GA-6LISL

LGA1150 socket motherboard for Intel® E3 series processors

User's Manual

Rev. 1102

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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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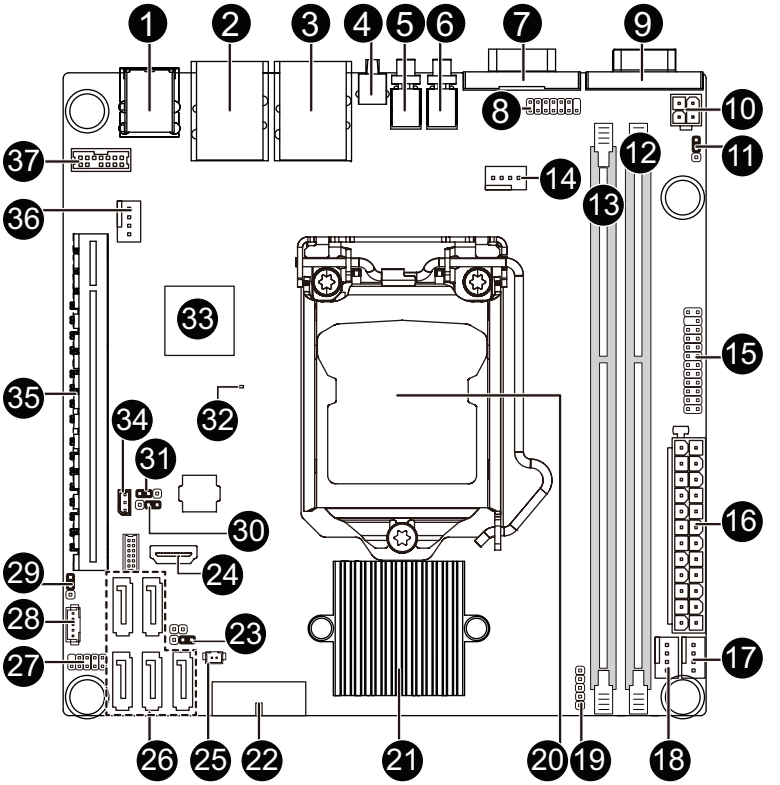
Box Contents

- ☑ GA-6LISL 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.

