profiles

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. You can select **Select File in HDD/USB/FDD** to input the profile previously created from your storage device or load the profile automatically created by the BIOS, such as reverting the BIOS settings to the last settings that worked properly (last known good record).



## Chapter 3 Configuring a RAID Set

### RAID Levels

	RAID 0	RAID 1	RAID 5	RAID 10
Minimum Number of Hard Drives	≥2	2	≥3	≥4
Array Capacity	Number of hard drives * Size of the smallest drive	Size of the smallest drive	(Number of hard drives - 1) * Size of the smallest drive	(Number of hard drives/2) * Size of the smallest drive
Fault Tolerance	No	Yes	Yes	Yes

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

- A. Install SATA hard drive(s) in your computer.
- B. Configure SATA controller mode in BIOS Setup.
- C. Configure a RAID array in RAID BIOS <sup>(Note 1)</sup>
- D. Install the SATA RAID/AHCI driver and operating system <sup>(Note 2)</sup>

### 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 flash drive.

## 3-1 Configuring SATA Controllers

### 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.

(Note 1) Skip this step if you do not want to create RAID array on the SATA controller.

(Note 2) Required when the SATA controller is set to AHCI or RAID mode.

## B. Configuring SATA controller mode in BIOS Setup

Make sure to configure the SATA controller mode correctly in system BIOS Setup.

Step 1:

Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Ensure **OnChip SATA Channel** is enabled under **Peripherals\SATA Configuration**. To enable RAID for the SATA3 0/1/2/3 connectors, set **OnChip SATA Type** to **RAID**. To enable RAID for the SATA3 4-SATA3 7 connectors, set **OnChip SATA Type** to **RAID** and set **OnChip SATA Port4-7 Type** to **As SATA Type** (Figure 1).



Figure 1

Step 2:

If you want to configure UEFI RAID, follow the steps in "C-1." To enter the legacy RAID ROM, save the settings and exit BIOS Setup. Refer to "C-2" for more information.



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-1. UEFI RAID Configuration

This mode supports Windows 10/8.1 64-bit installation only.

To configure UEFI RAID, you need to prepare a USB flash drive using FAT 32 file format and copy all files (including the UEFI RAID utility rcadm.efi) in the **!BootDrv\UEFI RAID Utility** folder in your motherboard driver disk to the flash drive. Then follow the steps below.

Step 1:

In BIOS Setup, go to **BIOS Features** and set **Windows 8 Features** to **Windows 8** and **CSM Support** to **Never**. (Figure 2) Save the changes and exit BIOS Setup.



Figure 2

### Running the UEFI RAID Utility

Restart your computer and press <F12> to enter the boot device configuration menu. Use the up or down arrow key to select your USB flash drive which is prefixed with "UEFI:" string. Then press <Enter> to access the screen as shown in Figure 3. To run the UEFI RAID utility, enter the following commands.

You can enter the commands at **Shell** or **fsx:** level (**x** represents the disk number for your USB flash drive).

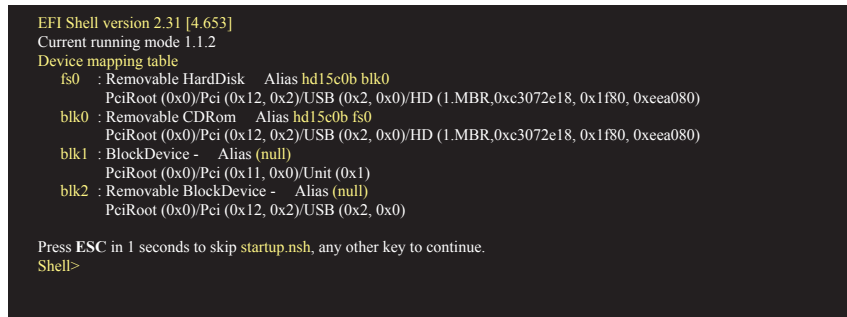


Figure 3

### Checking Disk Information

To see the hard drive information, enter the following commands and press <Enter>. You will see CONTROLLER LIST and DISK LIST displayed on the screen.

```
rcadm -M -qa (Figure 4)
```

```
fs0:\>rcadm -M -qa
```

Figure 4

### Creating a RAID Array

To create a RAID array, refer to the following examples to enter the commands and press <Enter>. When succeeded, the message which says "created successfully" will appear.

#### Example 1: Create a RAID 0 array with Drive 0 and Drive 1 and the array size is 40 GB.

```
rcadm -C -r0 -d 0 1 -s 40000 (Figure 5)
```

("C"=Create a array, "r0"=RAID 0, d 0 1=Drive 0 and Drive 1, "s 40000"=Size of 40 GB; to use the maximum size allowed, do not enter "s x0000")

```
fs0:\>rcadm -C -r0 -d 0 1 -s 40000
```

```
created successfully
```

```
fs0:\>
```

Figure 5

#### Example 2: Create a RAID 5 array with Drive 1~4 and the array size is 75 GB.

```
rcadm -C -r5 -d 1 2 3 4 -s 75000 (Figure 6)
```

("C"=Create a array, "r5"=RAID 5, d 1 2 3 4=Drive 1~4, "s 75000"=Size of 75 GB)

```
fs0:\>rcadm -C -r5 -d 1 2 3 4 -s 75000
```

```
created successfully
```

```
fs0:\>
```

Figure 6

After you create the array, you can enter the "rcadm -M -qa" commands to see the array information. In addition to the CONTROLLER LIST and DISK LIST information, you will see ARRAY LIST information displayed on the screen, too.


### Deleting an Array

To delete an array, enter the following commands and press <Enter>.

```
rcadm -D -a 1 (Figure 7)
```

("D"=Delete a array, "a 1"=Array 1, to delete all arrays, enter "a \*")

When prompted to confirm, enter **YES** to delete or **NO** to cancel, and then press <Enter>.



```
fs0:\>rcadm -D -a 1

Delete Array 1, are you sure?(YES, NO): yes
deleting array 1
deleting array //Core1/Route0/Device 1

fs0:\>
```

Figure 7

To exit the UEFI RAID utility, enter "exit" and press <Enter>.

## C-2. Configuring Legacy RAID ROM

Enter the legacy RAID BIOS setup utility to configure a RAID array. Skip this step and proceed with the installation of Windows operating system for a non-RAID configuration.

Steps:

After the POST memory test begins and before the operating system boot begins, look for a message which looks like that in Figure 8 below. Press <Ctrl> + <R> to enter the RAID BIOS setup utility.



Figure 8

## Creating a RAID Array

To create a new array, press <Enter> on the **Create Array** option. (Figure 9)

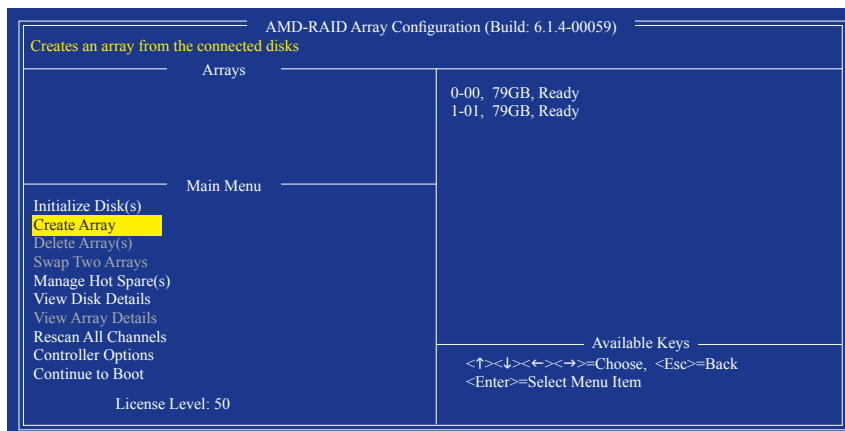


Figure 9

The selection bar will move to the **Disks** section on the right of the screen. Select the hard drives to be included in the RAID array. Use the up or down arrow key to select a hard drive and press <Insert>. The selected hard drive will be shown in green. To use all of the hard drives, simply press <A> to select all. Then press <Enter> and the selection bar will move to the **User Input** section on the left bottom of the screen. (Figure 10)

