

GA-9SISL

Intel® Atom® processor motherboard

User's Manual

Rev. 1001

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Documentation Classifications

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

- For detailed product information, carefully read the User's Manual.

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

<http://www.gigabyte.com>

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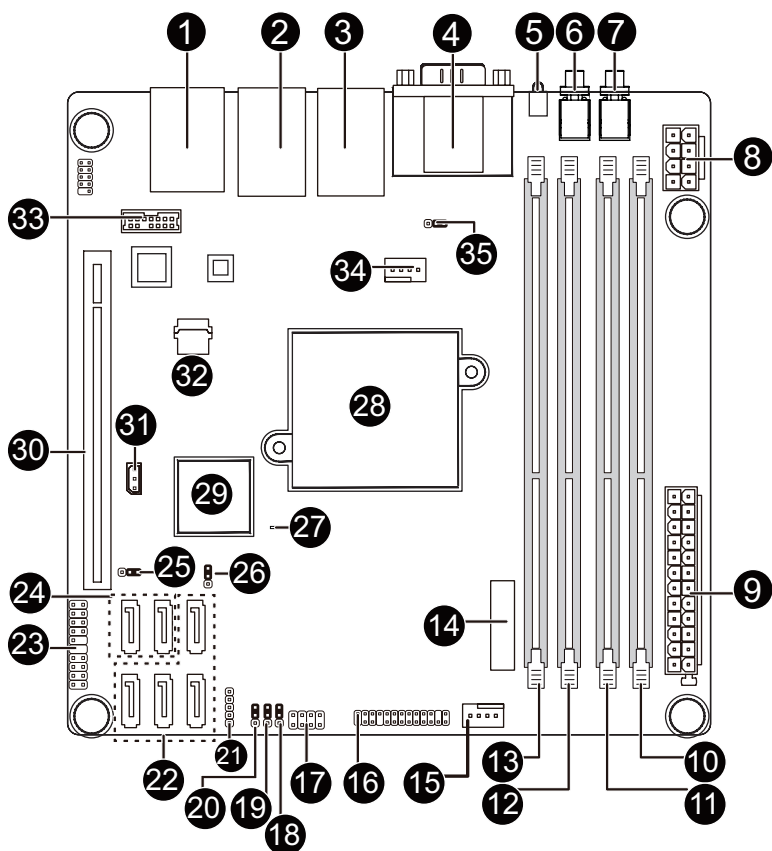
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Box Contents

- ☒ Motherboard
- ☒ Driver CD
- ☒ Two SATA cables
- ☒ I/O Shield

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

GA-9SISL Motherboard Layout

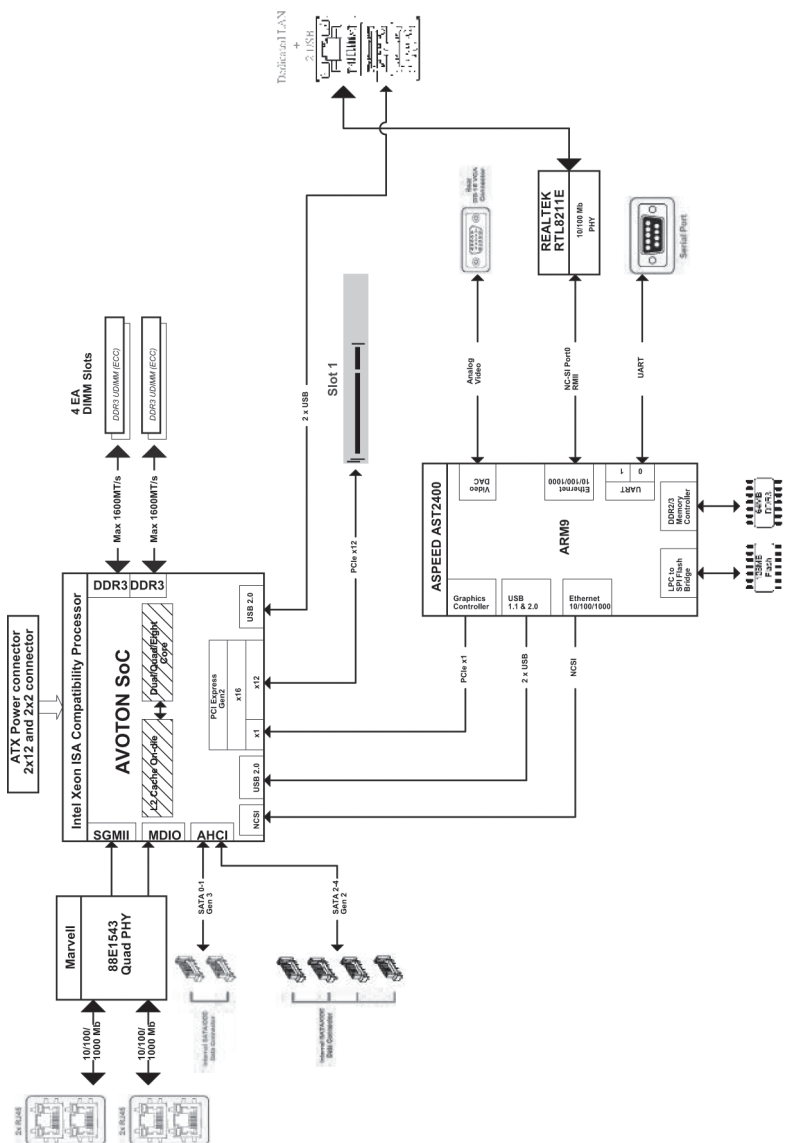


Item	Code	Description
1	USB_MLAN	BMC Management LAN port (top) / USB 2.0 ports (bottom)
2	LAN1_2	LAN1port (top) and LAN2 port (bottom)
3	LAN3_4	LAN3port (top) and LAN4 port (bottom)
4	VGA_COM1	Serial port (top) / VGA port (bottom)
5	LED_STA	System status LED
6	SW_ID	ID Switch button
7	SW_PWR	Power button
8	P12V_AUX1	8 pin power connector
9	ATX1	24 pin main power connector
10	DIMM_P0_A0	DIMM slot/Channel 1 slot 0
11	DIMM_P0_A1	DIMM slot/Channel 1 slot 1
12	DIMM_P0_B0	DIMM slot/Channel 2 slot 0
13	DIMM_P0_B0	DIMM slot/Channel 2 slot 1
14	BAT1	Battery socket
15	SYS_FAN1	System fan connector
16	BP_1	HDD back plane board header
17	PH_LED	Case open intrusion/LAN port 3 & port 4 Active/HDD LED header
18	BIOS_PWD	Clearing supervisor password jumper
19	CLR_CMOS	Clear CMOS jumper
20	BIOS_RCVR	BIOS recovery jumper
21	PMBUS	PMBus connector
22	SATA2/3/4/5	SATA 3Gb/s connectors
23	FP_2	Front panel header
24	SATA0/1	SATA 6Gb/s connectors
25	SATA_DOM0	SATA port 0 DOM support jumper
26	ACK_SEL1	4 Nodes System and Rack System switch jumper
27	LED_BMC	BMC readiness LED
28	CPU	CPU
29	U351	ASPEED BMC chipset
30	PCIE_1	PCI-E x16 slot
31	IPMB	IPMB connector
32	BMC_FLH1	BMC Flash/Upgrade ROM
33	TPM	TPM module connector
34	CPU_FAN	CPU fan connector
35	S3_MASK	S3 Power On Select jumper



CAUTION! If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Default setting), in order to reduce any risk of hard disk damage. Please refer to Page 25 for SATA_DOM0 jumper setting instruction.

GA-9SISL Block Diagram














Chapter 1 Hardware Installation



1-1 Installation Precautions

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

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

1-2 Product Specifications

 CPU	<ul style="list-style-type: none"> Support for Intel® Atom® C2000 series processor L1/L2 cache varies with CPU
 Memory	<ul style="list-style-type: none"> 4 x 1.35V/1.5V DDR3 DIMM sockets supporting up to 32 GB of system memory Dual channel architecture Support for DDR3 1600 MHz memory modules Support for ECC/non-ECC, un-buffered memory modules
 LAN	<ul style="list-style-type: none"> Marvell® 88E1543 Quad PHY supports 10/100/1000 Mbps
 Onboard Graphics	<ul style="list-style-type: none"> Build-In ASPEED® 2400 chipset
 Storage Interface	<ul style="list-style-type: none"> 2 x SATA 6Gb/s connectors 4 x SATA 3Gb/s connectors
 USB	<ul style="list-style-type: none"> 2 x USB 2.0 ports (On the back panel)
 Expansion Slots	<ul style="list-style-type: none"> 1 x PCIe x16 slot (Gen2 x8 bus)
 Internal Connectors	<ul style="list-style-type: none"> 1 x 24-pin ATX main power connector 1 x 8-pin ATX 12V power connector 2 x SATA 6Gb/s connectors 4 x SATA 3Gb/s connectors 1 x CPU fan header 1 x System fan header 2 x Front panel header 1 x PMBus header 1 x Trusted Platform Module connector 1 x HDD back plane board header 1 x HDD LED/LAN port active/Case open intrusion combination header
 Back Panel Connectors	<ul style="list-style-type: none"> 2 x USB 2.0 ports 5 x RJ-45 ports (1 x 10/100 dedicated management LAN port) 1 x COM port 1 x VGA port 1 x ID Switch button 1 x Power button 1 x Status LED
 I/O Controller	<ul style="list-style-type: none"> ASPEED® AST2400 BMC chip
 Hardware Monitor	<ul style="list-style-type: none"> System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System fan speed control <p>* Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.</p>

	BIOS	<ul style="list-style-type: none"> ♦ 1 x 64 Mbit flash ♦ AMI BIOS
	Form Factor	<ul style="list-style-type: none"> ♦ Mini ITX Form Factor; 6.7 inch x 6.7 inch
GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.		

1-3 Installing the Memory

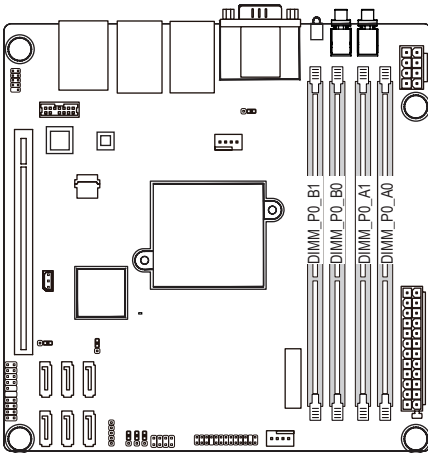


Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- 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.

1-3-1 Dual Channel Memory Configuration

This motherboard provides four DDR3 memory sockets and supports Dual Channel Technology. When 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.



	1N or 2N	DIMM1	DIMM0
U-DIMM	1N	Empty	Single-Rank
	1N	Empty	Dual-Rank
	2N	Single-Rank	Single-Rank
	2N	Single-Rank	Dual-Rank
	2N	Dual-Rank	Dual-Rank

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

1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
2. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used for optimum performance.

1-3-2 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.

Be sure to install DDR3 DIMMs on this motherboard.

Installation Step:

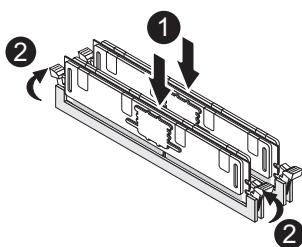
Step 1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.

Step 2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.

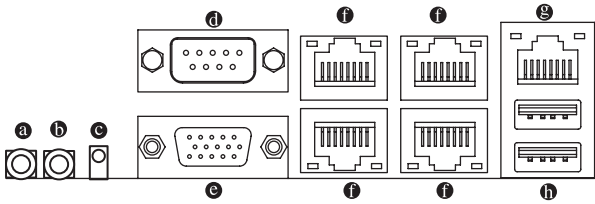
NOTE! DIMM must be populated in order starting from DIMM_P0_A0 socket.

For dual-channel operation, DIMMs must be installed in matched pairs.

Step 3. Reverse the installation steps when you wish to remove the DIMM module.



1-4 Back Panel Connectors



a Power Button and LED

Press this button to hard reset and power on the system.

Color	Status	Description
Green	On	System is powered on.
Green	Blink	System is in ACPI S1 state (sleep mode)
N/A	Off	<ul style="list-style-type: none">System is not powered on or in ACPI S5 state (power off)System is in ACPI S4 state (hibernate mode)

b ID Button and LED

This button provides the selected unit idfication function.

Color	Status	Description
Blue	On	Unit selected for identification.
N/A	Off	No identification.

c System Status LED

Display the system health status.