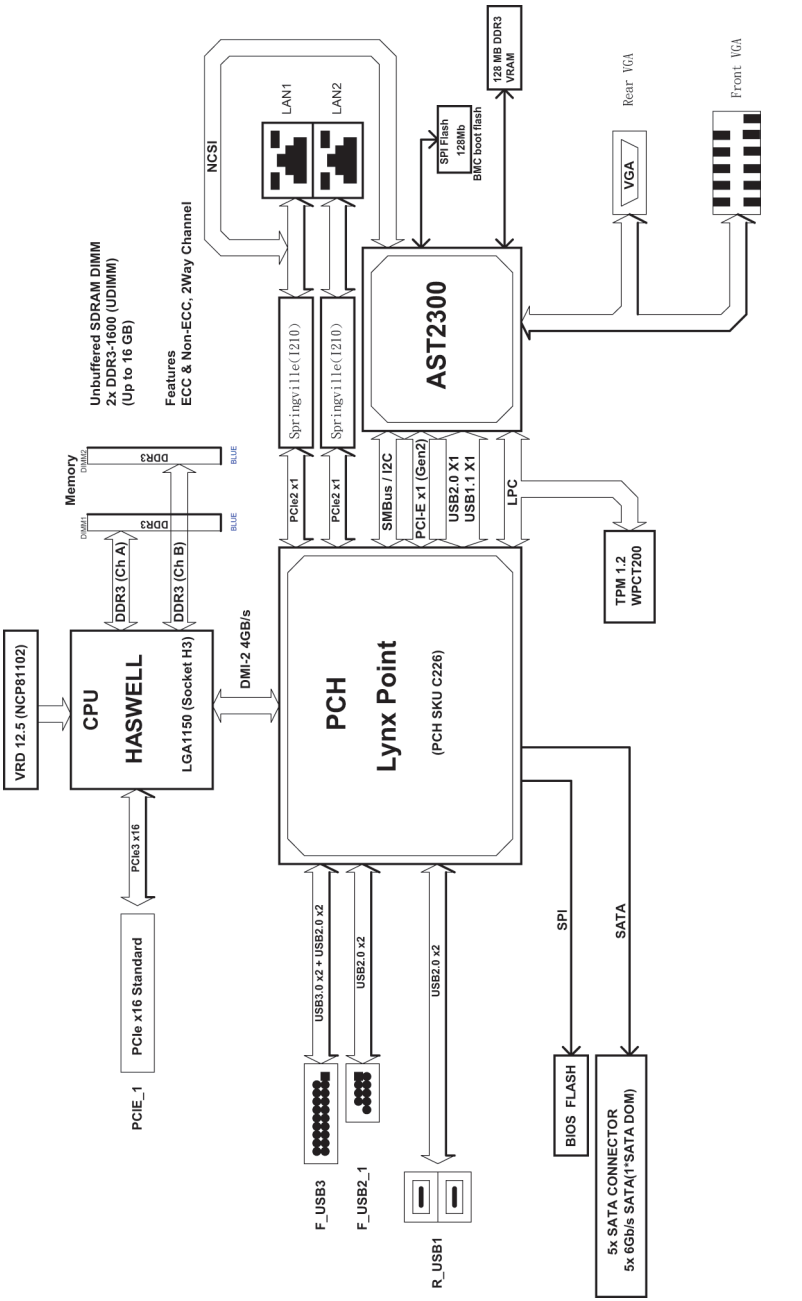
GA-6LISL Motherboard Layout



Item	Code	Description
1	R_USB1	USB 2.0 ports
2	LAN2	LAN2 port
3	LAN1	LAN1 port
4	NMI_BMCRST	Reset button (top)/NMI button (bottom)
5	ID_SW	ID Switch button
6	PWR_SW	Power button
7	COM1	Serial port
8	FP_VGA1	Front panel VGA header
9	VGA1	VGA port
10	P12V_AUX1	4 pin power connector
11	CFG5	PCI-E x16 and x8 bandwidth switch jumper
12	DDR3_P0_B0	DIMM slot
13	DDR3_P0_A0	DIMM slot
14	CPU0_FAN	CPU fan connector
15	FP_1	Front panel header
16	ATX1	24 pin main power connector
17	SYS_FAN2	System fan connector#2
18	SYS_FAN3	System fan connector#3
19	PWR_DET	PMBus connector
20	CPU0	Intel LGA1150 socket
21	U516	Intel C226 chipset
22	F_USB3	USB 3.0 header
23	SATA_DOM4	SATA port 4 DOM support jumper
24	HDMI	HDMI connector
25	BAT	Battery power cable connector
26	SATA0~4	SATA 6Gb/s connectors
27	F_USB2_1	USB 2.0 header
28	SATA_SGPIO	SATA SGPIO header
29	CLRCMOS	Clear CMOS jumper
30	ME_UPDATE	ME Update jumper
31	BIOSRCVR	BIOS recovery jumper
32	BMC_LED1	BMC readiness LED
33	U546	ASPEED 2300 BMC chipset
34	IPMB1	IPMB connector
35	PCIE_1	PCI-E x16 slot
36	SYS_FAN1	System fan connector#1
37	TPM	TPM module connector

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 30 for SATA_DOM4 jumper setting instruction.

GA-6LISL 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	◆ Support for Intel® Xeon® E3-1200 V3 family processors in the LGA1150 package ◆ L3 cache varies with CPU
Chipset	◆ Intel® C226 chipset
Memory	◆ 2 x 1.35V/1.5V DDR3 DIMM sockets supporting up to 16 GB of system memory ◆ Dual channel architecture ◆ Support for DDR3 1333/1600 MHz memory modules ◆ Support for ECC UDIMM memory modules
LAN	◆ 2 x Intel® I210 supports 10/100/1000 Mbps
Onboard Graphics	◆ Build-In ASPEED® 2300 chipset
Storage Interface	◆ 5 x SATA 6Gb/s connectors ◆ Support for Intel IRSTe SATA RAID 0, RAID 1, RAID 10, RAID 5
USB	◆ Up to 4 USB 2.0 ports (2 on the back panel, 2 via the USB brackets connected to the internal USB headers) ◆ 2 x USB 3.0 ports (2 via the USB brackets connected to the internal USB headers)
Expansion Slots	◆ 1 x PCIe x16 slot (Gen3 x16 bus) ◆ Supports 2 x PCIe x8 slots (Gen3 x8 bus) via riser card and CFG5 jumper
Internal Connectors	◆ 1 x 24-pin ATX main power connector ◆ 1 x 4-pin ATX 12V power connector ◆ 5 x SATA 6Gb/s connectors ◆ 1 x CPU fan header ◆ 3 x System fan header ◆ 1 x Front panel header ◆ 1 x PMBus header ◆ 1 x Front USB 3.0 header ◆ 1 x Front USB 2.0 header ◆ 1 x SATA SGPIO header ◆ 1 x Trusted Platform Module connector ◆ 1 x Front panel VGA header ◆ 1 x HDMI connector
Back Panel Connectors	◆ 2 x USB 2.0 ports ◆ 2 x RJ-45 ports ◆ 1 x COM port ◆ 1 x VGA port ◆ 1 x NMI button ◆ 1 x Reset button ◆ 1 x ID Switch button ◆ 1 x Power button

I/O Controller	◆	ASPEED® AST2300 BMC chip
Hardware Monitor	◆	System voltage detection
	◆	CPU/System temperature detection
	◆	CPU/System fan speed detection
	◆	CPU/System fan speed control * Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.
BIOS	◆	1 x 128 Mbit flash
	◆	AMI BIOS
Form Factor	◆	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.