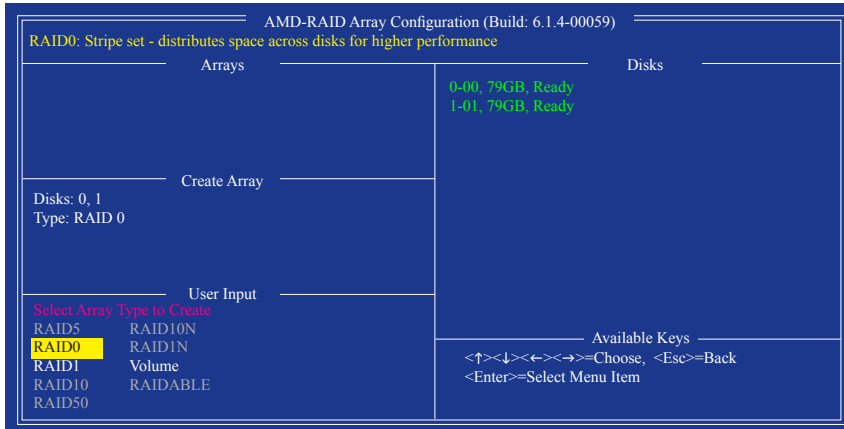


Figure 10

First, select a RAID mode and press <Enter>. The selections available depend on the number of the hard drives being installed. Then follow the on-screen instructions to specify the array size. You can select **All available space** to use the maximum size allowed or use the up or down arrow key to adjust the size (Figure 11) and press <Enter>

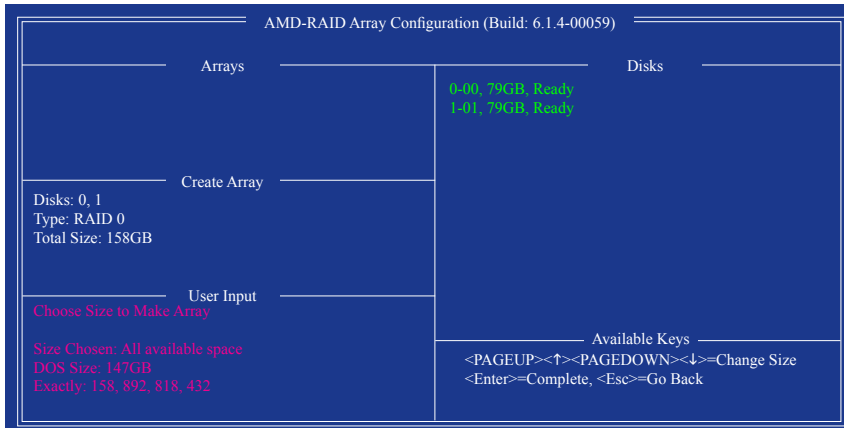


Figure 11

Select a caching mode. Options include Read/Write, Read Only, and None. Then press <Enter> to proceed.

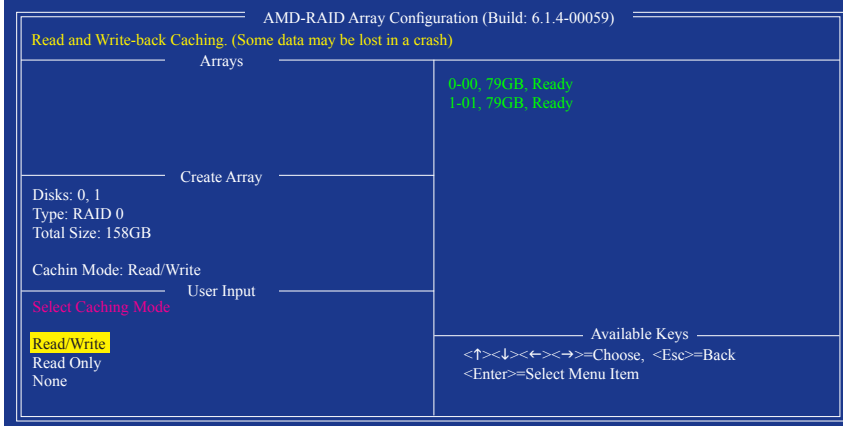


Figure 12

Finally, a message which says "Confirm Creation of Array" will appear. Press <C> to confirm or <Esc> to return to the previous screen. When completed, you will see the new array on the main screen (Figure 13). To exit the RAID BIOS utility, press <Esc> and then press <C> to confirm.

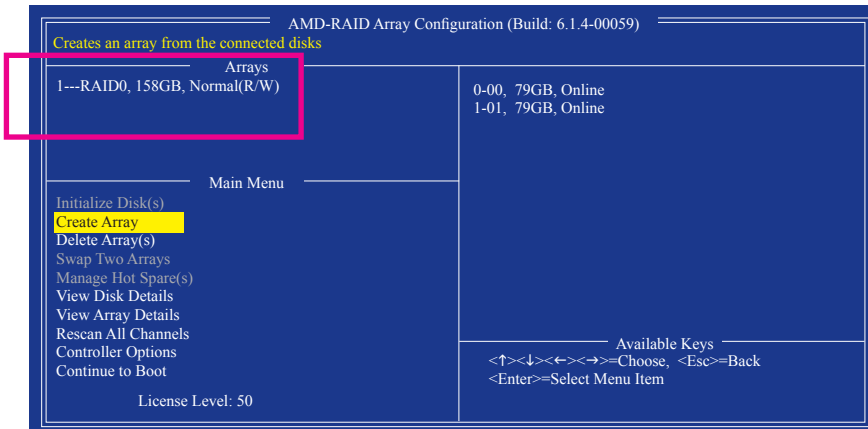


Figure 13



## Deleting an Array

The **Delete Array(s)** menu option allows for deletion of disk array assignments.



Deleting an existing disk array could result in loss of data. Record all array information including the array type, the disk members, and stripe block size in case you wish to undo a deletion.

1. Select **Delete Array(s)** in the **Main Menu** and press <Enter>.
2. In the **Arrays** section, press the <Insert> key on the array you want to delete and then press <Enter> to proceed.
3. When prompted to confirm (Figure 14), press <C> to continue the deletion or <Esc> to cancel.

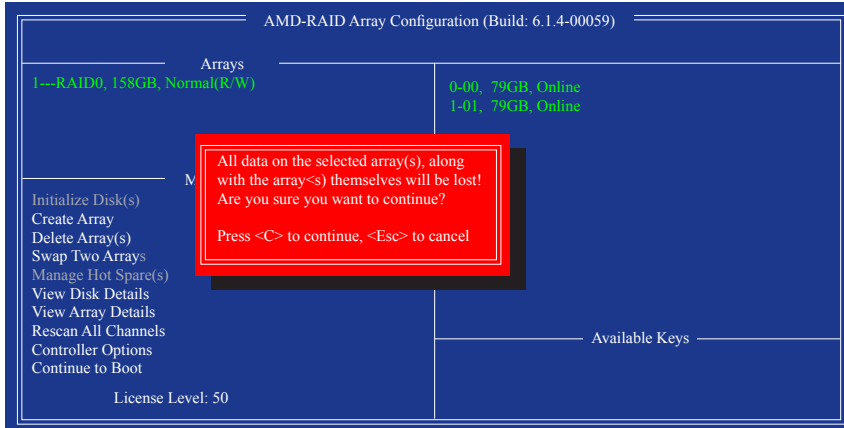


Figure 14

## 3-2 Installing the SATA RAID/AHCI Driver and Operating System

With the correct BIOS settings, you are ready to install the operating system.