Color	Status	Description
Green	On	Running or normal operation.
Amber	On	There is at least one sensor that has critical alter.
N/A	Off	System is not ready.

d Serial Port

Connects to serial-based mouse or data processing devices.

e VGA Port

The video in port allows connect to video in, which can also apply to video loop thru function.

f RJ-45 LAN Port

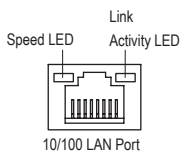
The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.

g KVM Server Management 10/100 LAN Port (Dedicated LAN Port)

The LAN port provides Internet connection with data transfer speeds of 10/100Mbps. This port is the decated LAN port for server management.

h USB 2.0 Port

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

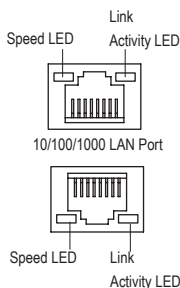


MLAN Speed LED:

State	Description
Green On	100 Mbps data rate
Green Blink	10 Mbps or 100 Mbps data rate
Off	10 Mbps data rate

Link/Activity LED:

State	Description
On	Link between system and network or no access
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring



LAN1/LAN2/LAN3/LAN4 Speed LED:

State	Description
Yellow On	1 Gbps data rate
Yellow Blink	Identify 1 Gbps data rate
Green On	100 Mbps data rate
Green Blink	Identify 100 Mbps data rate
Off	10 Mbps data rate

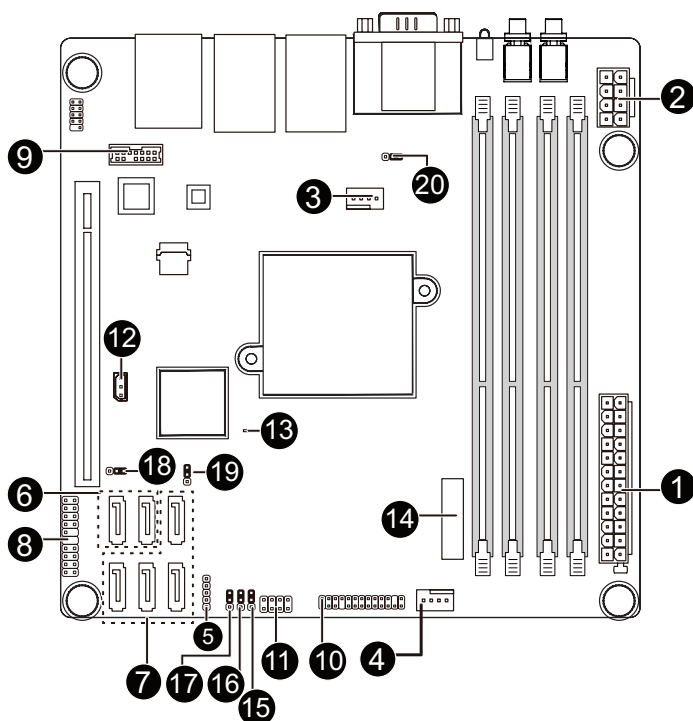
Link/Activity LED:

State	Description
On	Link between system and network or no access
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring



- 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.

1-5 Internal Connectors



1) ATX1	11) PH_LED
2) P12V_AUX1	12) IPMB
3) CPU_FAN (CPU Fan)	13) LED_BMC
4) SYS_FAN1 (System Fan)	14) BAT
5) PMBUS	15) BIOS_PWD
6) SATA0/1	16) CLR_CMOS
7) SATA2/3/4/5	17) BIOS_RCVR
8) FP_2	18) SATA_DOM0
9) TPM	19) ACK_SEL1
10) BP_1	20) S3_MASK

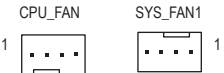
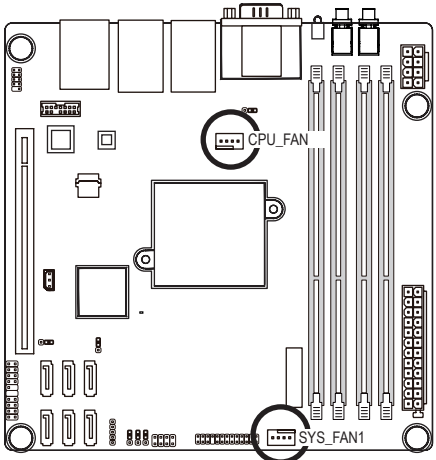


Read the following guidelines before connecting external devices:

- 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.

3/4) CPU_FAN/SYS_FAN1 (CPU Fan/System Fan Headers)

The motherboard has one 4-pin CPU fan header (CPU_FAN), and one 4-pin (SYS_FAN1) system fan headers. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



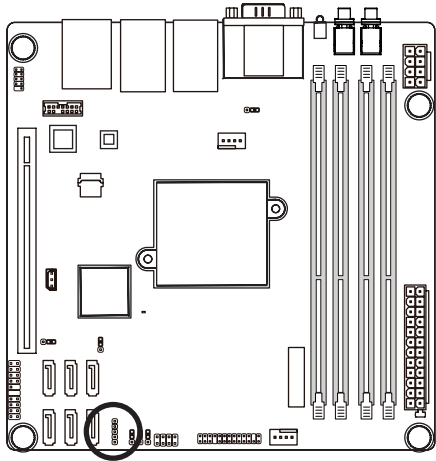
CPU_FAN/SYS_FAN1:

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



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

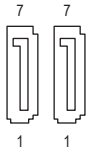
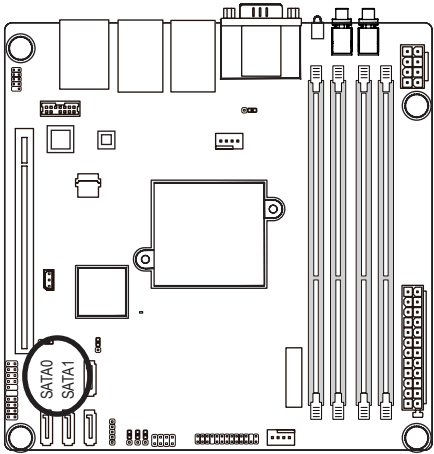
5) PMBUS (PMBus connector)



Pin No.	Definition
1	PMBUS_5VSTBY_SCL
2	PMBUS_5VSTBY_SDA
3	PMBUS_ALT_N
4	GND
5	P3V3

6) SATA0/SATA1 (SATA 6Gb/s Connectors)

The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and 1.5Gb/s standard. Each SATA connector supports a single SATA device.

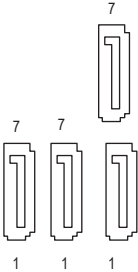
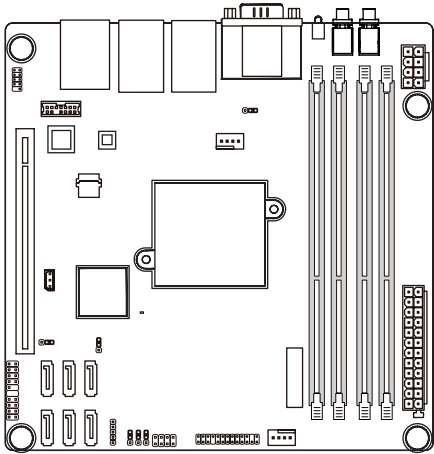


When SATA_DOM0 jumper are set to 1-2 pin: When SATA_DOM0 jumper are set to 2-3 pin:

Pin No.	Definition	Pin No.	Definition
1	GND	1	GND
2	TXP	2	TXP
3	TXN	3	TXN
4	GND	4	GND
5	RXN	5	RXN
6	RXP	6	RXP
7	P5V	7	GND

7) SATA20/SATA3/SATA4/SATA5 (SATA 3Gb/s Connectors)

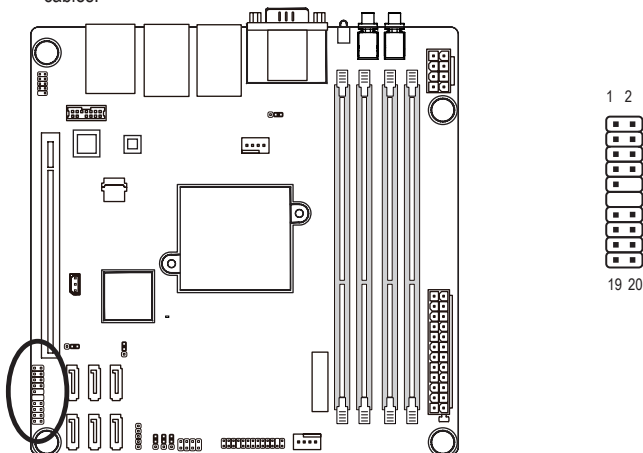
The SATA connectors conform to SATA 3Gb/s standard and are compatible with 1.5Gb/s standard. Each SATA connector supports a single SATA device.



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

8) FP_2 (Front Panel Header)

Connect the power switch, reset 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.

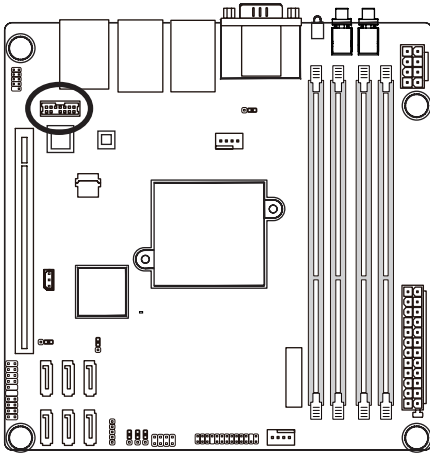


Pin No.	Signal Name	Definition
1	HD_LED+	Hard Disk LED Signal anode (+)
2	PWR_LED+	Power LED Signal anode (+)
3	HD_LED-	Hard Disk LED Signal cathode(-)
4	PW_LED-	Power LED Signal cathode(-)
5	GND	Power LED Signal cathode(-)
6	PWR_BTN	Power Button
7	RST_BTN	Reset button
8	GND	Ground
9	NC	No Pin
10	Key	No Pin
11	Key	No Pin
12	Key	No Pin
13	LAN1_LED+	LAN2 link LED Signal anode (+)
14	SPEAK+	Speaker Signal anode (+)
15	LAN1_ACT-	LAN2 active LED Signal cathode(-)
16	NC	No Connect
17	LAN0_LED+	LAN1 link LED Signal anode (+)
18	NC	No Connect
19	LAN0_ACT-	LAN1 active LED Signal cathode(-)
20	SPEAK-	Speaker Signal anode cathode(-)



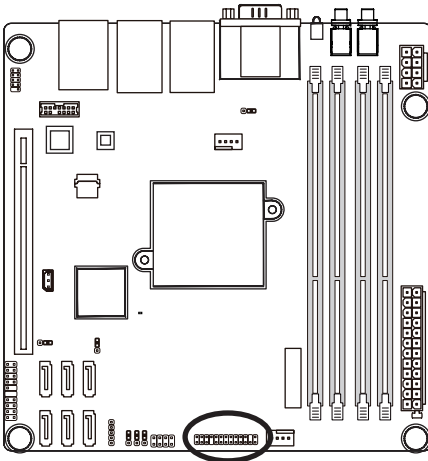
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

9) TPM (TPM Module connector)



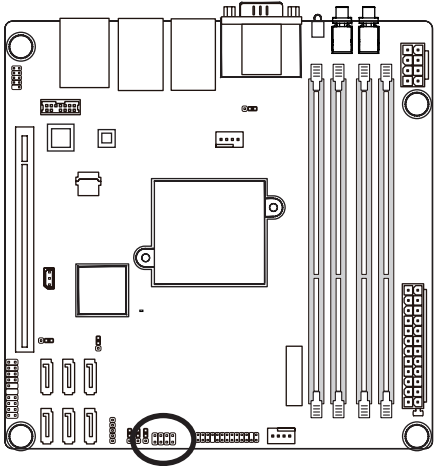
Pin No.	Definition
1	LPC_CLK
2	P_3V3_AUX
3	LPC_RST
4	LPC_SERIQ
5	LPC_LAD0
6	GRN_LED-
7	LPC_LAD1
8	NC
9	LPC_LAD2
10	KEY
11	LPC_LAD3
12	GND
13	LPC_FRAME
14	GND

10) BP_1 (HDD Back Plane Board Headers)



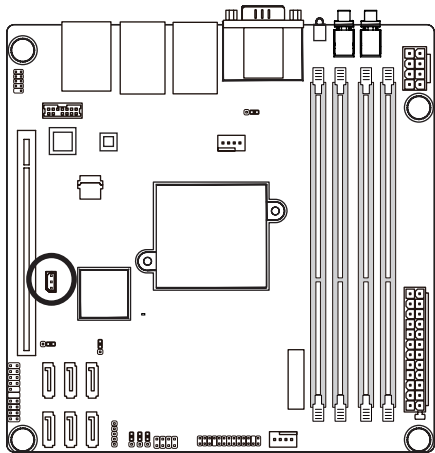
Pin No.	Definition
1	SGPIO_CLK
2	NC
3	SGPIO_LOAD
4	NC
5	SGPIO_DOUT
6	GND
7	KEY
8	RESET-
9	GND
10	AMR_LED-
11	GRN_LED-
12	GND
13	SGPIO_DIN
14	ACC_LED
15	GND
16	SMB_SDA
17	GND
18	SMB_SCL
19	P_3V3_AUX
20	ACK-
21	P_3V3_AUX
22	FCB-
23	GND
24	KEY
25	NC
26	GND

11) PH_LED (Case open intrusion/LAN prot 3 & port 4 Active/HDD LED header)