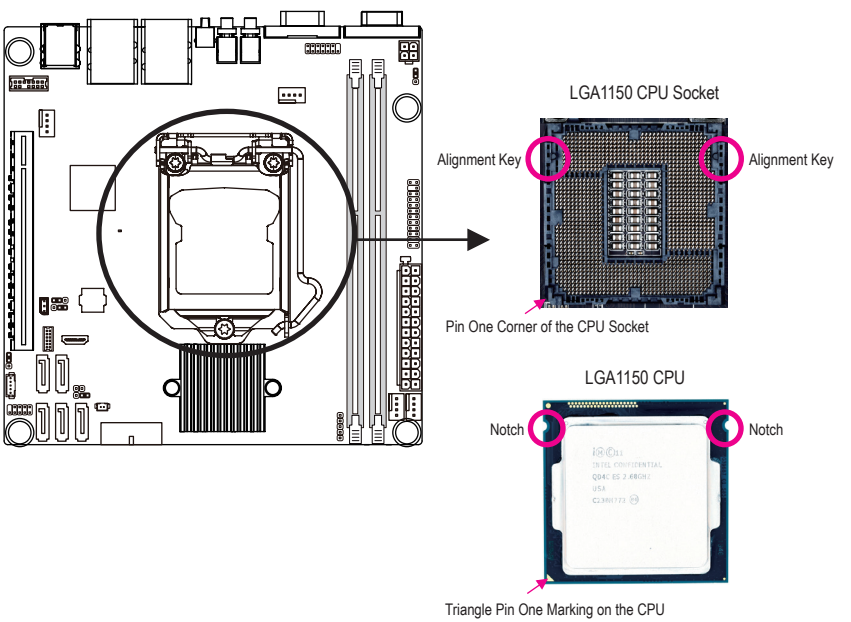
1-3 Installing the CPU and CPU Cooler

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

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

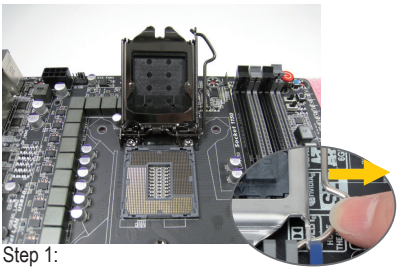
1-3-1 Installing the CPU

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



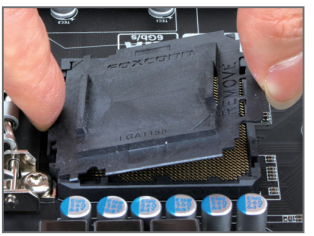
B. Follow the steps below to correctly install the CPU into the motherboard CPU socket.

Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet power plug to prevent any damage to prevent damage to the CPU.



Step 1:

Gently press the CPU socket lever handle down and away from the socket with your finger. Then completely lift the CPU socket lever and the metal load plate will be lifted as well.



Step 2:

Remove the CPU socket cover as shown. Hold your index finger down on the rear grip of the socket cover and use your thumb to lift up the front edge (next to the "REMOVE" mark) and then remove the cover. (DO NOT touch socket contacts. To protect the CPU socket, always replace the protective socket cover when the CPU is not installed.)

Step 3:

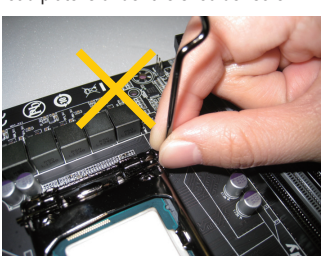
Hold the CPU with your thumb and index fingers. Align the CPU pin one marking (triangle) with the pin one corner of the CPU socket (or you may align the CPU notches with the socket alignment keys) and gently insert the CPU into position.

Step 4:

Once the CPU is properly inserted, use one hand to hold the socket lever and use the other to lightly replace the load plate. When replacing the load plate, make sure the front end of the load plate is under the shoulder screw.

Step 5:

Push the CPU socket lever back into its locked position.



NOTE:

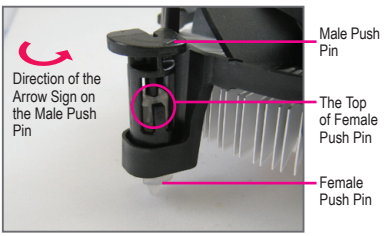
Hold the CPU socket lever by the handle, not the lever base portion.

1-3-2 Installing the CPU Cooler

Follow the steps below to correctly install the CPU cooler on the motherboard. (The following procedure uses Intel® boxed cooler as the example cooler.)

Step 1:

Apply an even and thin layer of thermal paste on the surface of the installed CPU.

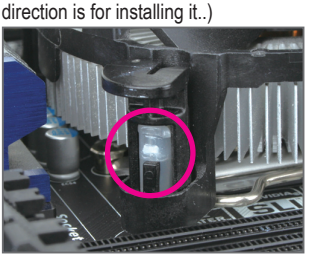


Step 2:

Before installing the cooler, note the direction of the arrow sign on the male push pin. (Turning the push pin along the direction of the arrow is for removing the cooler, and the opposite direction is for installing it..)

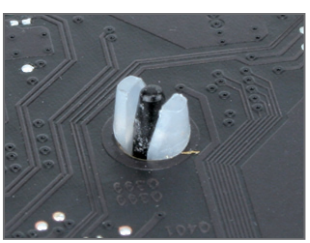
Step 3:

Place the cooler atop the CPU, aligning the four push pins through the pin holes on the motherboard. Push down on the push pins diagonally.



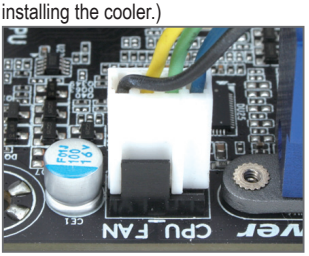
Step 4:

You should hear a "click" when pushing down each push pin. Check that the Male and Female push pins are joined closely. (Refer to your CPU cooler installation manual for instructions on installing the cooler.)



Step 5:

After the installation, check the back of the motherboard. If the push pin is inserted as the picture above shows, the installation is complete.



Step 6:

Finally, attach the power connector of the CPU cooler to the CPU fan header (CPU_FAN) on the motherboard.