### A. Installing Windows

(The following instructions use Windows 8.1 as the example operating system.)

#### Step 1:

You need to install the SATA RAID/AHCI driver during the OS installation. Use an alternative system to copy the SATA RAID/AHCI driver from the motherboard driver disk to a USB flash drive. Copy the SATA RAID/AHCI driver folder under **BootDrv** in the driver disk depending on your Windows version, for example:

Windows 10 driver folder: "BootDrv\Hw10"

Windows 8.1 driver folder: "BootDrv\Hw81"

Windows 7 driver folder: "BootDrv\Hw7\_A88"

#### Step 2:

Boot from the Windows setup disk and perform standard OS installation steps. When the screen requesting you to load the driver appears, select **Browse**.

#### Step 3:

Then browse to the USB flash drive and select the location of the driver, for example:

Windows 10 64-bit RAID driver directory: "Hw10\RAID\x64"

Windows 8.1 64-bit RAID driver directory: " Hw81\RAID\x64"

Windows 7 32-bit RAID driver directory: "Hw7\_A88\RAID\x86"

#### Step 4:

When a screen as shown in Figure 1 appears, select **AMD-RAID Controller (storport) (E:\Hw81\RAID\x64\acraid.inf)** and click **Next** to load the driver and continue the OS installation.

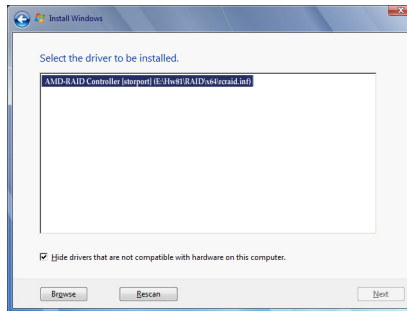
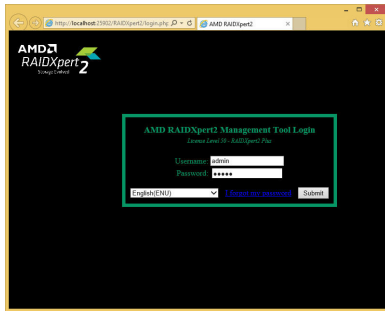


Figure 1

## Rebuilding an Array:

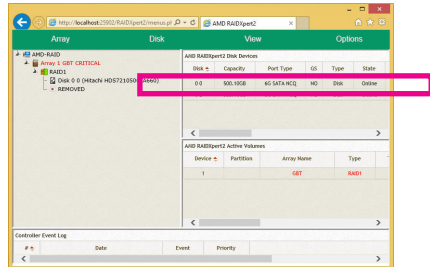
Rebuilding is the process of restoring data to a hard drive from other drives in the array. Rebuilding applies only to fault-tolerant arrays such as RAID 1, RAID 5, and RAID 10 arrays. To replace the old drive, make sure to use a new drive of equal or greater capacity. The procedures below assume a new drive is added to replace a failed drive to rebuild a RAID 1 array.

While in the operating system, make sure the Chipset and RAID drivers have been installed from the motherboard driver disk. After restarting your computer, switch to Windows desktop mode. Then double-click the **RAIDXpert2** icon on the desktop to launch the RAID utility.



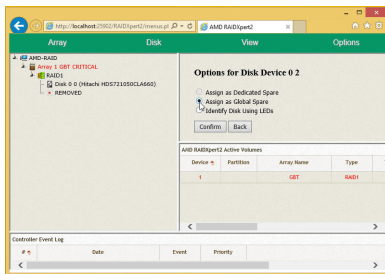
### Step 1:

Enter the login ID and password (default: "admin"), and then click **Submit** to launch AMD RAIDxpert2.



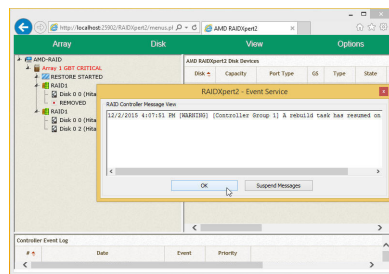
### Step 2:

In the **Disk Devices** section, left-click your mouse twice on the newly-added hard drive.



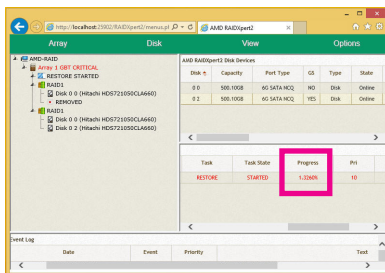
### Step 3:

On the next screen, select **Assign as Global Spare** and click **Confirm**.



### Step 4:

When the message "A rebuild task has resumed on.." appears, click **OK** to continue.



### Step 5:

During the rebuild process, you can select the array that is being built (displayed in red) in the **Active Volumes** section to check the current progress. When notified that the rebuild is done, click **OK** to complete.




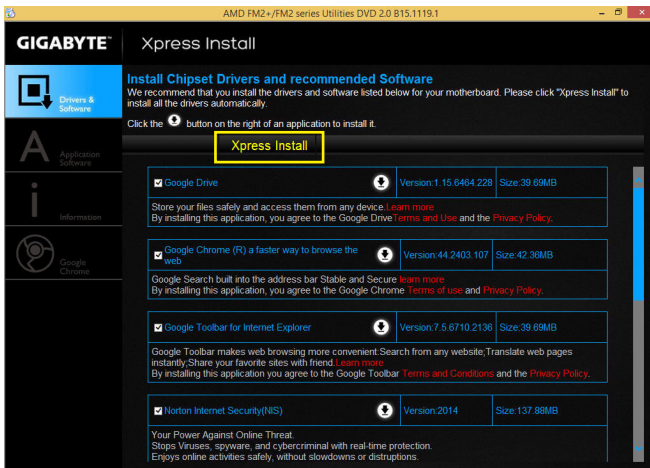
# Chapter 4 Drivers Installation



- Before installing the drivers, first install the operating system. (The following instructions use Windows 8.1 as the example operating system.)
- After installing the operating system, insert the motherboard driver disk into your optical drive. Click on the message "Tap to choose what happens with this disc" on the top-right corner of the screen and select "Run Run.exe." (Or go to My Computer, double-click the optical drive and execute the Run.exe program.)


## 4-1 Drivers & Software

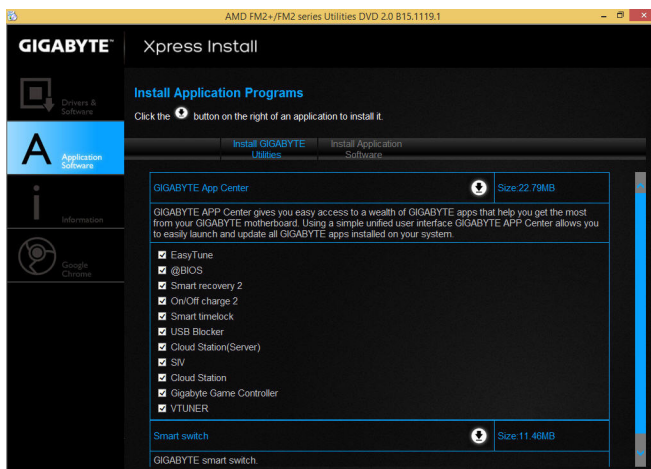
"Xpress Install" will automatically scan your system and then list all of the drivers that are recommended to install. You can click the **Xpress Install** button and "Xpress Install" will install all of the selected drivers. Or click the  icon to individually install the drivers you need.



- Please ignore the popup dialog box(es) (e.g. the **Found New Hardware Wizard**) displayed when "Xpress Install" is installing the drivers. Failure to do so may affect the driver installation.
- Some device drivers will restart your system automatically during the driver installation. After the system restart, "Xpress Install" will continue to install other drivers.