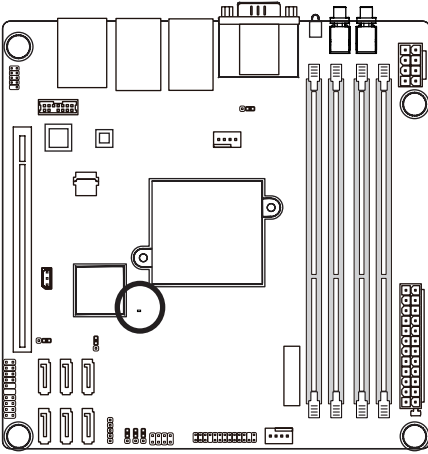
Pin No.	Definition
1	GND
2	CASE_OPEN-
3	LAN3_LED+
4	LAN3_ACT-
5	LAN4_LED+
6	LAN4_ACT-
7	HDD_AMR_LED-
8	HDD_GRN_LED-

12) IPMB (IPMB Connector)



Pin No.	Definition
1	SMB_CLK
2	GND
3	SMB_SDA

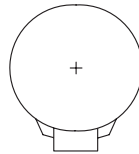
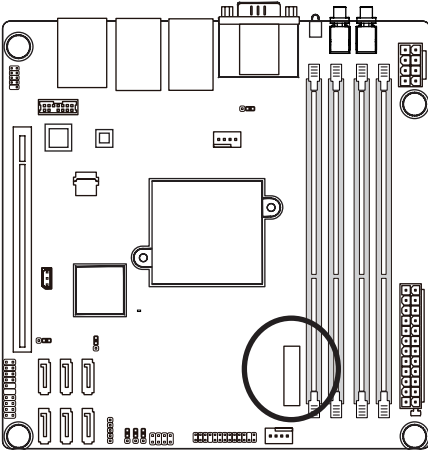
13) LED_BMC (BMC Firmware Readiness LED)



State	Description
On	BMC firmware is initial
Blinking	BMC firmware is ready
Off	System is powered off

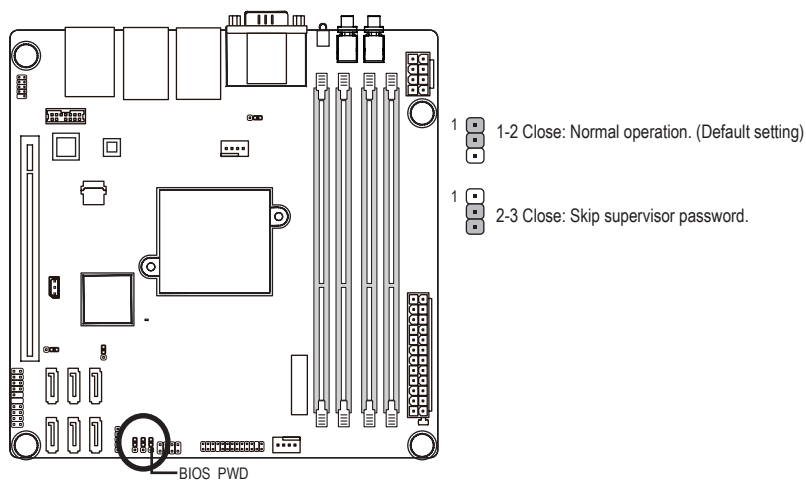
14) BAT (Battery cable connector)

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.



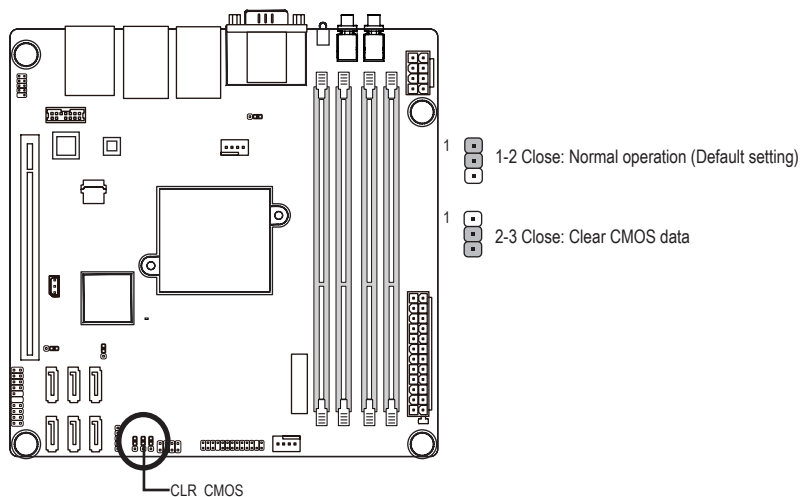
- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself 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.

15) BIOS_PWD (Clearing Supervisor Password Jumper)

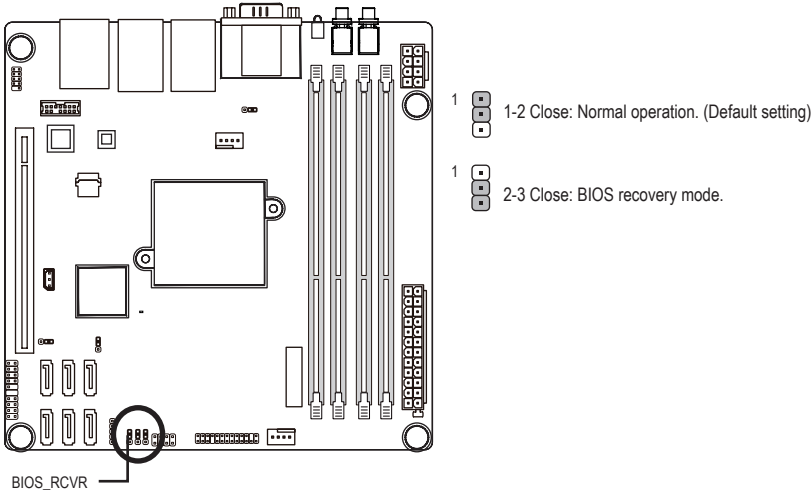


16) CLR_CMOS (Clearing CMOS Jumper)

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



17) BIOS_RCVR (BIOS Recovery Jumper)



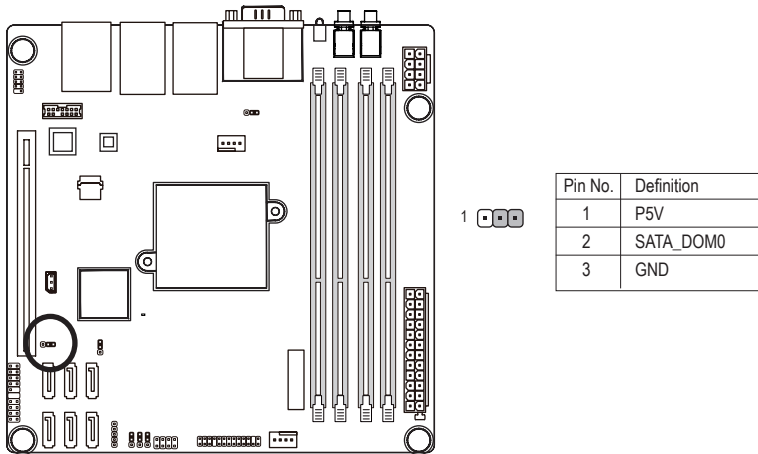
18) SATA_DOM0 (SATA port 0 DOM Jumper)



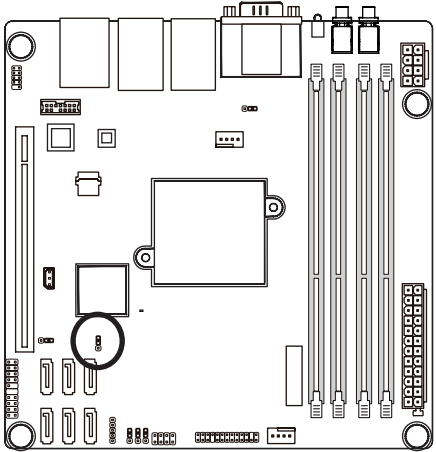
CAUTION!



- If the SATA DOM power is supplied by the motherboard, set the jumper to pin 1-2.
- If the SATA DOM power is supplied by external power, set the jumper to pin 2-3.
- If a SATA type hard drive is connected to the motherboard, please ensure the jumper is closed and set to **2-3 pins** (Default setting), in order to reduce any risk of hard disk damage.

Please refer to the pin definition table in the following.

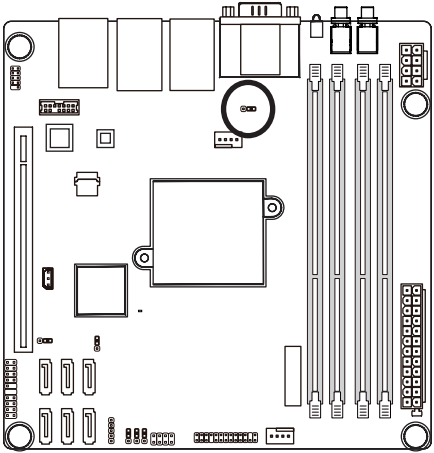




19) ACK_SEL1 (4 Nodes System and Rack System switch Jumper)



- 1  1-2 Close: 4 Node System.
- 1  2-3 Close: Rack System.

20) S3_MASK (S3 Power On Select Jumper)



- 1  1-2 Close: Stop an initial power on when BMC is not ready.
- 1  2-3 Close: Keep initial power on.
(Default setting)

Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the EFI 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 <F2> key during the POST when the power is turned on.



- BIOS flashing is potentially risky, if you do not encounter problems of using the current BIOS version, it is recommended that you don't 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 **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<<-><->>	Move the selection bar to select the screen
<↑><↓>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

■ **Main**

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

■ **Advanced**

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

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Intel RC Setup**

This setup page includes all the submenu options for configuring the function of processor, network, North Bridge, South Bridge, and System event logs.

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Security**

Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.

A supervisor password allows you to make changes in BIOS Setup.

A user password only allows you to view the BIOS settings but not to make changes.

■ **Boot**

This setup page provides items for configuration of boot sequence.

■ **Exit**

Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)

Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

2-1 The Main Menu

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

Main Menu Help

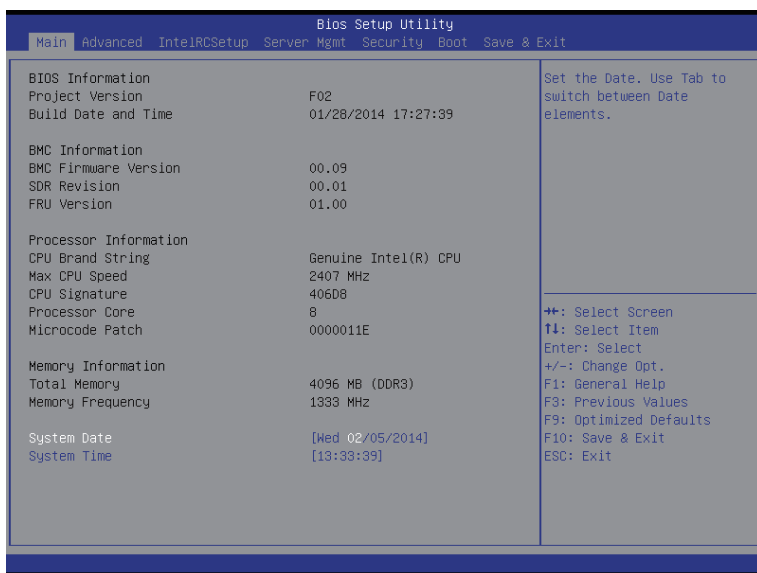
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.



- When the system is not stable as usual, select the **Restore 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.



🔗 **BIOS Information**

🔗 **Porject Version**

Display version number of the BIOS setup utility.

🔗 **BIOS Build Date and Time**

Displays the date and time when the BIOS setup utility was created.

🔗 **BMC Information**

🔗 **BMC Firmware Version**

Display version number of the Firmware setup utility.

🔗 **SDR Reversion**

Display the SDR revision information.

🔗 **FRU Version**

Display the FRU version information.

🔗 **Processor Information**

🔗 **Brand String/Max CPU Speed/CPU Signature/Processors Core/Microcode Patch**

Displays the technical specifications for the installed processor.

🔗 **Memory Information**

🔗 **Total Memory**

Display the total memory size of the installed memory.

🔗 **Memory Frequency**

Display the frequency information of the installed memory.

🔗 **System Date**

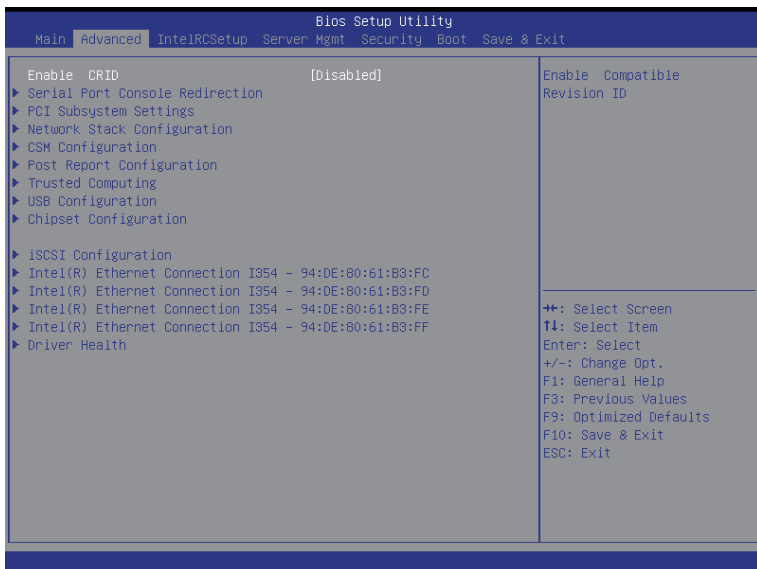
Set the date following the weekday-month-day- year format.