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

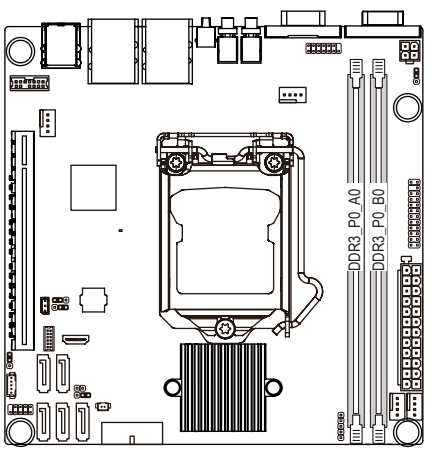
1-4 Installing the Memory

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

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

1-4-1 Dual Channel Memory Configuration

This motherboard provides two 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.



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

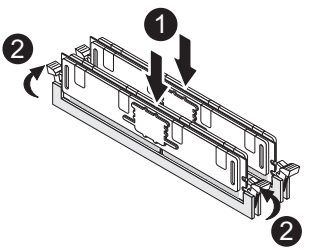
1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
2. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used for optimum performance.

1-4-2 Installing a Memory

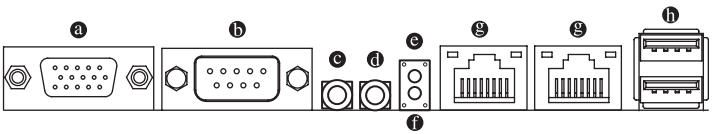
Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.
Be sure to install DDR3 DIMMs on this motherboard.

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! 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.



1-5 Back Panel Connectors



a VGA Port

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

b Serial Port

Connects to serial-based mouse or data processing devices.

c 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	• System is not powered on or in ACPI S5 state (power off) • System is in ACPI S4 state (hibernate mode)

d 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.

e Reset Button

Press this button to reset the system.

f NMI Button

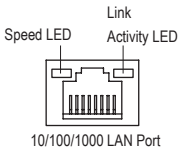
The NMI button allows a technician servicing the server to generate a NMI to the processor to help solve server errors.

g 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.

h USB 2.0 Port

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



I210 Speed LED:

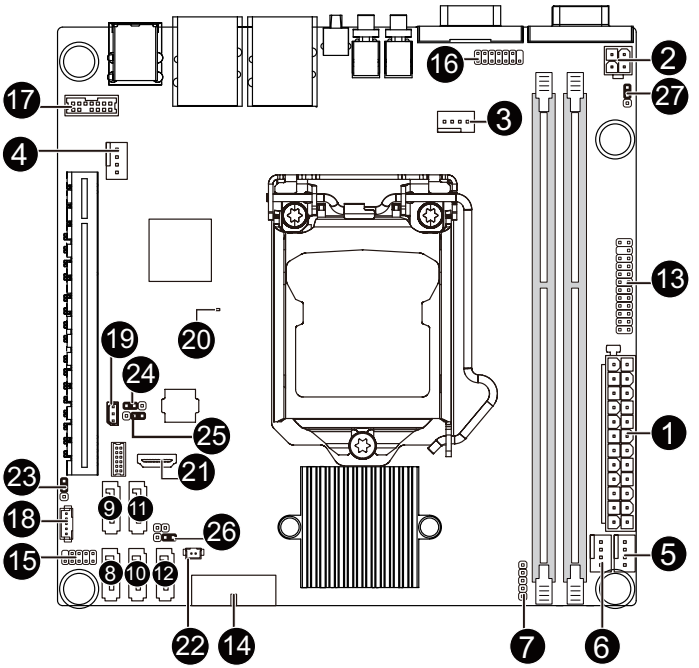
State	Description
Yellow On	1 Gbps data rate
Yellow Blink	Identify 1 Gbps data rate
Green On	100 Mbps data rate
Green Blink	Identify 100 Mbps data rate
Off	10 Mbps data rate

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.

1-6 Internal Connectors



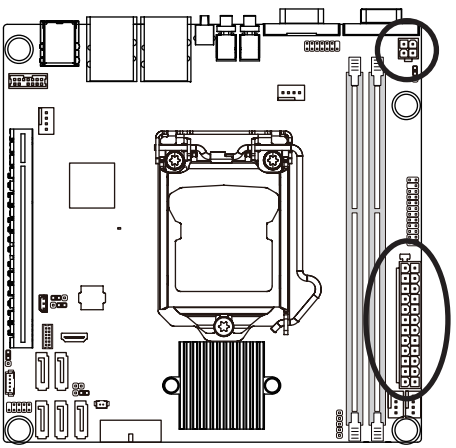
1)	ATX1	15)	F_USB2_1
2)	P12V_AUX1	16)	FP_VGA1
3)	CPU0_FAN (CPU Fan)	17)	TPM
4)	SYS_FAN1 (System Fan)	18)	SGPIO_SATA
5)	SYS_FAN2 (System Fan)	19)	IPMB1
6)	SYS_FAN3 (System Fan)	20)	BMC_LED1
7)	PWR_DET	21)	HDMI
8)	SATA0	22)	BAT
9)	SATA1	23)	CLRCMOS
10)	SATA2	24)	BIOSRCVR
11)	SATA3	25)	ME_UPDATE
12)	SATA4	26)	SATA_DOM4
13)	FP_1	27)	CFG5
14)	F_USB3		

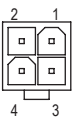
Read the following guidelines before connecting external devices:

- 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) ATX1/P12V_AUX1 (2x12 Main Power Connector and 2x2 12V Power Connector)

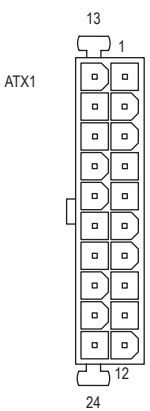
With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.