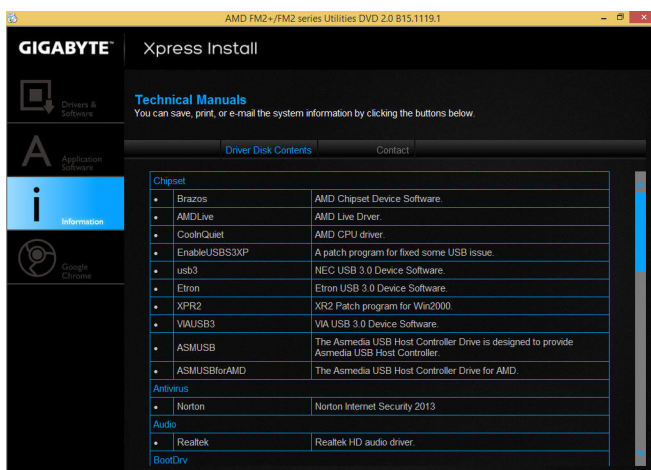
## 4-2 Application Software

This page displays the apps that GIGABYTE develops and some free software. You can select the apps you want and click the **Install**  icon to begin the installation.



## 4-3 Information

This page provides detailed information on the drivers on the driver disk. The **Contact** page provides contact information of the GIGABYTE Taiwan headquarter. You can click the URL on this page to link to the GIGABYTE website to check more information on the GIGABYTE headquarter or worldwide branch offices.



## Chapter 5 Unique Features

### 5-1 BIOS Update Utilities

GIGABYTE motherboards provide two unique BIOS update tools, Q-Flash™ and @BIOS™. GIGABYTE Q-Flash and @BIOS are easy-to-use and allow you to update the BIOS without the need to enter MS-DOS mode. Additionally, this motherboard features the DualBIOS™ design, which enhances protection for the safety and stability of your computer by adding one more physical BIOS chip.

#### What is DualBIOS™?

Motherboards that support DualBIOS have two BIOS onboard, a main BIOS and a backup BIOS. Normally, the system works on the main BIOS. However, if the main BIOS is corrupted or damaged, the backup BIOS will take over on the next system boot and copy the BIOS file to the main BIOS to ensure normal system operation. For the sake of system safety, users cannot update the backup BIOS manually.

#### What is Q-Flash™?

With Q-Flash you can update the system BIOS without having to enter operating systems like MS-DOS or Windows first. Embedded in the BIOS, the Q-Flash tool frees you from the hassles of going through complicated BIOS flashing process.

#### What is @BIOS™?

@BIOS allows you to update the system BIOS while in the Windows environment. @BIOS will download the latest BIOS file from the nearest @BIOS server site and update the BIOS.

### 5-1-1 Updating the BIOS with the Q-Flash Utility

#### A. Before You Begin

1. From GIGABYTE's website, download the latest compressed BIOS update file that matches your motherboard model.
2. Extract the file and save the new BIOS file (e.g. A88XMD3HP.F1) to your USB flash drive, or hard drive. Note: The USB flash drive or hard drive must use FAT32/16/12 file system.
3. Restart the system. During the POST, press the <End> key to enter Q-Flash. Note: You can access Q-Flash by either pressing the <End> key during the POST or pressing the <F8> key in BIOS Setup. However, if the BIOS update file is saved to a hard drive in RAID/AHCI mode or a hard drive attached to an independent SATA controller, use the <End> key during the POST to access Q-Flash.



Because BIOS flashing is potentially risky, please do it with caution. Inadequate BIOS flashing may result in system malfunction.

## B. Updating the BIOS

In the main menu of Q-Flash, use the keyboard or mouse to select an item to execute. When updating the BIOS, choose the location where the BIOS file is saved. The following procedure assumes that you save the BIOS file to a USB flash drive.

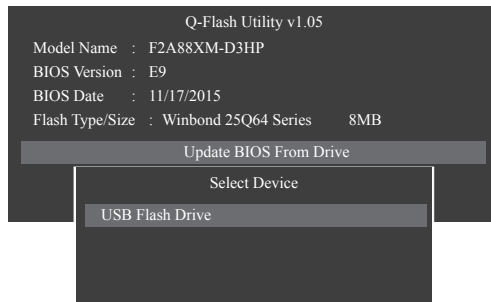
Step 1:

1. Insert the USB flash drive containing the BIOS file into the computer. In the main menu of Q-Flash, select **Update BIOS From Drive**.



- The **Save BIOS to Drive** option allows you to save the current BIOS file.
- Q-Flash only supports USB flash drive or hard drives using FAT32/16/12 file system.
- If the BIOS update file is saved to a hard drive in RAID/AHCI mode or a hard drive attached to an independent SATA controller, use the <End> key during the POST to access Q-Flash.

2. Select **USB Flash Drive**.



3. Select the BIOS update file.



**Make sure the BIOS update file matches your motherboard model.**

Step 2:

The process of the system reading the BIOS file from the USB flash drive is displayed on the screen. When the message "Are you sure to update BIOS?" appears, select **Yes** to begin the BIOS update. The monitor will display the update process.



- **Do not turn off or restart the system when the system is reading/updating the BIOS.**
- **Do not remove the USB flash drive or hard drive when the system is updating the BIOS.**

Step 3:

The system will restart after the update process is complete.



Step 4:

During the POST, press <Delete> to enter BIOS Setup. Select **Load Optimized Defaults** on the **Save & Exit** screen and press <Enter> to load BIOS defaults. System will re-detect all peripheral devices after a BIOS update, so we recommend that you reload BIOS defaults.



Select **Yes** to load BIOS defaults

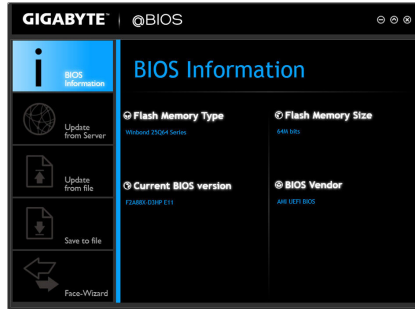
Step 5:

Select **Save & Exit Setup** and press <Enter>. And then select **Yes** to save settings to CMOS and exit BIOS Setup. The procedure is complete after the system restarts.

## 5-1-2 Updating the BIOS with the @BIOS Utility

### A. Before You Begin

1. In Windows, close all applications and TSR (Terminate and Stay Resident) programs. This helps prevent unexpected failures when performing a BIOS update.
2. If the BIOS is being updated via the Internet, ensure the Internet connection is stable and do NOT interrupt the Internet connection (for example, avoid a power loss or switching off the Internet). Failure to do so may result in a corrupted BIOS or a system that is unable to start.
3. GIGABYTE product warranty does not cover any BIOS damage or system failure resulting from an inadequate BIOS flashing.



### B. Using @BIOS

#### 1. Update the BIOS Using the Internet Update Function:



Click **Update from Server**, select the @BIOS server site closest to your location and then download the BIOS file that matches your motherboard model. Follow the on-screen instructions to complete.



If the BIOS update file for your motherboard is not present on the @BIOS server site, please manually download the BIOS update file from GIGABYTE's website and follow the instructions in "Update the BIOS without Using the Internet Update Function" below.

#### 2. Update the BIOS without Using the Internet Update Function:



Click **Update from File**, then select the location where you save the BIOS update file obtained from the Internet or through other source. Follow the on-screen instructions to complete.

#### 3. Save the Current BIOS File:



Click **Save to File** to save the current BIOS file.

#### 4. Change the Boot-up Logo:



Click **Upload new image** in Face-Wizard and you will be able to change the boot-up logo with your own picture, creating a personalized boot-up screen. Click **Backup current image** to save the currently used boot-up logo.



Supported image formats include jpg, bmp, and gif.

### C. After Updating the BIOS

Restart your system after updating the BIOS.