🔗 **System Time**

Set the system time following the hour-minute- second format.

2-2 Advanced Menu

The Advanced menu display submenu options for configuring the function of various hardware components. Select a submenu item, then press Enter to access the related submenu screen.



🔑 Enable CRID

Enable/Disable Intel Compatible Revision ID.

Options available: Enabled/Disabled. Default setting is **Disabled**.

2-2-1 Serial Port Console Redirection



Bios Setup Utility		
Advanced		
Serial Over LAN		Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Console Redirection Settings		
Terminal Type	[ANSI]	++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Bits per second	[115200]	
Data Bits	[8]	
Parity	[None]	
Stop Bits	[1]	
Flow Control	[None]	
VT-UTF8 Combo Key Support	[Enabled]	
Recorder Mode	[Disabled]	
Resolution 100x31	[Enabled]	
Legacy OS Redirection Resolution	[80x24]	
Putty KeyPad	[VT100]	
Redirection After BIOS POST	[Always Enable]	

Bios Setup Utility		
Advanced		
Out-of-Band Mgmt Port		Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
Terminal Type	[COM0]	++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Bits per second	[VT-UTF8]	
Flow Control	[115200]	
Data Bits	[None]	
Parity	8	
Stop Bits	None	
	1	

- ☞ **COM0/Serial Over LAN/Serial Port for Out-of Band Management/Windows Emergency Management Service (EMS)**
- ☞ **Console Redirection** ^(Note)

Select whether to enable console redirection for specified device. Console redirection enables users to manage the system from a remote location.
Options available: Enabled/Disabled. Default setting is **Disabled**.
- ☞ **Console Redirection Settings**
- ☞ **Terminal Type**

Select a terminal type to be used for console redirection.
Options available: VT100/VT100+/ANSI /VT-UTF8. Default setting is **ANSI**.
- ☞ **Bits per second**

Select the baud rate for console redirection.
Options available: 9600/19200/57600/115200. Default setting is **115200**.
- ☞ **Data Bits**

Select the data bits for console redirection.
Options available: 7/8. Default setting is **8**.
- ☞ **Parity**

A parity bit can be sent with the data bits to detect some transmission errors.
Even: parity bit is 0 if the num of 1's in the data bits is even.
Odd: parity bit is 0 if num of 1's in the data bits is odd.
Mark: parity bit is always 1. Space: Parity bit is always 0.
Mark and Space Parity do not allow for error detection.
Options available: None/Even/Odd/Mark/Space. Default setting is **None**.
- ☞ **Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Options available: 1/2. Default setting is **1**.
- ☞ **Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
Options available: None/Hardware RTS/CTS. Default setting is **None**.
- ☞ **VT-UTF8 Combo Key Support** ^(Note)

Enable/Disable VT-UTF8 Combo Key Support.
Options available: Enabled/Disabled. Default setting is **Enabled**.
- ☞ **Recorder Mode** ^(Note)

When this mode enabled, only text will be send. This is to capture Terminal data.
Options available: Enabled/Disabled.
- ☞ **Resolution 100x31** ^(Note)

Enables or disables extended terminal resolution. Default setting is **Enabled**.

(Note) Advanced items prompt when this item is defined.

Options available: Enabled/Disabled.

☞ **Legacy OS Redirection Resolution** (Note)

On Legacy OS, the number of Rows and Columns supported redirection.

Options available: 80x24/80X25. Default setting is **80x24**.

☞ **Putty KeyPad** (Note)

Select function FunctionKey and KeyPad on Putty.

Options available: VT100/LINUX/XTERMR6/SCO/ESCN/VT400. Default setting is **VT100**.

☞ **Redirection After BIOS POST** (Note)

This option allows user to enable console redirection after O.S has loaded.

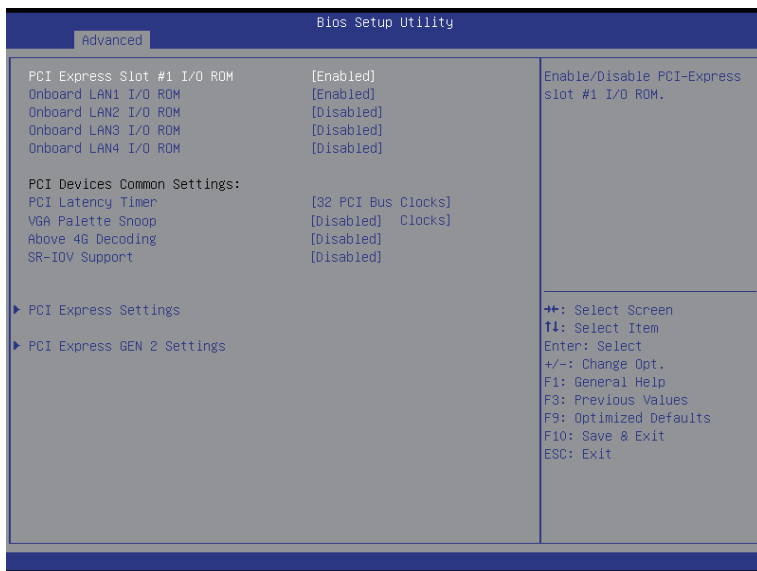
Options available: Always Enable/Boot Loader. Default setting is **Always Enable**.

☞ **Out-of-Bnad Mgmt Port**

Microsoft Windows Emerency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port.

Options available: COM0/COM1. Default setting is **COM0**.

2-2-2 PCI Subsystem Settings



⚙️ PCI Express Slot #1 I/O ROM

When enabled, This setting will initialize the device expansion ROM for the related PCI-E slot.

Options available: Enabled/Disabled. Default setting is **Enabled**.

⚙️ Onboard LAN1 I/O ROM

Enable/Disable onboard LAN devices and initialize device expansion ROM.

Options available: Enabled/Disabled. Default setting is **Enabled**.

⚙️ Onboard LAN 2/3/4 I/O ROM

Enable/Disable onboard LAN devices and initialize device expansion ROM.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⚙️ PCI Devices Common Settings

⚙️ PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

Options available: 32 PCI Bus Clocks/64 PCI Bus Clocks/96 PCI Bus Clocks/128 PCI Bus Clocks/160 PCI Bus Clocks/192 PCI Bus Clocks/224 PCI Bus Clocks/248 PCI Bus Clocks/.

Default setting is **32 PCI Bus Clocks**.

⚙️ VGA Palette Snoop

Enable/Disable VGA Palette Registers Snooping.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⚙️ Above 4G Decoding

Enable/Disable Above 4G Decoding.

Options available: Enabled/Disabled. Default setting is **Disabled**.

⚙️ SR-IOV Support

If system has SR-IOV capable PCIe Devices, this option enables or disables Single Root IO Virtualization Support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

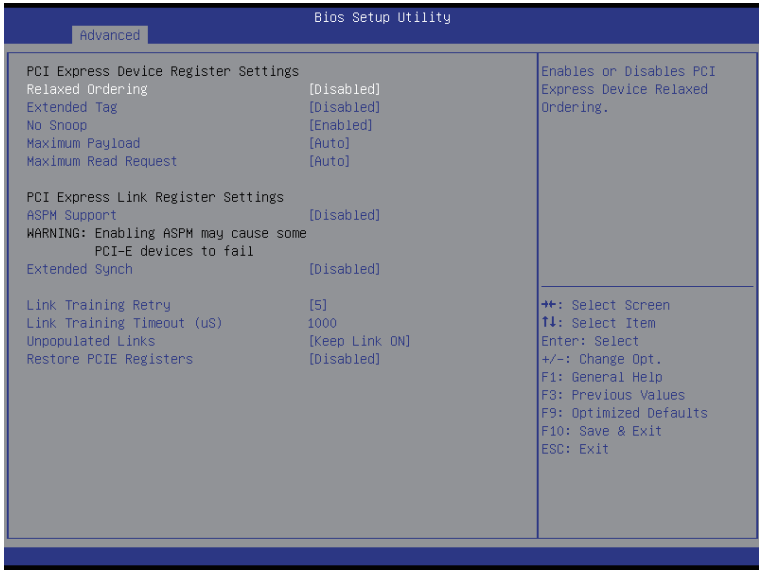
☞ **PCI Express Settings**

Press [Enter] for configuration of advanced items.

☞ **PCI Express GEN2 Settings**

Press [Enter] for configuration of advanced items.

2-2-2-1 PCI Express Settings



☞ PCI Express Device Register Settings

☞ Relaxed Ordering

Enable/Disable PCI Express Device Relaxed Ordering feature.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Extended Tag

When this feature is enabled, the system will allow device to use 8-bit Tag field as a requester.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ No Snoop

Enable/Disable PCI Express Device No Snoop option.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Maximum Payload

Set maximum payload for PCI Express Device or allow system BIOS to select the value.

Options available: Auto/128 Bytes/256 Bytes/512 Bytes/1024 Bytes/2048 Bytes/4096 Bytes.

Default setting is **Auto**.

☞ Maximum Read Request

Set maximum Read Request size for PCI Express Device or allow system BIOS to select the value.

Options available: Auto/128 Bytes/256 Bytes/512 Bytes/1024 Bytes/2048 Bytes/4096 Bytes.

Default setting is **Auto**.

☞ **PCI Express Link Register Settings**

☞ **ASPM Support**

Set the ASPM (Active State Power Management) Level.

Force L0s: Force all links to L0s State.

Auto: BIOS auto configuration.

Disabled: Disable ASPM.

Options available: Force L0s/Auto/Disabled. Default setting is **Disabled**.

☞ **Extended Synch**

When this feature is enabled, the system will allow generation of Extended Synchronization patterns.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Link Training Retry**

Define the number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful. Press <+> / <-> keys to increase or decrease the desired values.

☞ **Link Training Timeout (us)**

Define the number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Press <+> / <-> keys to increase or decrease the desired values. Value range is from 10 to 10000 us.

☞ **Unpopulated Links**

When this item is set to 'Disable Link', the system will operate power save feature for those unpopulated PCI Express links.

Options available: Keep Link ON/ Disable Link. Default setting is **Keep Link ON**.

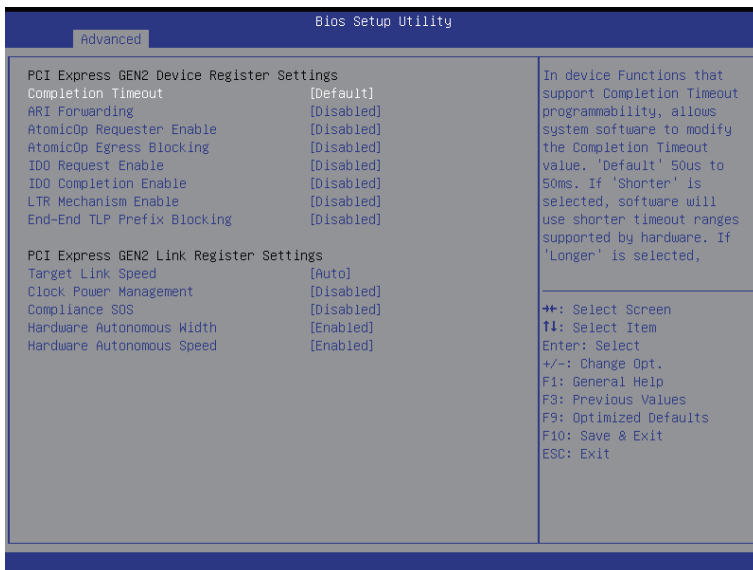
☞ **Restore PCIE Registers**

When this item is enabled, the system will restore PCI Express device configuration on S3 resume.

Warning: Enabling this may cause issues with other hardware after S3 resume.

Options available: Enabled/Disabled. Default setting is **Disabled**.

2-2-2-2 PCI Express GEN 2 Settings



☞ PCI Express GEN2 Device Register Settings

☞ Completion Timeout

In device functions that support Completion Timeout programmability, allows system software to modify the Completion Timeout value.

Options available: Default/Shorter/Longer/Disabled. Default setting is **Default**.

☞ ARI Forwarding

If supported by hardware and set to 'Enabled', the Downstream Port disables its traditional Device Number field being 0 enforcement when turning a Type1 Configuration Request into a Type0 Configuration Request, permitting access to Extended Functions.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ AtomicOp Requester Enable

If supported by hardware and set to 'Enabled', this function initiates AtomicOp Requests only if Bus Master Enable bit is in the Command Register Set.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ AtomicOp Egress Blocking

If supported by hardware and set to 'Enabled', outbound AtomicOp Requests via Egress Ports will be blocked.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **IDO Request Enable**

If supported by hardware and set to 'Enabled', this permits settings the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **IDO Completion Enable**

If supported by hardware and set to 'Enabled', this permits settings the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **LTR Mechanism Enable**

If supported by hardware and set to 'Enabled', this enables the Latency Tolerance Reporting (LTR) Mechanism.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **End-End TLP Prefix Blocking**

If supported by hardware and set to 'Enabled', this function will block forwarding of TLPs containing End-End TLP Prefixes.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PCI Express GEN2 Device Register Settings**

☞ **Target Link Speed**

If supported by hardware and set to 'Force to 2.5 GT/s' for Downstream Ports, this sets an upper limit on link operational speed by restricting the values advertised by the Upstream component in its training sequences.