P12V_AUX1

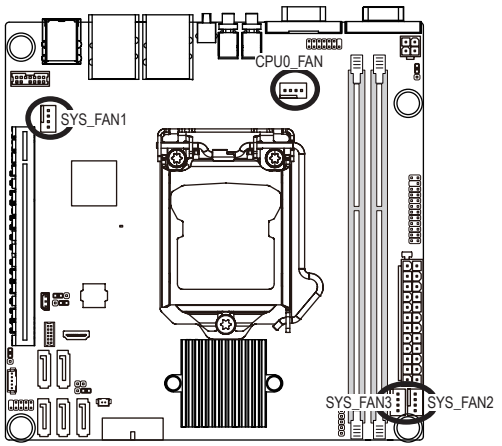
Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

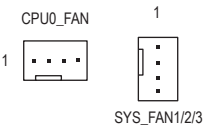


Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB (stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

3/4/5/6) CPU0_FAN/SYS_FAN1/SYS_FAN2/SYS_FAN3 (CPU Fan/System Fan Headers)

The motherboard has a 4-pin CPU fan header (CPU0_FAN), and three 4-pin (SYS_FAN1/SYS_FAN2/SYS_FAN3) 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.



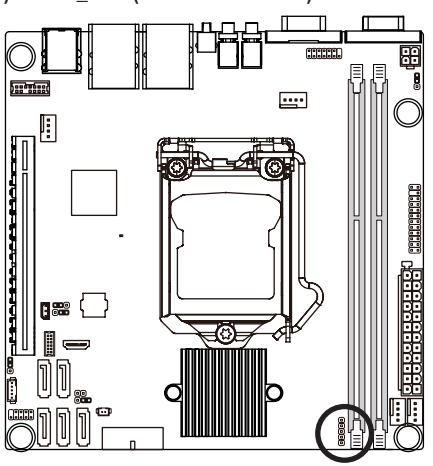


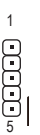
CPU0_FAN/SYS_FAN1/2/3:

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.

7) PWR_DET (PMBus connector)

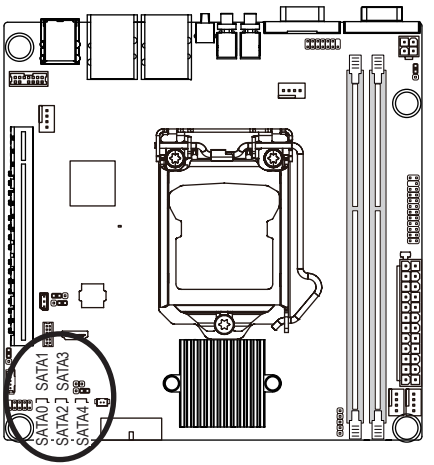


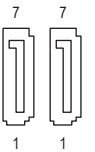


Pin No.	Definition
1	SMB CLK
2	SMB DATA
3	SMB Alert
4	GND
5	3.3V Sense

8/9/10/11/12) SATA0/SATA1/SATA2/SATA3/SATA4 (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_DOM4 jumper are set to **1-2 pin**:

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

When SATA_DOM4 jumper are set to **2-3 pin:**

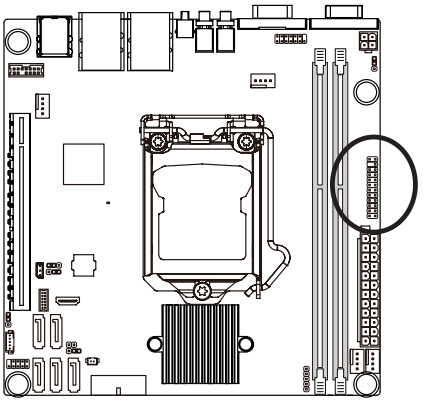
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

- A RAID 0 or RAID 1 configuration requires at least two hard drives. If more than two hard drives are configured, the total number of hard drives must be an even number.
- A RAID 10 configuration requires four hard drives.

(Note) When a RAID configuration is built across the SATA 6Gb/s channels, the system performance of the RAID configuration may vary depends on the devices are connected.

13) FP_1 (Front Panel Header)

Connect the power switch, reset switch, 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.