- Make sure that the BIOS file to be flashed matches your motherboard model. Updating the BIOS with an incorrect BIOS file could cause your system not to boot.
- Do not turn off the system or remove the power during the BIOS update process, or the BIOS may corrupt and the system may not boot.

## 5-2 APP Center

GIGABYTE App Center gives you easy access to a wealth of GIGABYTE apps that help you get the most from your GIGABYTE motherboard <sup>(Note)</sup>. Using a simple, unified user interface, GIGABYTE App Center allows you to easily launch all GIGABYTE apps installed on your system, check related updates online, and download the apps, drivers, and BIOS.

### Running the APP Center

Insert the motherboard driver disk. On the Autorun screen, go to **Application Software\Install GIGABYTE Utilities** to install GIGABYTE App Center and the selected apps. Restart your computer after the installation is complete. In Desktop mode, click the App Center icon  in the notification area to launch the App Center utility (Figure 1). On the main menu, you can select an app to run or click **Live Update** to update an app online.

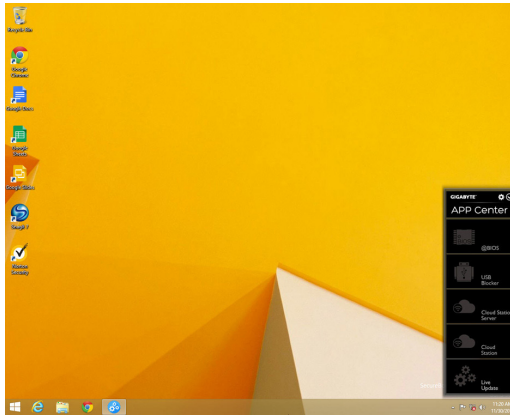


Figure 1

If the App Center is closed, you can restart it by clicking the App Center icon on the Apps menu (Figure 2).

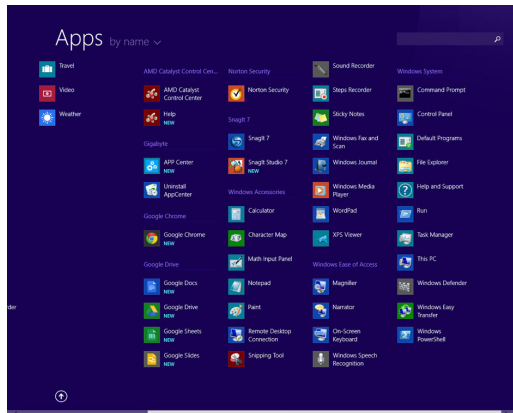


Figure 2

(Note) Available applications in APP Center may differ by motherboard model. Supported functions of each application may also differ depending on motherboard specifications.




## 5-2-1 EasyTune

GIGABYTE's EasyTune is a simple and easy-to-use interface that allows users to fine-tune their system settings or do overclock/overvoltage in Windows environment.

### The EasyTune Interface



### Tabs Information

Tab	Description
	The <b>Smart Quick Boost</b> tab provides you with different levels of CPU frequency to choose to achieve desired system performance. After making changes, be sure to restart your system for these changes to take effect.
	The <b>Advanced CPU OC</b> tab allows you to set CPU base clock, frequency, and voltages, and integrated graphics frequency. You can save the current settings to a profile. You can create up to 2 profiles.
	The <b>Advanced DDR OC</b> tab allows you to set the memory clock.



Available functions in EasyTune may differ by motherboard model. Grayed-out area(s) indicates that the item is not configurable or the function is not supported.

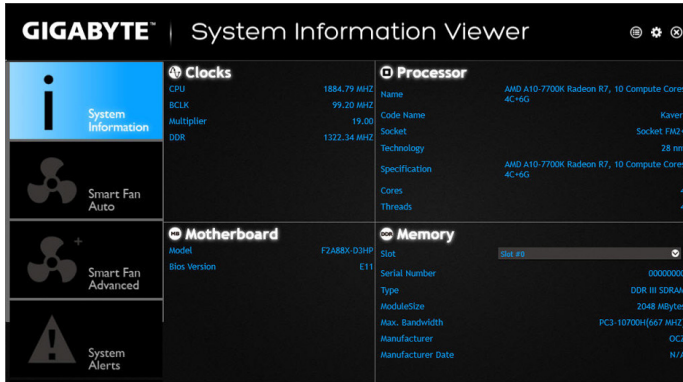


Incorrectly doing overclock/overvoltage may result in damage to the hardware components such as CPU, chipset, and memory and reduce the useful life of these components. Before you do the overclock/overvoltage, make sure that you fully know each function of EasyTune, or system instability or other unexpected results may occur.






## 5-2-2 System Information Viewer

GIGABYTE System Information Viewer allows you to monitor and adjust the fan speed in the operating system. You can also display the hardware monitor information on the desktop to view the system status at any time.

### The System Information Viewer Interface



### Tabs Information

Tab	Description
	The <b>System Information</b> tab provides information on the installed CPU and motherboard and the BIOS version.
	The <b>Smart Fan Auto</b> tab allows you to specify a Smart Fan mode
	The <b>Smart Fan Advance</b> tab allows you to adjust the smart fan speed. The fans will run at different speeds according to system temperatures. Using the <b>Smart Fan</b> option you can adjust the fan's workload according system temperatures or you can fix the fan speeds using the <b>RPM Fixed Mode</b> option. Click the <b>Calibrate</b> button and the fan speed will be shown in relation to overall fan workload after calibration. The <b>Reset</b> button can revert the fan settings back to the last saved values.
	The <b>System Alerts</b> tab allows you to monitor hardware temperature, voltage and fan speed, and set temperature/fan speed alarm.
	The <b>Record</b> tab allows you to record changes in system voltages, temperatures, and fan speeds. Please note, the recording will stop if you exit the <b>Record</b> tab during the recording process.

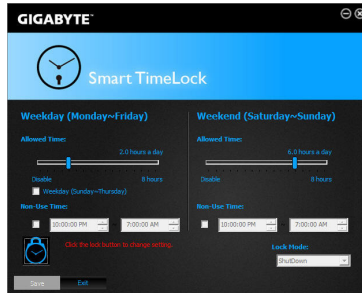


The speed control function requires the use of a fan with fan speed control design.


## 5-2-3 Smart TimeLock

GIGABYTE Smart TimeLock allows you to effectively manage computer or Internet usage time with simple rules and options.

### The Smart TimeLock Interface



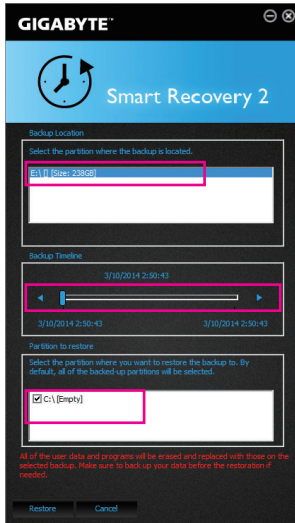
### Using Smart TimeLock

Click the lock icon  on the bottom left corner and enter the password <sup>(Note)</sup>. Set the time when a user can or cannot use your computer for weekdays and weekends. The **Lock Mode** on the bottom right corner allows you to choose to turn off the computer or only close the Internet connection during the specified time period. Click **Save** to save the settings and click **Exit** to exit.

An alert will appear 15 minutes and 1 minute prior to the default shutdown time. When the alert appears, you can enter the password to extend the usage time or click **Cancel** to close the alert. If you respond **Cancel**, you will be requested to enter the password to extend the usage time again when the default shutdown time arrives, or the computer will shutdown right away.

(Note) You can set the User Password in the system BIOS Setup program to prevent the system time being changed by other users.