Options available: Auto/Force to 2.5GT/s/Force to 5.0GT/s. Default setting is **Auto**.

☞ **Clock Power Management**

If supported by hardware and set to 'Enabled', the device is permitted to use CLKREQ# signal for power management of link clock in accordance to protocol defined in appropriate from factor specification.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Compliance SOS**

If supported by hardware and set to 'Enabled', this will force LTSSM to send SKP Ordered Sets between sequences when sending Compliance Pattern or Modified Compliance Pattern.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Hardware Autonomous Width**

If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link width size reduction for the purpose of correcting unstable link operation.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Hardware Autonomous Speed**

If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link speed rate reduction for the purpose of correcting unstable link operation.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-2-3 Network Stack



Network stack

Enable/Disable UEFI network stack.

Options available: Enabled/Disabled. Default setting is **Disabled**.

Ipv4 PXE Support^(Note)

Enable/Disable Ipv4 PXE feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

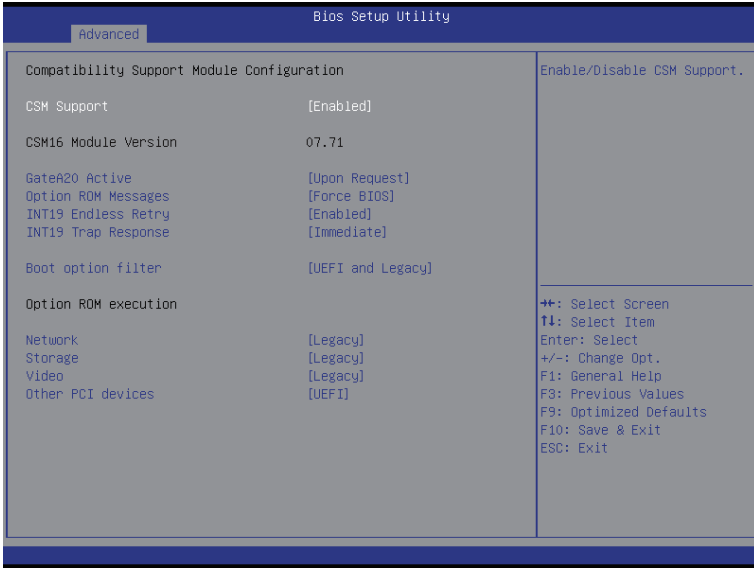
Ipv6 PXE Support^(Note)

Enable/Disable Ipv6 PXE feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

(Note) This item appears when **Network Stack** is set to **Enabled**.

2-2-4 CSM Configuration



Compatibility Support Module Configuration

CSM Support

Enable/Disable Compatibility Support Module (CSM) support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

CSM16 Module Version

Display CSM Module version information.

Gate20 Active

Upon Request: GA20 can be disabled using BIOS services.

Always: Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Options available: Upon Request/Always. Default setting is **Upon Request**.

Option ROM Messages

Option ROM Messages.

Options available: Force BIOS/Keep Current. Default setting is **Force BIOS**.

INT19 Endless Retry

Enabled: Allowed headless retry boot

Options available: Enabled/Disabled. Default setting is **Enabled**.

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM

Immediate: execute the trap right away.

Postpone: execute the trap during legacy boot.

Options available: Immediate/Postpone. Default setting is **Immediate**.

☞ **Boot option filter**

Determines which devices system will boot to.

Options available: UEFI and Legacy/Legacy only/UEFI only. Default setting is **UEFI and Legacy**.

☞ **Option ROM execution**

☞ **Network**

Controls the execution UEFI and Legacy PXE OpROM.

Options available: UEFI/Legacy/Do not launch. Default setting is **Legacy**.

☞ **Storage**

Controls the execution UEFI and Legacy Storage OpROM.

Options available: UEFI/Legacy/Do not launch. Default setting is **Legacy**.

☞ **Video**

Controls the execution UEFI and Legacy Video OpROM.

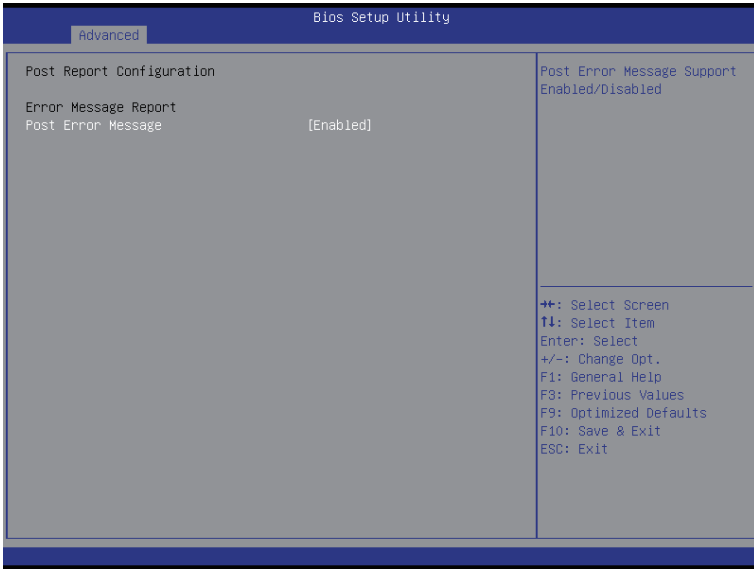
Options available: UEFI/Legacy/Do not launch. Default setting is **Legacy**.

☞ **Other PCI devices**

Determines OpROM execution policy for devices other than network, Storage, or Video.

Options available: UEFI/Legacy. Default setting is **UEFI**.

2-2-5 Post Report Configuration



🔑 Post Report Configuration

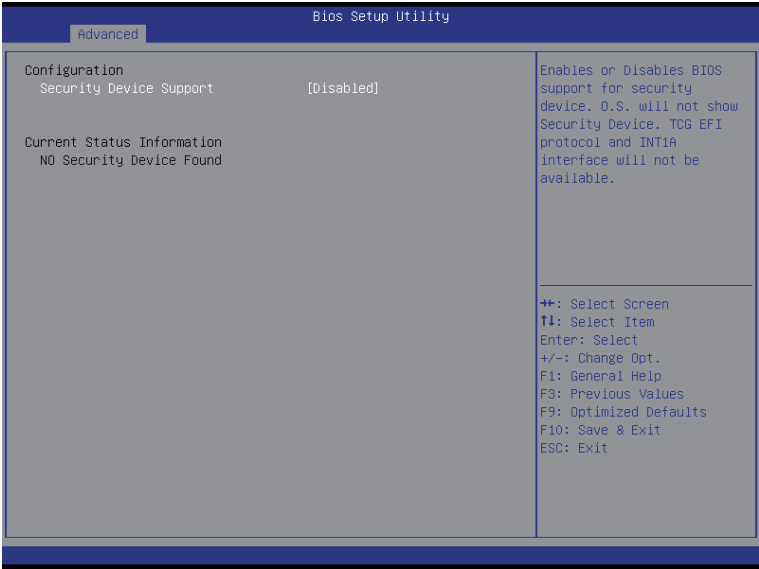
🔑 Error Message Report

🔑 Post Error Message

Enable/Disable Info Error Message support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-2-6 Trusted Computing



➤ **Configuration**

➤ **Security Device Support**

Select Enabled to activate TPM support feature.

Options available: Enabled/Disabled. Default setting is **Disabled**.

➤ **Current Status Information**

Display current TPM status information.

2-2-7 USB Configuration



USB Configuration

USB Module Version

Display USB module version information.

Legacy USB Support

Enables or disables support for legacy USB devices.

Options available: Auto/Enabled/Disabled. Default setting is **Enabled**.

EHCI Hand-off

Enable/Disable EHCI (USB 2.0) Hand-off function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

USB Mass Storage Driver Support^(Note)

Enable/Disable USB Mass Storage Driver Support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Port 60/64 Emulation

Enable I/O port 60h/64h emulation support. This should be enabled for the complete USB Keyboard Legacy support for non-USB aware OS.

Options available: Enabled/Disabled. Default setting is **Enabled**.

USB hardware delays and time-outs:

USB transfer time-out

(Note) This item is present only if you attach USB types of device.

Configure the time out values for control, bulk, and Interrupt transfer.

Options available: 1 sec/5 sec/ 10 sec/20 sec. Default setting is **20 sec**.

☞ **Device reset time-out**

USB mass storage device Start Unit command time-out.

Options available: 1 sec/5 sec/ 10 sec/20 sec. Default setting is **20 sec**.

☞ **Device power-up delay**

Maximum time the device will take before it properly reports itself to the Host Controller.

Options available: Auto/Manual. Default setting is **Auto**.

☞ **Mass Storage Device^(Note)**

(Note) This item is present only if you attach USB types of device.

2-2-8 Chipset Configuration



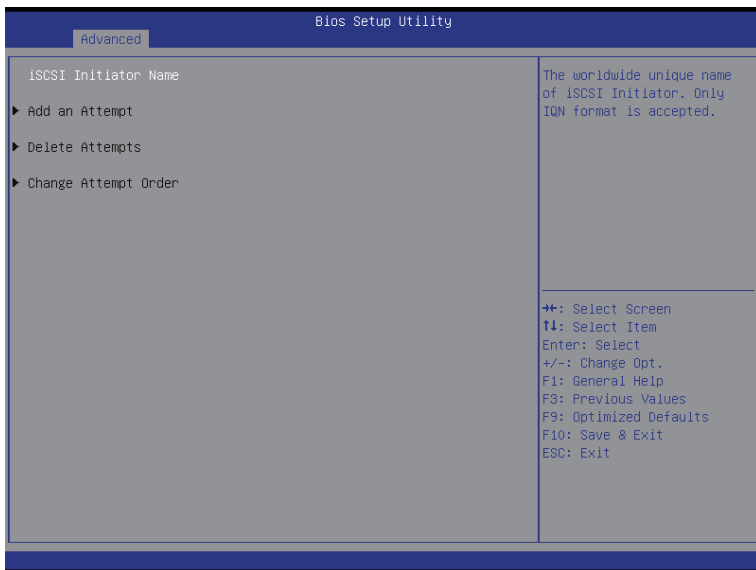
Restore on AC Power Loss ^(Note)

Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the system will return to the active power state prior to shutdown. When set to Stay Off, the system remains off after power shutdown.

Options available: Last State/Stay Off/Power On. The default setting depends on the BMC setting.

(Note) When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

2-2-9 iSCSI Configuration



☞ iSCSI Initiator Name

☞ Add an Attempts

Press [Enter] for configuration of advanced items.

☞ Delete Attempts

Press [Enter] for configuration of advanced items.

☞ Change Attempt Order

Press [Enter] for configuration of advanced items.

2-2-10 Intel (R) Ethernet Connection I354

Bios Setup Utility		
Advanced		
PORT CONFIGURATION MENU ► NIC Configuration		Configure Boot Protocol, Wake on LAN, Link Speed, and VLAN.
Blink LEDs 0		
PORT CONFIGURATION INFORMATION		
UEFI Driver:	Intel(R) PRO/1000 5.8.09 PCI	++: Select Screen Tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Adapter FBA:	131218-001	
Chip Type	Intel i350	
PCI Device ID	1F41	
Bus:Device:Function	00:14:00	
Link Status	[Disconnected]	
MAC Address	94:DE:80:61:B3:FC	
Virtual MAC Address	94:DE:80:61:B3:FC	

Bios Setup Utility		
Advanced		
Link Speed	[Auto Negotiated]	Specifies the port speed used for the selected boot protocol.
Wake On LAN	[Enabled]	
++: Select Screen Tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit		

☞ **PORT CONFIGURATION MENU**

☞ **NIC Configuration**

Press [Enter] for configuration of advanced items.

☞ **Blink LEDs (range 0-15 seconds)**

Blink LEDs for the specified duration (up to 15 seconds).

Press the numeric keys to input the desired value.

☞ **PORT CONFIGURATION INFORMATION**

☞ **UEFI Driver**

Display the UEFI driver information.

☞ **Adapter PBA**

Display the Adapter PBA information.

☞ **Chip Type**

Display the Chip type.

☞ **PCI Device ID**

Display the PCI device ID.

☞ **Bus:Device:Function**

Display the number of Bus/Device/Function

☞ **Link Status**

Display the link status.

☞ **MAC Address**

Display the Factory MAC address information.

☞ **Virtual MAC Address**

Display the virtual MAC address information.

☞ **Link Speed**

Change link speed duplex for current port.

Options available: AutoNegotiated/10Mbps Half/10Mbps Half/10Mbps Half/100Mbps Full.

Default setting is **AutoNegotiated**.