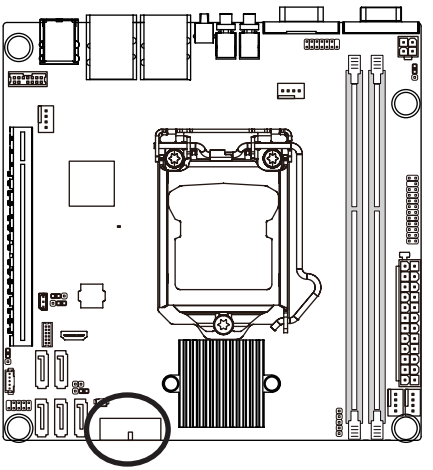


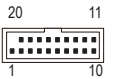
Pin No.	Signal Name	Definition
1	PWLED+	Power LED Signal anode (+)
2	5VSB	5V Stanndby Power
3	NC	No Pin
4	ID_LED+	ID LED Signal anode (+)
5	PWLED-	Power LED Signal cathode(-)
6	ID_LED-	ID LED Signal cathode(-)
7	HD+	Hard Disk LED Signal anode (+)
8	F_SYSRDY	System Front board LED Signal
9	HD- (GND)	Hard Disk LED Signal cathode(-)
10	SYS_STATUS-	System Status LED Signal cathode(-)
11	PWB+	Power Button Signal anode (+)
12	L1_LINK	LAN1link LED Signal
13	PWB+_GND	Power Button Signal cathode(-)
14	L1_ACT	LAN1 active LED Signal cathode(-)
15	RST_BTN+	Reset button Signal anode (+)
16	SENSOR_SDA	SMBus Data Signal
17	RST_BTN_GND	Reset button Signal cathode(-)
18	SENSOR_SCL	SMBus Clock Signal
19	ID_SW+	ID Switch Signal anode (+)
20	CASE_OPEN-	Chassis intrusion Signal cathode(-)
21	ID_SW (GND)	ID Switch Signal cathode(-)
22	L2_LINK	LAN2 Link LED Signal cathode(-)
23	NMI_SW-	NMI switch Signal cathode(-)
24	L2_ACT	LAN2 active LED Signal 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.

14) F_USB3 (USB 3.0 Header)

The headers conform to USB 3.0 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.

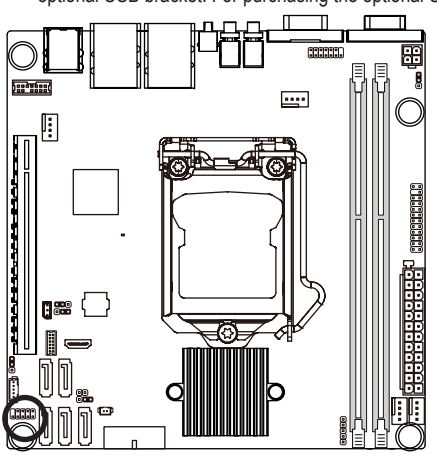




Pin No.	Definition
1	Power
2	IntA_P1_SSRX-
3	IntA_P1_SSRX+
4	GND
5	IntA_P1_SSTX-
6	IntA_P1_SSTX+
7	GND
8	IntA_P1_D-
9	IntA_P1_D+
10	NC
11	IntA_P2_D+
12	IntA_P2_D-
13	GND
14	IntA_P2_SSTX+
15	IntA_P2_SSTX-
16	GND
17	IntA_P2_SSRX+
18	IntA_P2_SSRX-
19	Power
20	No Pin

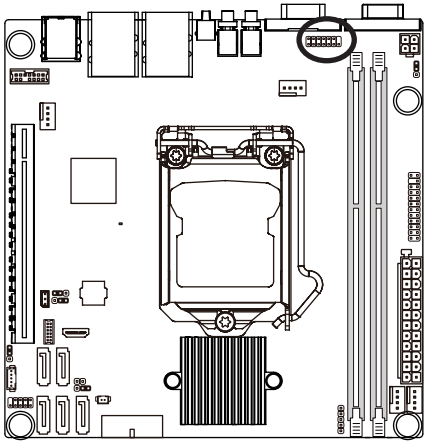
15) F_USB2_1 (USB 2.0 Header)

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.



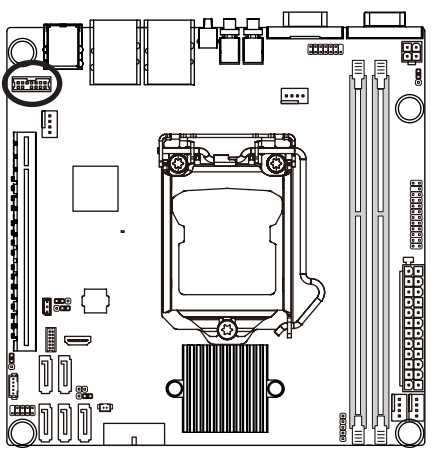
Pin No.	Definition
1	Power (5V)
2	Power (5V)
3	USB DX-
4	USB DY-
5	USB DX+
6	USB DY+
7	GND
8	GND
9	No Pin
10	NC

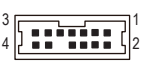
16) FP_VGA1 (Front panel VGA header)



Pin No.	Definition
1	V-Sync
2	H-Sync
3	Power (5V)
4	Clock
5	Enable (active low)
6	Data
7	Blue
8	GND
9	Green
10	GND
11	Red
12	No Pin

17) TPM (TPM Module connector)

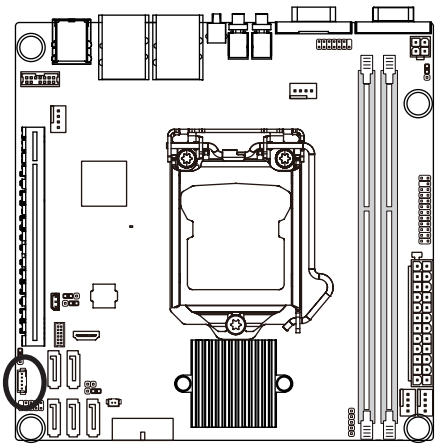




Pin No.	Definition
1	CLK_33M_TPM
2	P_3V3_AUX
3	LPC_RST_DEBUG
4	P3V3
5	LPC_LAD0
6	IRQ_SERIAL
7	LPC_LAD1
8	TPM_DET_N
9	LPC_LAD2
10	NC
11	LPC_LAD3
12	GND
13	LPC_FRAME_N
14	GND