## Recovering your system with Smart Recovery 2:

Steps:

1. Click the **System Recovery** button on the main menu.
2. Select the location where your backup is saved.
3. Use the time slider to select a time point.
4. Select a partition backup created on the selected time point and click **Restore**.
5. Confirm whether to restart your system to proceed with the restore immediately or later. Once you respond "Yes" the system will restart to the Windows recovery environment. Follow the onscreen instructions to restore your system.



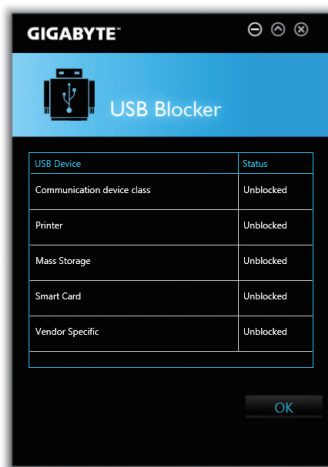
All of your files and programs will be deleted and replaced with those on the selected backup. If needed, be sure to make a copy of your data before the restore.



## 5-2-5 USB Blocker

GIGABYTE USB Blocker provides you with an easy-to-use interface that allows you to block certain USB device types on your PC. Devices classes that are blocked will be ignored by the operating system.

### The USB Blocker Interface



### Using USB Blocker

Select the class of USB device that you would like to block or unblocked. Double left-click to change the **Blocked** or **Unblocked** status and click **OK**. Then enter your password and click **OK** to complete.

## 5-2-6 Game Controller

GIGABYTE Game Controller allows you to define your own hotkeys and change the mouse sensitivity, helping you make the most out of your keyboard and mouse in games.

### The Game Controller Interface



### Using Game Controller:

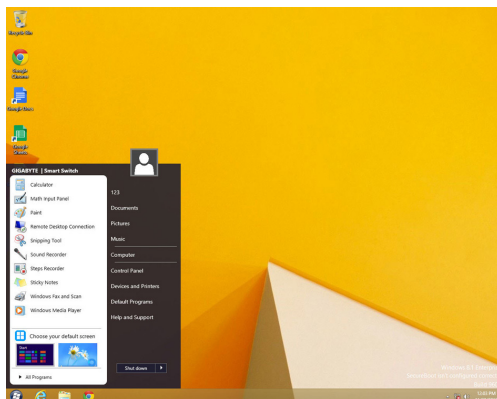
- **Hot Key:**  
Create macro commands and define your own hotkeys to quickly perform the function you want.
- **Speed:**  
Using the Sniper key you can switch the mouse sensitivity when you are in sniper mode for better sniper accuracy.

(Note) It is recommended that Game Controller be closed if it violates the end user license agreement of your game.


## 5-3 Smart Switch

GIGABYTE Smart Switch provides you with the conventional Windows start menu, allowing you to easily access to the apps that you frequently use. You can also select the default screen displayed after you enter Windows.

### The Smart Switch Interface



### Using Smart Switch

The Smart Switch icon  will appear on the bottom left corner of the traditional Windows desktop screen after Smart Switch is installed. Left-click the icon to see the screen as that shown above and you can set the default screen displayed after you enter Windows.

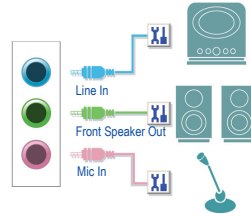


## Chapter 6 Appendix

### 6-1 Configuring Audio Input and Output

#### 6-1-1 Configuring 2/4/5.1/7.1-Channel Audio

The motherboard provides three audio jacks on the back panel which support 2/4/5.1/7.1 (Note)-channel audio. The picture to the right shows the default audio jack assignments.



- To configure 4/5.1/7.1-channel audio, you have to retask either the Line in or Mic in jack to other speaker functionality through the audio driver.
- Audio signals will be present on both of the front and back panel audio connections simultaneously. If you want to mute the back panel audio (only supported when using an HD front panel audio module), refer to instructions on the next page.

#### High Definition Audio (HD Audio)


HD Audio includes multiple high quality digital-to-analog converters (DACs) and features multistreaming capabilities that allow multiple audio streams (in and out) to be simultaneously processed. For example, users can listen to MP3 music, have an Internet chat, make a telephone call over the Internet, and etc. all at the same time.

#### A. Configuring Speakers

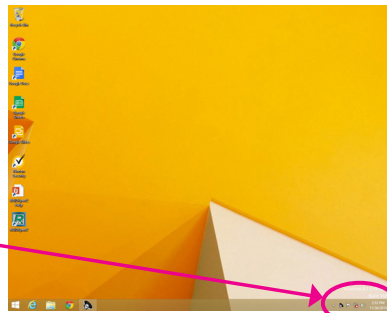
(The following instructions use Windows 8.1 as the example operating system.)

Step 1:

After installing the audio driver, restart your computer.

Then switch to Windows desktop mode. The **HD Audio Manager** icon  will appear in the notification area.

Double-click the icon to access the **HD Audio Manager**.



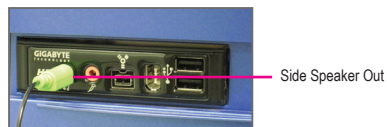
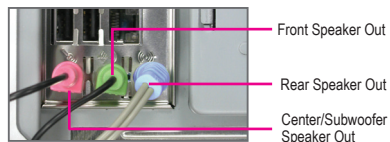
(Note) 2/4/5.1/7.1-Channel Audio Configurations:

Refer to the following for multi-channel speaker configurations.

- 2-channel audio: Headphone or Line out.
- 4-channel audio: Front speaker out and Rear speaker out.
- 5.1-channel audio: Front speaker out, Rear speaker out, and Center/Subwoofer speaker out.
- 7.1-channel audio: Front speaker out, Rear speaker out, Center/Subwoofer speaker out, and Side speaker out.

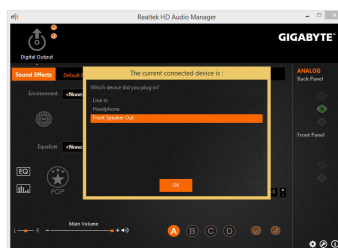
The pictures to the right show the 7.1-channel speaker configurations.

### 7.1-Channel Speakers:



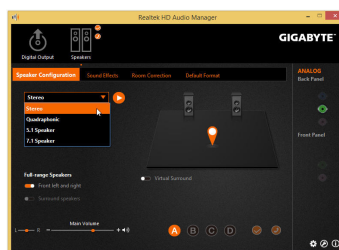
### Step 2:

Connect an audio device to an audio jack. The **The current connected device is** dialog box appears. Select the device according to the type of device you connect. Then click **OK**.



### Step 3:


On the **Speakers** screen, click the **Speaker Configuration** tab. In the **Speaker Configuration** list, select **Stereo**, **Quadraphonic**, **5.1 Speaker**, or **7.1 Speaker** according to the type of speaker configuration you wish to set up. Then the speaker setup is completed.

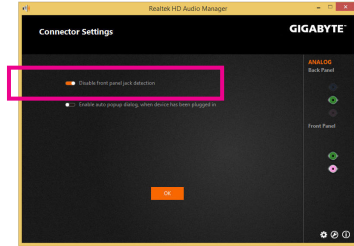


## B. Configuring Sound Effect


You may configure an audio environment on the **Sound Effects** tab.

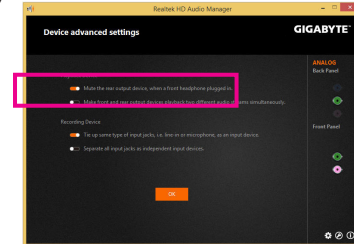
### C. Activating an AC'97 Front Panel Audio Module

If your chassis provides an AC'97 front panel audio module, to activate the AC'97 functionality, click the **Tool** icon  on the right bottom of the screen. On the **Connector Settings** dialog box, select the **Disable front panel jack detection** check box. Click **OK** to complete.