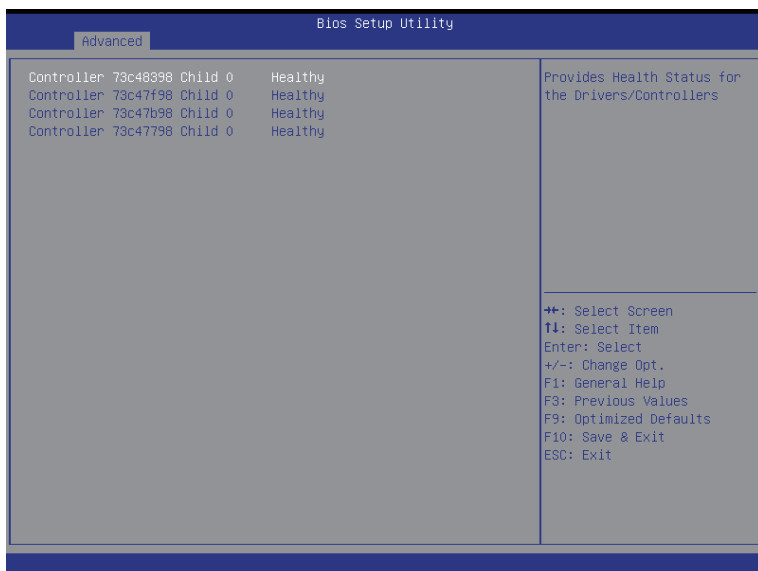
☞ **Wake On LAN**

Enable/Disable Wake On LAN feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

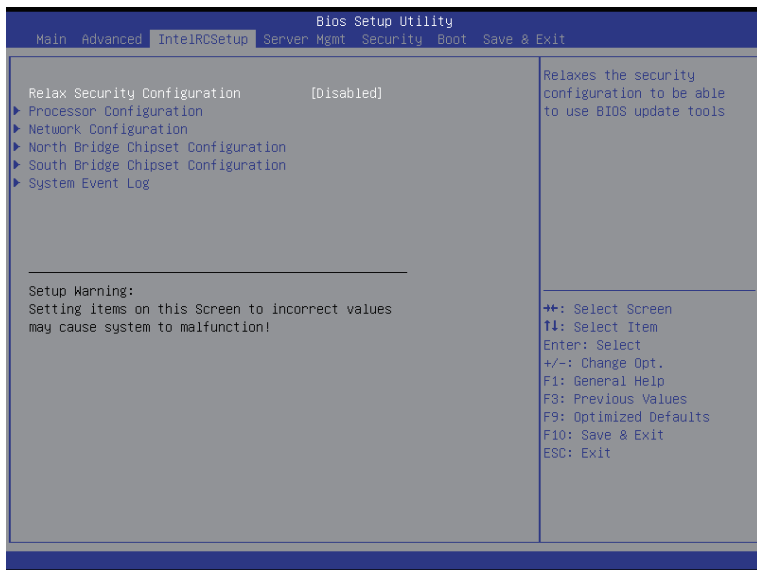
2-2-11 Driver health

Press Enter to view the submenu screen which displays a real-time record of the LAN controllers, Items on this window are non-configurable.



2-3 Intel RC Setup Menu

Intel RC Setup menu displays submenu options for configuring the function of North Bridge and South Bridge. Select a submenu item, then press Enter to access the related submenu screen.



Relax Security Configuration

Relaxes the security configuration to be able to use BIOS update tools.

Options available: Enabled/Disabled. Default setting is **Disabled**.

2-3-1 Processor Configuration

Bios Setup Utility	
IntelRCSetup	
Processor Configuration	
Processor ID	00040608
Processor Frequency	2.407GHz
Microcode Revision	0000011E
L1 Cache RAM	448KB
L2 Cache RAM	4096KB
Processor Version	Genuine Intel(R) CPU
EIST (GV3)	[Auto]
P-state Coordination	[Package]
TM1	[Enable]
TM2 Mode	[Adaptive Throttling]
CPU C State	[Auto]
Enhanced Halt State (C1E)	[Disable]
ACPI C2	[C6 NS]
L1 Prefetcher	[Enable]
L2 Prefetcher	[Enable]
ACPI 3.0 T-States	[Disable]
Max CPUID Value Limit	[Disable]
Execute Disable Bit	[Enable]
VMX	[Enable]
Extended APIC	[Enable]
AES-NI	[Enable]
Turbo	[Enable]
<p>Enable/Disable EIST. GV3 and TM1 must be enabled for TM2 to be available. GV3 must be enabled for Turbo. Auto - Enable for B0 CPU stepping, all others disabled, change setting to override.</p> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit </p>	

Bios Setup Utility	
IntelRCSetup	
Microcode Revision	0000011E
L1 Cache RAM	448KB
L2 Cache RAM	4096KB
Processor Version	Genuine Intel(R) CPU
EIST (GV3)	[Auto]
P-state Coordination	[Package]
TM1	[Enable]
TM2 Mode	[Adaptive Throttling]
CPU C State	[Auto]
Enhanced Halt State (C1E)	[Disable]
ACPI C2	[C6 NS]
L1 Prefetcher	[Enable]
L2 Prefetcher	[Enable]
ACPI 3.0 T-States	[Disable]
Max CPUID Value Limit	[Disable]
Execute Disable Bit	[Enable]
VMX	[Enable]
Extended APIC	[Enable]
AES-NI	[Enable]
Turbo	[Enable]
RAPL	[Enable]
Active Processor Cores	[All]
CPU Flex Ratio Override	[Disable]
CPU Core Ratio	24
<p>Enable/Disable CPU Flex Ratio Programming</p> <p> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit </p>	

⌄ Processor Configuration

⌄ Processor ID/Processor Frequency/Microcode Revision/L1 Cache RAM/L2 Cache RAM /Processor Version

Displays the technical specifications for the installed processor.

⌄ EIST (GV3)(Enhanced Intel SpeedStep Technology)

Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load.

Options available: Auto/Enabled/Disabled. Default setting is **Auto**.

⌄ P-STATE Coordination

In Hardware mode, the processor hardware is responsible for coordinating the P-state among logical processors dependencies. The OS is responsible for keeping the P-state request up to date on all logical processors.

In Package mode, the OS Power Manager is responsible for coordinating the P-state among logical processors with dependencies and must initiate the transition on all of those Logical Processors.

In Module mode, the OS Power Manager is responsible for coordinating the P-state among logical processors with dependencies and may initiate the transition on any of those Logical Processors.

Options available: Hardware/Package/Module. Default setting is **Package**.

⌄ TM1

Enable/Disable TM1. TM1 and GV3 must be enabled in order to support TM2.

Options available: Enabled/Disabled. Default setting is **Enabled**.

⌄ TM2 Mode

Select LFM throttling or adaptive throttling for TM mechanisms.

Options available: LFM Throttling/Adaptive Throttling. Default setting is **Adaptive Throttling**.

⌄ CPU C State

Enable/Disable CPU C State feature.

Options available: Auto/Enabled/Disabled. Default setting is **Auto**.

⌄ Enhanced Halt State (C1E)

Enable/Disable C1E State feature.

Options available: Enabled/Disabled. Default setting is **Enabled**.

⌄ ACPI C2

Configure CPU (ACPI C2) reported to OS.

Options available: C6 NS/C6 FS/Disabled. Default setting is **C6 NS**.

⌄ L1 Prefetcher

Options available: Enabled/Disabled. Default setting is **Enabled**.

⌄ L2 Prefetcher

Options available: Enabled/Disabled. Default setting is **Enabled**.

⌄ ACPI 3.0 T-States

Options available: Enabled/Disabled. Default setting is **Disabled**.

Max CPUID Value Limit

When enabled, the processor will limit the maximum CPUID input values to 03h when queried, even if the processor supports a higher CPUID input value.

When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

Options available: Enabled/Disabled. Default setting is **Disabled**.

Execute Disable Bit

When enabled, the processor prevents the execution of code in data-only memory pages. This provides some protection against buffer overflow attacks.

When disabled, the processor will not restrict code execution in any memory area. This makes the processor more vulnerable to buffer overflow attacks.

Options available: Enabled/Disabled. Default setting is **Enabled**.

VMX (Vanderpool Technology)

Enable/Disable Vanderpool Technology. This will take effect after rebooting the system.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Extended APIC

Enable/Disable extended APIC support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

AES-NI

Enable/Disable CPU Advanced Encryption Standard instructions.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Turbo

When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance.

When this item is disabled, the processor will not overclock any of its core.

Options available: Enabled/Disabled. Default setting is **Enabled**.

RAPL (Running Average Power Limit)

Enable/Disable CPU RAPL capability. This option only applies to ES2 and above.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Please note that this item is configurable when Turbo is set to Disabled.

Active Processor Cores

Allows you to determine whether to enable all CPU cores.

Options available: All/4/2. Default setting is **All**.

CPU Flex Ratio Override

Options available: Enabled/Disabled. Default setting is **Disabled**.

CPU Core Ratio

Press <+> / <-> keys to increase or decrease the desired values.

Please note that this item is configurable when CPU Flex Ratio Override is set to Enabled.

2-3-2 Network Configuration



GBE controller #0/1/2/3

Enable/Disable the GBE hardware #0/1/2/3 controller if supported by SKU.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-3 North Bridge Chipset Configuration

Bios Setup Utility	
IntelRCSetup	
North Bridge Chipset Configuration	
Displays memory topology with Dimm population information	
Memory Information	
MRC Version	1.0.0.35
Total Memory	4096 MB
Memory Frequency	DDR3 - 1333 MHz
▶ Memory Topology	
Fast Boot	[Disabled]
Memory Frequency	[Auto]
ECC Support	[Enabled]
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	

Bios Setup Utility	
IntelRCSetup	
Channel0.Dimm0: 1333MHz DRx8 4GB UDIMM	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	

☞ **North Bridge Chipset Configuration**

☞ **Memory Configuration**

☞ **MRC Version/Total Memory/Memory Frequency**

Displays the technical specifications for the installed memory.

☞ **Memory Topology Configuration**

Press [Enter] to view the memory topology with DIMM population information.

☞ **Fast Boot**

This BIOS feature allows you to decrease the time it takes to boot up the system by skipping certain booting procedures.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Memory Frequency**

Configure the memory frequency.

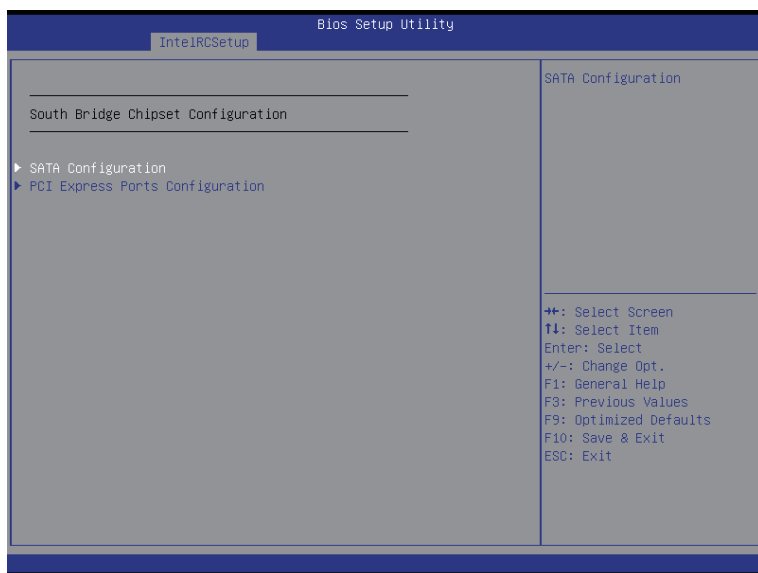
Options available: Auto/DDR-1333/DDR-1600. Default setting is **Auto**.

☞ **ECC Support**

Enable/Disable ECC support function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-4 South Bridge Chipset Configuration



SATA Configuration

Press [Enter] for configuration of advanced items.

PCI Express Ports Configuration

Press [Enter] for configuration of advanced items.

2-3-4-1 SATA Configuration



☞ **Sata 3 Controller**

Enable/Disable the SATA 3 controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **SATA Mode (for Sata 3 controller)**

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables AHCI functions and runs in the IDE emulation mode.

AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality.

Options available: IDE/AHCI. Default setting is **ACHI Mode**.

☞ **Sata 3 speed**

Options available: GEN 1/GEN 2/GEN 3. Default setting is **GEN 3**.

☞ **LPM**

Enable/Disable Link Power Management.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Overwrite SIR values**

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **SATA Port #0/1 (for Sata 3 controller)**

The category identifies Serial ATA type of hard disk that are installed in the computer.

System will automatically detect HDD type.

☞ **Spin Up (for Sata 3 Port 0/1)**

On an edge detect from 0 to 1, the south bridge starts a COM reset initialization to the device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **External device (for Sata 3 Port 0/1)**

Enable/Disable External SATA support for Serial ATA Port 0/1.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Hot Plug (for Sata 3 Port 0/1)**

Enable/Disable Hot Plug support for Serial ATA Port 0/1.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Mechanical Switch (for Sata 3 Port 0/1)**

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Sata 2 Controller**

Enable/Disable the SATA 2 controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **SATA Mode (for Sata 2 controller)**

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables AHCI functions and runs in the IDE emulation mode.

AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality.

Options available: IDE/AHCI. Default setting is **ACHI Mode**.

☞ **LPM**

Enable/Disable Link Power Management.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Overwrite SIR values**

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **SATA Port #0/1 (for Sata 3 controller)**

The category identifies Serial ATA type of hard disk that are installed in the computer.

System will automatically detect HDD type.

☞ **Spin Up (for Sata 2 Port 0/1/2/3)**

On an edge detect from 0 to 1, the south bridge starts a COM reset initialization to the device.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **External device (for Sata 2 Port 0/1/2/3)**

Enable/Disable External SATA support for Serial ATA Port 0/1/2/3.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Hot Plug (for Sata 2 Port 0/1/2/3)**

Enable/Disable Hot Plug support for Serial ATA Port 0/1/2/3.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Mechanical Switch (for Sata 2 Port 0/1/2/3)**

Options available: Enabled/Disabled. Default setting is **Disabled**.

2-3-4-2 PCI Express Ports Configuration



☞ PCI Express Ports Configuration

☞ Bifurcation

Select Root Complex Bifurcation Configuration.

Options available:

Auto/-----P0 X16/--P2--P0 X8X8/--P2P1P0 X8X4X4/P3P2--P0 X4X4X8/P3P2P1P0 X4X4X4X4.

Default setting is **Auto**.

2-3-5 System Event Log



System Event Log

System Errors

Options available: Auto/Enabled/Disabled. Default setting is **Enabled**.

Memory Event Log

Press [Enter] for configuration of advanced items.

PCIe Event Log

Press [Enter] for configuration of advanced items.

Whea Event Log

Press [Enter] for configuration of advanced items.

Native AER

Enable/Disable Native Advanced Error reporting capability function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-5-1 Memory Event Log



☞ Memory Event Log

☞ Memory Elog Support

Options available: Enabled/Disabled. Default setting is **Enabled**.

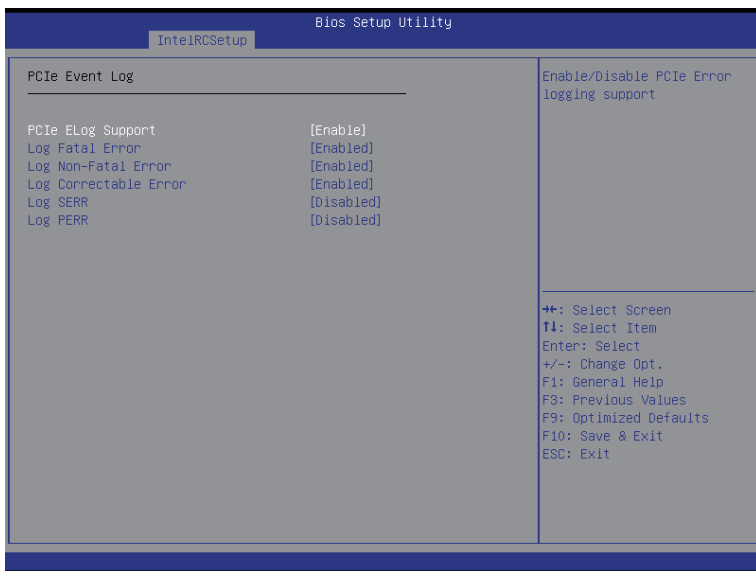
☞ Log Correctable Errors

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Log Un-Correctable Errors

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-5-2 PCIe Event Log



☞ PCIe Event Log

☞ PCIe Elog Support

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Log Fatal Error

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Log Non-Fatal Error

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Log Correctable Errors

Options available: Enabled/Disabled. Default setting is **Disabled**.

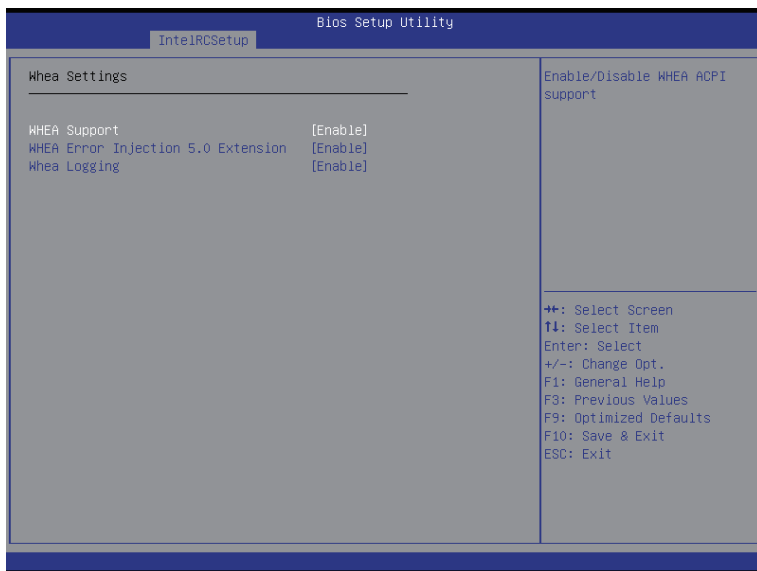
☞ Log SERR (PCI Bus System Error)

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Log PERR (PCI Bus Parity Error)

Options available: Enabled/Disabled. Default setting is **Disabled**.

2-3-5-3 Whea Settings



☞ **WHEA Support (Windows Hardware Error Architecture)**

Enable/Disable WHEA Support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

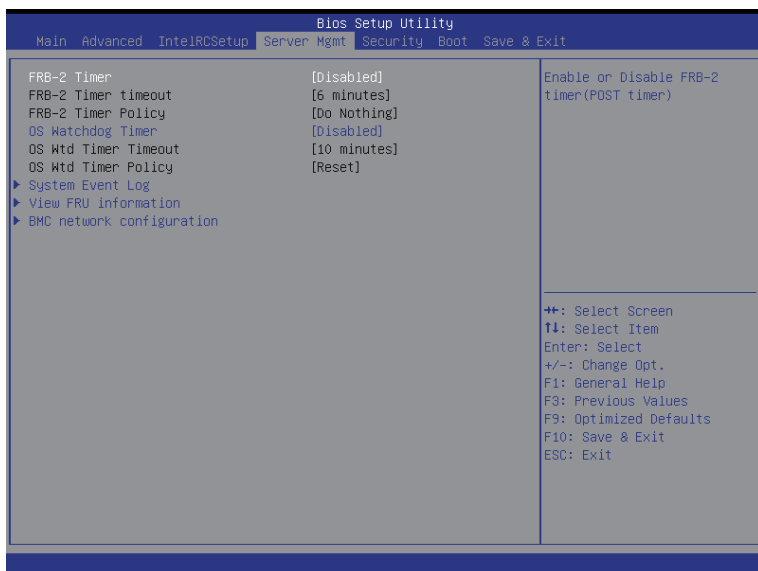
☞ **WHEA Error Injection 5.0 Extension**

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **WHEA Logging**

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-4 Server Management Menu



🔑 FRB-2 Timer

Enable/Disable FRB-2 timer (POST timer).

Options available: Enabled/Disabled. Default setting is **Disabled**.

🔑 FRB2 Timer timeout

Configure the FRB2 Timer timeout.

Options available: 3 minutes/4 minutes/5 minutes/6 minutes. Default setting is **6 minutes**.

Please note that this item is configurable when FRB-2 Timer is set to Enabled.

🔑 FRB2 Timer Policy

Configure the FRB2 Timer policy.

Options available: Do Nothing/Reset/Power Down. Default setting is **Do Nothing**.

Please note that this item is configurable when FRB-2 Timer is set to Enabled.

🔑 OS Watchdog Timer

Enable/Disable OS Watchdog Timer function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

🔑 OS Wtd Timer Timeout

Configure OS Watchdog Timer.

Options available: 5 minutes/10 minutes/15 minutes/20 minutes. Default setting is **10 minutes**.

Please note that this item is configurable when OS Watchdog Timer is set to Enabled.

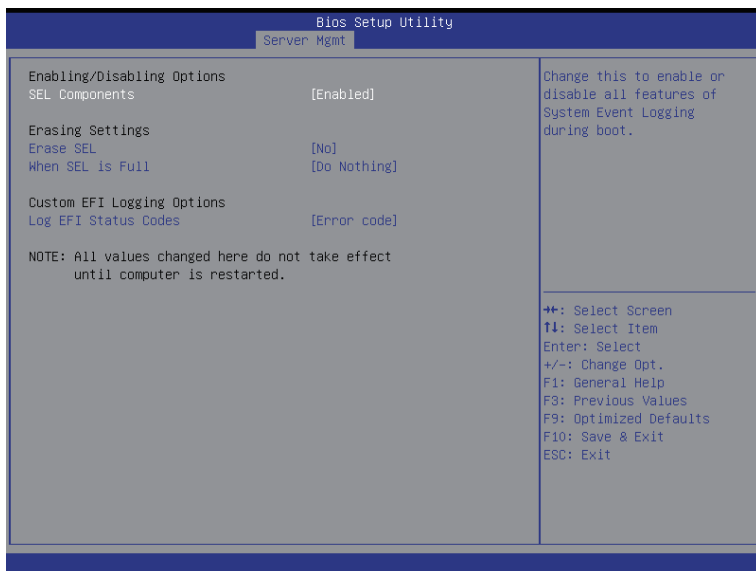
🔑 OS Wtd Timer Policy

Configure OS Watchdog Timer Policy.

Options available: Reset/Do Nothing/Power Down. Default setting is **Reset**.

Please note that this item is configurable when OS Watchdog Timer is set to Enabled.

2-4-1 System Event Log



☞ Enabling/Disabling Options

☞ SEL Components

Change this to enable or disable all features of System Event Logging during boot.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Erasing Settings

☞ Erasing SEL

Choose options for erasing SEL.

Options available: No/Yes, On next reset/Yes, On every reset. Default setting is **No**.

☞ When SEL is Full

Choose options for reactions to a full SEL.

Options available: Do Nothing/Erase Immediately. Default setting is **Do Nothing**.

☞ Custom EFI Logging Options

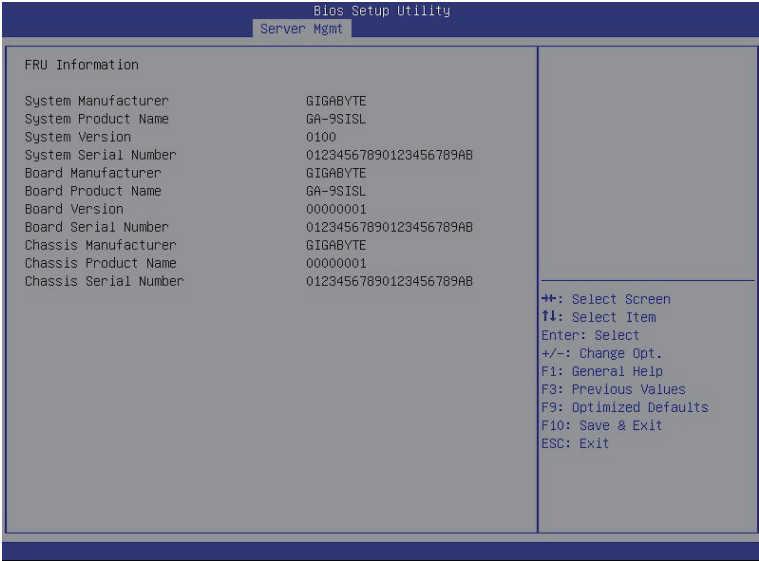
☞ Log EFI Status Codes

Enable/Disable the logging of EFI Status Codes (if not already converted to legacy).

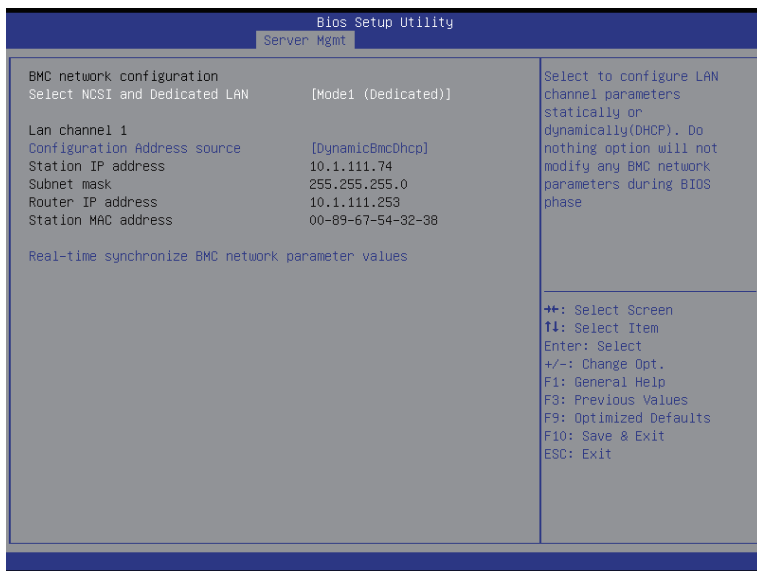
Options available: Disabled/Both/Error code/Progress code. Default setting is **Both**.

2-4-2 View FRU Information

The FRU page is a simple display page for basic system ID information, as well as System product information. Items on this window are non-configurable.