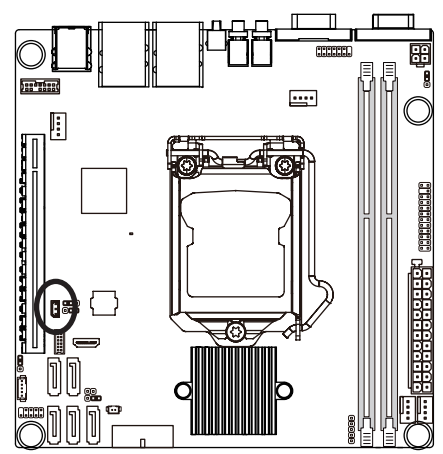
18) SATA_SGPIO (SATA SGPIO Header)

SGPIO is stands for Serial General Purpose Input/Output which is a 4-signal (or 4-wire) bus used between a Host Bus Adapter (HBA) and a backplane. Out of the 4 signals, 3 are driven by the HBA and 1 is driven by the backplane. Typically, the HBA is a storage controller located inside a server, desktop, rack or workstation computer that interfaces with Hard disk drives (HDDs) to store and retrieve data.



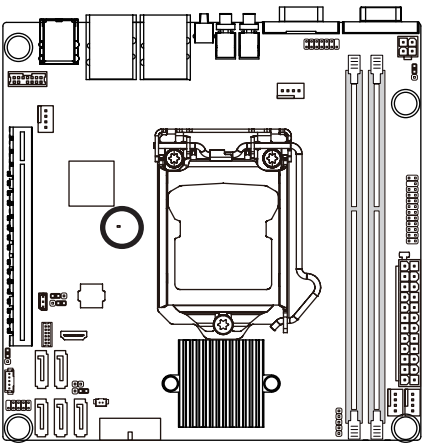
Pin No.	Definition
1	SDATA0
2	GND
3	SDATA1
4	SLOAD
5	SCLK

19) IPMB1 (IPMB Connector)



Pin No.	Definition
1	SCL
2	GND
3	SDA

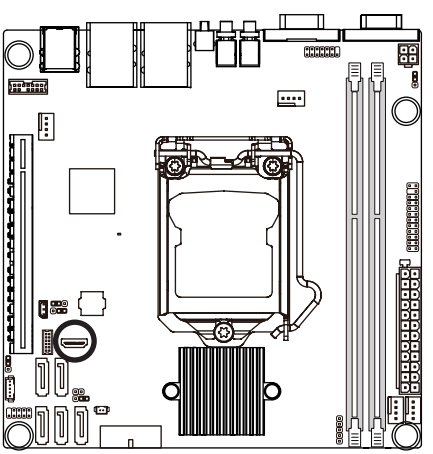
20) BMC_LED1 (BMC Firmware Readiness LED)



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

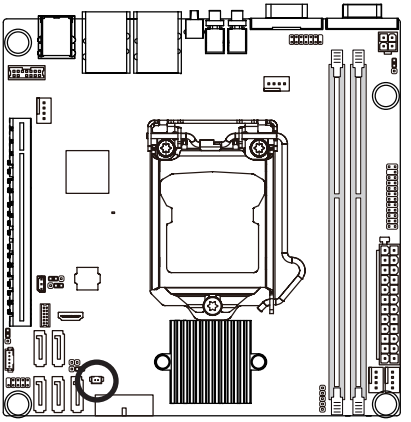
21) HDMI (HDMI Connector)

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@24Hz or 2560x1600@60Hz, but the actual resolutions supported are dependent on the monitor being used.



22) 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.

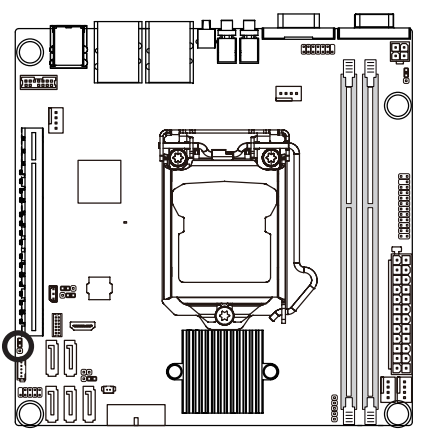


Pin No.	Definition
1	RTC Reset
2	GND

- 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.