### D. Muting the Back Panel Audio (For HD Audio Only)

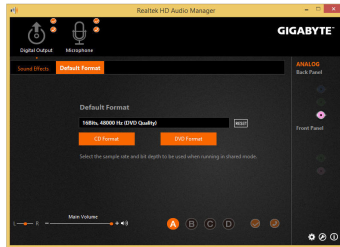
Click **Device advanced settings** icon  on the right bottom of the screen to open the **Device advanced settings** dialog box. Select the **Mute the rear output device, when a front headphone plugged in** check box. Click **OK** to complete.



## 6-1-2 Configuring S/PDIF Out

The S/PDIF Out connector can transmit audio signals to an external decoder for decoding to get the best audio quality.

On the **Digital Output(Optical)** screen, click the **Default Format** tab and then select the sample rate and bit depth. Click **OK** to complete.

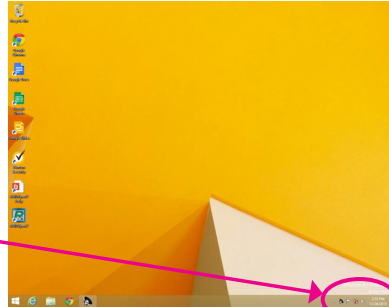




## 6-1-3 Configuring Microphone Recording

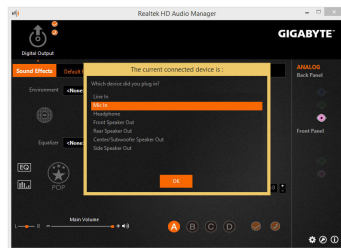
Step 1:

Switch to Windows desktop mode. The **HD Audio Manager** icon will appear in the notification area. Double-click the icon to access the **HD Audio Manager**.



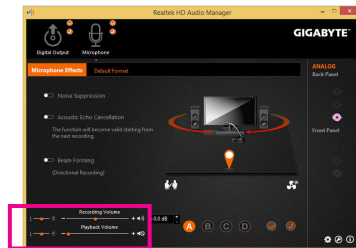
Step 2:

Connect your microphone to the Mic in jack (pink) on the back panel or the Mic in jack (pink) on the front panel. Then configure the jack for microphone functionality. Note: The microphone functions on the front panel and back panel cannot be used at the same time.



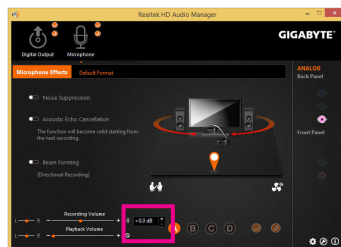
Step 3:

Go to the **Microphone** screen. Do not mute the recording volume, or you'll not be able to record the sound. To hear the sound being recorded during the recording process, do not mute the playback volume. It is recommended that you set the volumes at a middle level.



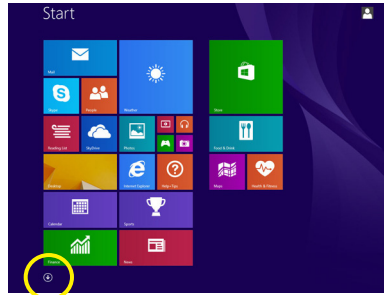
Step 4:

To raise the recording and playback volume for the microphone, you can set the Microphone Boost level on the right of the **Recording Volume** slider.



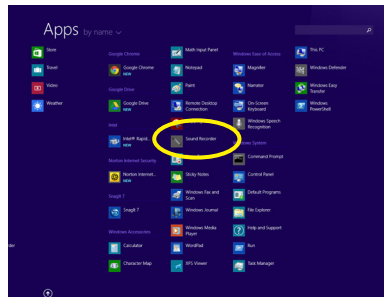
Step 5:

To open the **Sound Recorder**, move the mouse cursor to the bottom left corner of the screen, click the **Start** icon to switch to the **Start** screen (or press the Windows button on the keyboard). Click the **Start** icon on the bottom left corner of the screen to access the **Apps** screen.



Step 6:

On this screen, click **Sound Recorder** for audio recording.

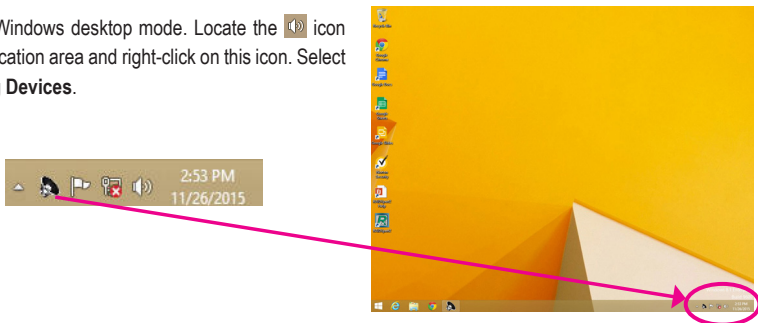


### \* Enabling Stereo Mix

If the HD Audio Manager does not display the recording device you wish to use, refer to the steps below. The following steps explain how to enable Stereo Mix (which may be needed when you want to record sound from your computer).

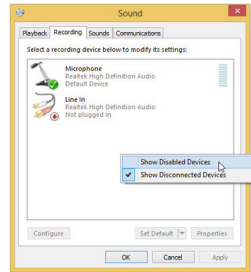
Step 1:

Switch to Windows desktop mode. Locate the **Speaker** icon in the notification area and right-click on this icon. Select **Recording Devices**.



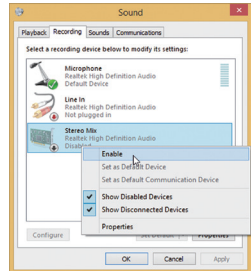
Step 2:

On the **Recording** tab, right-click on an empty space and select **Show Disabled Devices**.



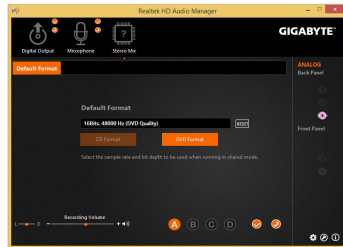
Step 3:

When the **Stereo Mix** item appears, right-click on this item and select **Enable**. Then set it as the default device.

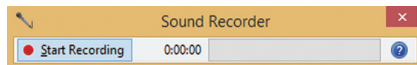


Step 4:



Now you can access the **HD Audio Manager** to configure **Stereo Mix** and use **Sound Recorder** to record the sound.



## 6-1-4 Using the Sound Recorder



### A. Recording Sound

1. Make sure you have connected the sound input device (e.g. microphone) to the computer.
2. To record the audio, click the **Start Recording** button .
3. To stop recording audio, click the **Stop Recording** button .

Be sure to save the recorded audio file upon completion.

### B. Playing the Recorded Sound

You can play your recording in a digital media player program that supports your audio file format.

## 6-2 Troubleshooting

### 6-2-1 Frequently Asked Questions

To read more FAQs for your motherboard, please go to the **Support & Downloads\FAQ** page on GIGABYTE's website.

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

A: Some motherboards provide a small amount of standby power after the computer shuts down and that's why the light is still on.

Q: How do I clear the CMOS values?