2-4-3 BMC network configuration



☞ BMC network configuration

☞ Select NCSI and Dedicated LAN

Switch NCSI and dedicated LAN and send KCS command.

Options available: Mode2(NSCI)/ Mode1 (Dedicated). Default setting is **Mode1 (Dedicated)**.

☞ Lan Channel 1

☞ Configuration Address source

Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase.

Options available: Static/Dynamic/Do Nothing.

☞ Station IP Address

Display IP Address information.

☞ Subnet mask

Display Subnet Mask information.

Please note that the IP address must be in three digitals, for example, 192.168.000.001.

☞ Router IP address

Display the Router IP Address information.

☞ Station MAC Address

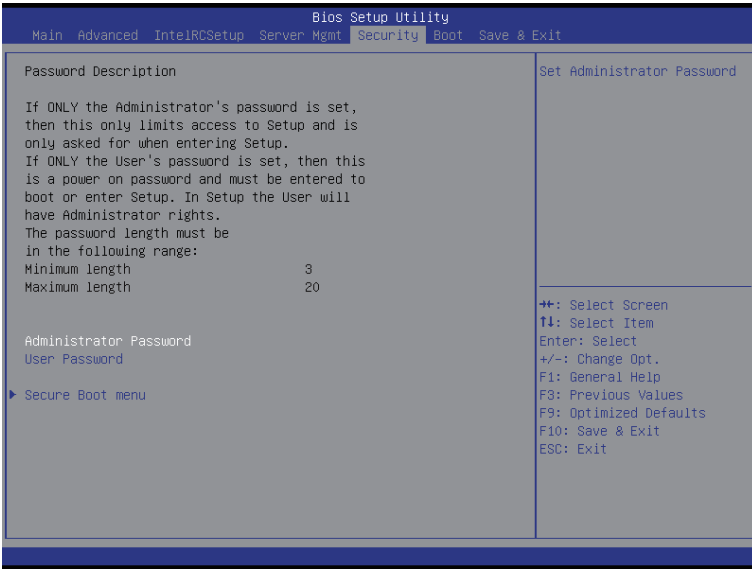
Display the MAC Address information.

☞ Real-time synchronize BMC network parameter values

Press [Enter] to synchronize BMC network parameter values.

2-5 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- **Administrator Password**
Entering this password will allow the user to access and change all settings in the Setup Utility.
- **User Password**
Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

⏏ Administrator Password

Press Enter to configure the Administrator password.

⏏ User Password

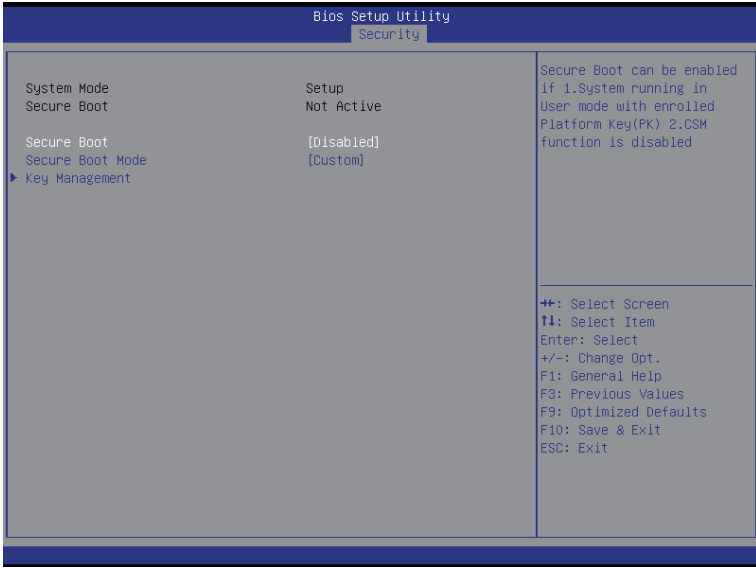
Press Enter to configure the user password.

⏏ Secure Boot menu

Press [Enter] for configuration of advanced items.

2-5-1 Secure Boot menu

The Secure Boot Menu is applicable when your device is installed the Windows® 8 operatin system.



☞ Secure Mode

Display the System secure mode state.

☞ Secure Boot

Display the status of Secure Boot.

☞ Secure Boot

Enable/Disable Secure Boot function.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ Secure Boot Mode

Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with.

When set to Standard, it will automatically load the Secure Boot keys from the BIOS databases.

When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database.

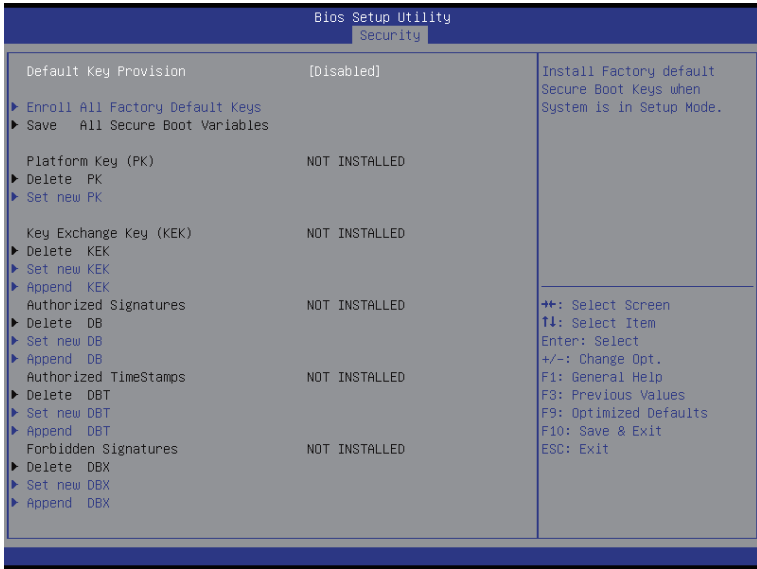
Options available: Standard/Custom. Default setting is **Standard**.

☞ Key Management^(Note)

Press [Enter] for configuration of advanced items.

(Note) Advanced items prompt when this item is set to **Custom**.

2-5-1-1 Key Management



Key Management

This item appears only when the **Secure Boot Mode** is set to **Custom**.

Default Key Provisioning

Force the system to Setup Mode. This will clear all Secure Boot Variables such as Platform Key (PK), Key-exchange Key (KEK), Authorized Signature Database (db), and Forbidden Signatures Database (dbx).

Options available: Enabled/Disabled. Default setting is **Disabled**.

Enroll All Factory Default Keys

Press [Enter] to install all factory default keys.

Save All Secure Boot Variables

Press [Enter] to save all Secure Boot Variables.

Platform Key (PK)

Display the status of Platform Key.

Delete the PK

Press [Enter] to delete the existed PK. Once the PK is deleted, all the system's Secure Boot keys will not be activated.

Set new PK File

Press [Enter] to configure a new PK.

Key Exchange Key Database (KEK)

Display the status of Platform Key.

Delete KEK

Press [Enter] to delete the KEK from your system.

☞ **Set new KEK**

Press [Enter] to configure a new KEK.

☞ **Append Var to KEK**

Press [Enter] to load additional KEK from a storage devices for an additional db and dbx management.

☞ **Authorized Signature Database (DB)**

Display the status of Authorized Signature Database.

☞ **Delete DB**

Press [Enter] to delete the db from your system.

☞ **Set new DB**

Press [Enter] to configure a new db.

☞ **Append aVar to DB**

Press [Enter] to load additional db from a storage devices.

☞ **Forbidden Signature Database (DBX)**

Display the status of Forbidden Signature Database.

☞ **Delete the DBX**

Press [Enter] to delete the dbx from your system.

☞ **Set DBX from File**

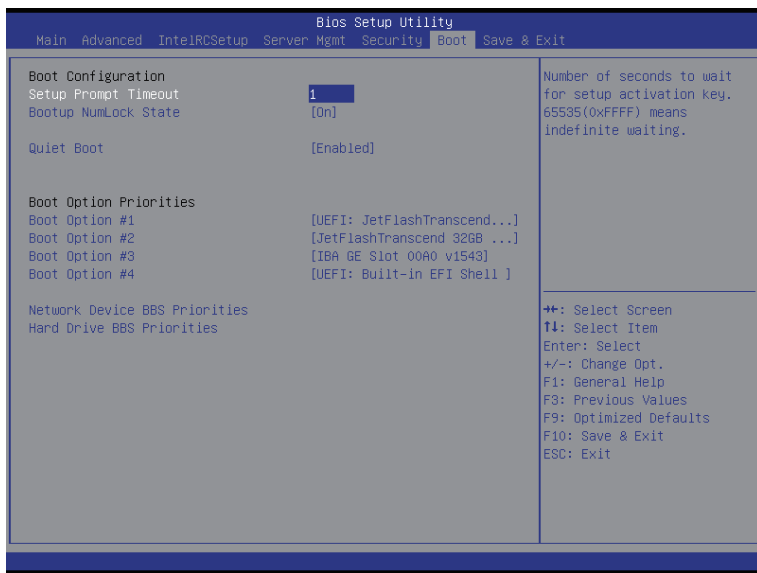
Press [Enter] to configure a new dbx.

☞ **Append Var to DBX**

Press [Enter] to load additional db from a storage devices.

2-6 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.



Boot Configuration

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting."

Press the numeric keys to input the desired value.

Bootup NumLock State

Enable or Disable Bootup NumLock function.

Options available: On/Off. Default setting is **On**.

Quiet Boot

Enables or disables showing the logo during POST.

Options available: Enabled/Disabled. Default setting is **Enabled**.

Boot Priority Order

Boot Option #1/#2/#3/#4

Press Enter to configure the boot priority.

By default, the server searches for boot devices in the following sequence:

1. UEFI device.
2. Hard drive.
3. Network device.
4. Removable device.

☞ **Network Device BBS Priorities**

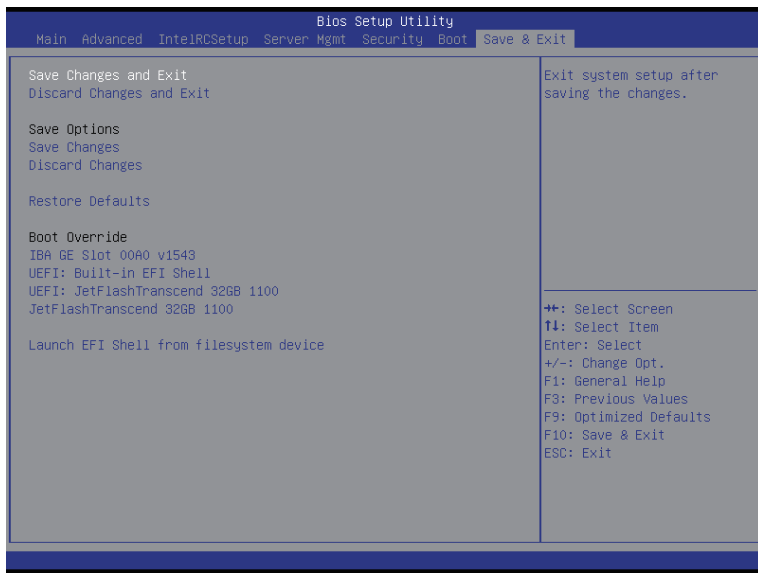
Press Enter to configure the boot priority.

☞ **Hard Drive BBS Priorities**

Press Enter to configure the boot priority.

2-7 Save & Exit Menu

The Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press **Enter**.



☞ Save Changes and Exit

Saves changes made and close the BIOS setup.

Options available: Yes/No.

☞ Discard Changes and Exit

Discards changes made and close the BIOS setup.

Options available: Yes/No.

☞ Save Options

☞ Save Changes

Saves changes made in the BIOS setup.

Options available: Yes/No.

☞ Restore Defaults

Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.

Options available: Yes/No.

☞ Boot Override

Press Enter to configure the device as the boot-up drive.

☞ UEFI: Built-in in EFI Shell

Press <Enter> on this item to Launch EFI Shell from filesystem device.

2-8 BIOS Beep Codes

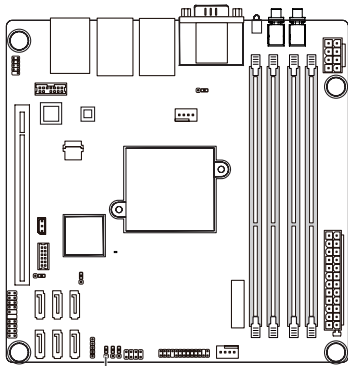
# of Beeps	Description
5	Memory error during POST.

2-9 BIOS Recovery Instruction

The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

Recovery Instruction:

1. Change xxx.ROM to amiboot.rom.
2. Copy amiboot.rom and AFUDOS.exe to USB diskette.
3. Setting BIOS Recovery jump to enabled status.



BIOS Recovery Jumper

4. Boot into BIOS recovery.
5. Run Proceed with flash update.
6. BIOS update.



Chapter 3 Appendix

3-1 Regulatory Statements

Regulatory Notices

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

Our Commitment to Preserving the Environment

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

Restriction of Hazardous Substances (RoHS) Directive Statement

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

Waste Electrical & Electronic Equipment (WEEE) Directive Statement

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

WEEE Symbol Statement



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

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

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

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