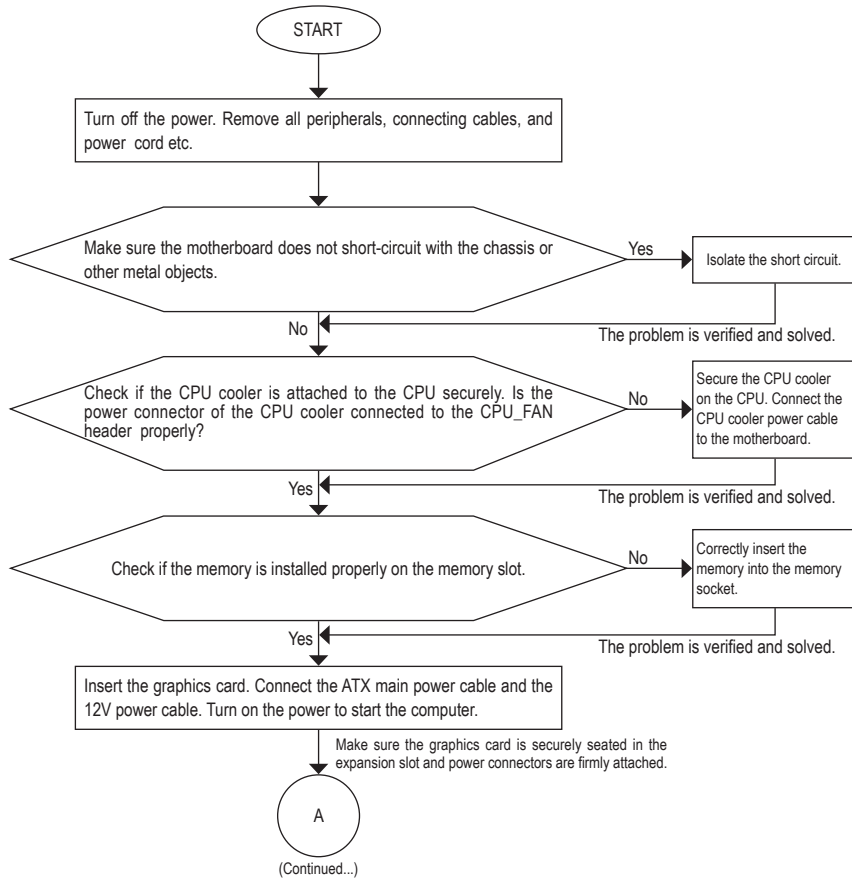
A: For motherboards that have a Clear CMOS button, press this button to clear the CMOS values (before doing this, please turn off the computer and unplug the power cord). For motherboards that have a Clear CMOS jumper, refer to the instructions in Chapter 1 to short the jumper to clear the CMOS values. If your board doesn't have this jumper/button, refer to the instructions on the motherboard battery in Chapter 1. You can temporarily remove the battery from the battery holder to stop supplying power to the CMOS, which will clear the CMOS values after about one minute.

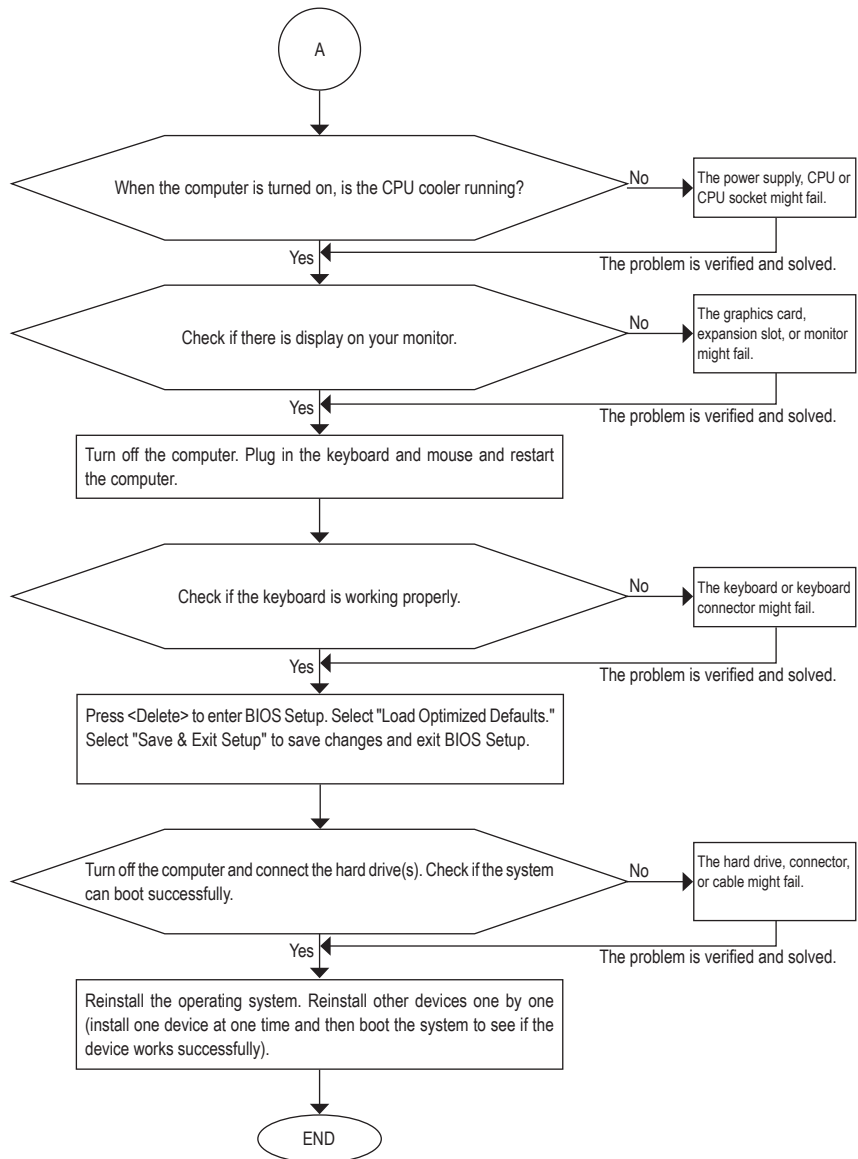
Q: Why do I still get a weak sound even though I have turned my speaker to the maximum volume?

A: Make sure your speaker is equipped with an internal amplifier. If not, try a speaker with power/amplifier.

## 6-2-2 Troubleshooting Procedure

If you encounter any troubles during system startup, follow the troubleshooting procedure below to solve the problem.





If the procedure above is unable to solve your problem, contact the place of purchase or local dealer for help. Or go to the **Support\Technical Support** page to submit your question. Our customer service staff will reply you as soon as possible.

# 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.

### **FCC Notice (U.S.A. Only)**

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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FAX: +886-2-8912-4005

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<http://esupport.gigabyte.com>

WEB address (English): <http://www.gigabyte.com>

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

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Warranty Info: <http://rma.gigabyte.us>

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Tech. Support: <http://rma.gigabyte.us>

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- **Thailand**

WEB address : <http://th.giga-byte.com>

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- **Saudi Arabia**

WEB address : <http://www.gigabyte.com.sa>

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- **Gigabyte Technology Pty. Ltd. - Australia**

WEB address : <http://www.gigabyte.com.au>

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- **G.B.T. TECHNOLOGY TRADING GMBH - Germany**

WEB address : <http://www.gigabyte.de>

- **G.B.T. TECH. CO., LTD. - U.K.**

WEB address : <http://www.giga-byte.co.uk>

- **Giga-Byte Technology B.V. - The Netherlands**

WEB address : <http://www.giga-byte.nl>

- **GIGABYTE TECHNOLOGY FRANCE - France**

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- **Sweden**

WEB address : <http://www.gigabyte.se>

- **Italy**

WEB address : <http://www.giga-byte.it>

- **Spain**

WEB address : <http://www.giga-byte.es>

- **Greece**

WEB address : <http://www.gigabyte.com.gr>

- **Czech Republic**

WEB address : <http://www.gigabyte.cz>

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- **Hungary**

WEB address : <http://www.giga-byte.hu>

- **Turkey**

WEB address : <http://www.gigabyte.com.tr>

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WEB address : <http://www.gigabyte.ru>

- **Poland**

WEB address : <http://www.gigabyte.pl>

- **Ukraine**

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- **Romania**

WEB address : <http://www.gigabyte.com.ro>

- **Serbia**

WEB address : <http://www.gigabyte.co.rs>

- **Kazakhstan**

WEB address : <http://www.gigabyte.kz>

- **GIGABYTE eSupport**

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