23) CLRCMOS (Clearing CMOS Jumper)

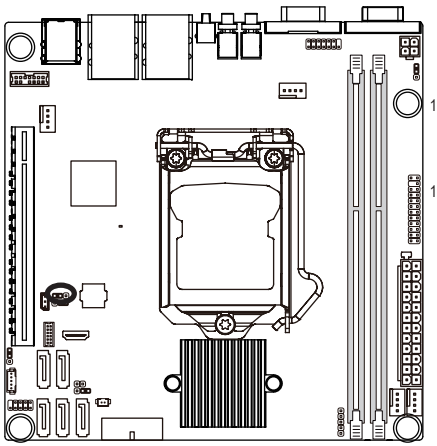
Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins to temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few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



1-2 Close: Normal operation (Default setting)

2-3 Close: Clear CMOS data

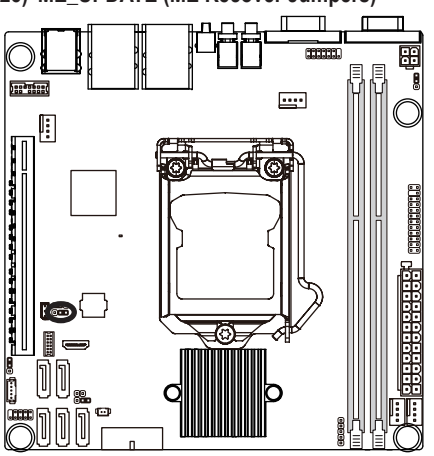
24) BIOSRCVR (BIOS Recovery Jumper)



1 1-2 Close: Normal operation. (Default setting)

1 2-3 Close: BIOS recovery mode.

25) ME_UPDATE (ME Recover Jumpers)



1 1-2 Close: ME recovery mode.

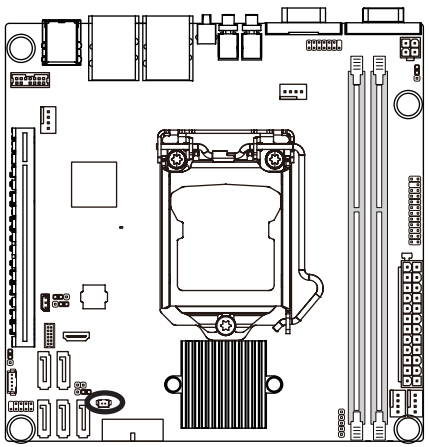
1 2-3 Close: Normal operation (Default setting)

26) SATA_DOM4 (SATA port 4 DOM Jumpers)

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.

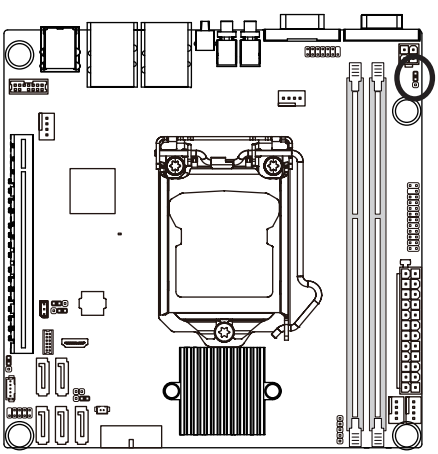
Please refer to the pin definition table in the following.



1

Pin No.	Definition
1	P5V
2	SATA_DOM4
3	GND

27) CFG5 (PCIE_1 bandwidth switch Jumper)



1

1-2 Close: PCIE_1 operates in x16 bandwidth. (Default setting)

1

2-3 Close: PCIE_1 operates in x8 bandwidth.

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.)
- **Chipset**
  This setup page includes all the submenu options for configuring the function of North Bridge and South Bridge.
  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)
- **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.
- **Server Management**
  Server additional features enabled/disabled setup menus.
- **Event Logs**
  This setup page provides items for configuration of Smbios Event Log settings and display the Smbios event logs information.
- **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.

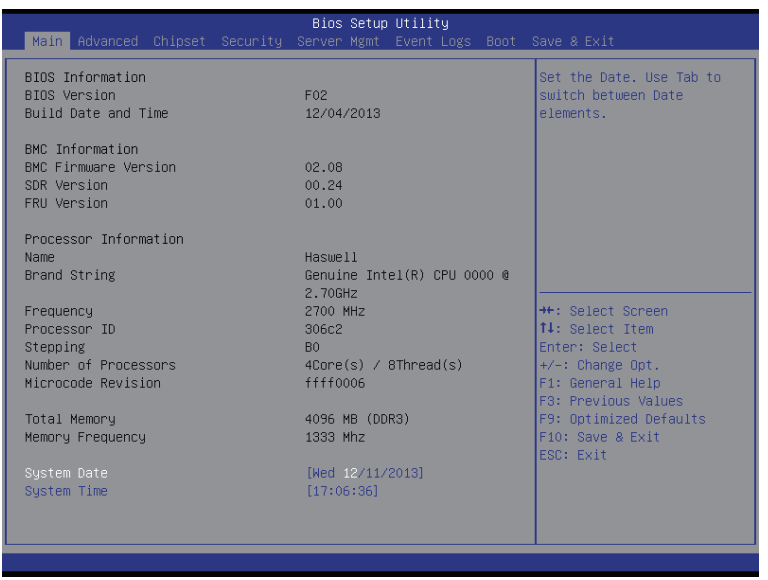
Main Menu Help

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**

☞ **BIOS 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 BMC setup utility.

☞ **SDR Version**

Display the SDR version of the BMC setup utility.

☞ **FRU Version**

Display the FRU version of the BMC setup utility.

☞ **Processor Information**

☞ **Processor Information**

☞ **CPU Type/Brand String/Frequency/Processor ID/Stepping/Number of Processors/ Microcode Revison**

Displays the technical specifications for the installed processor.

☞ **Memory Information**

☞ **Memory Frequency**

Display the frequency information of the installed memory.

☞ **System Date**

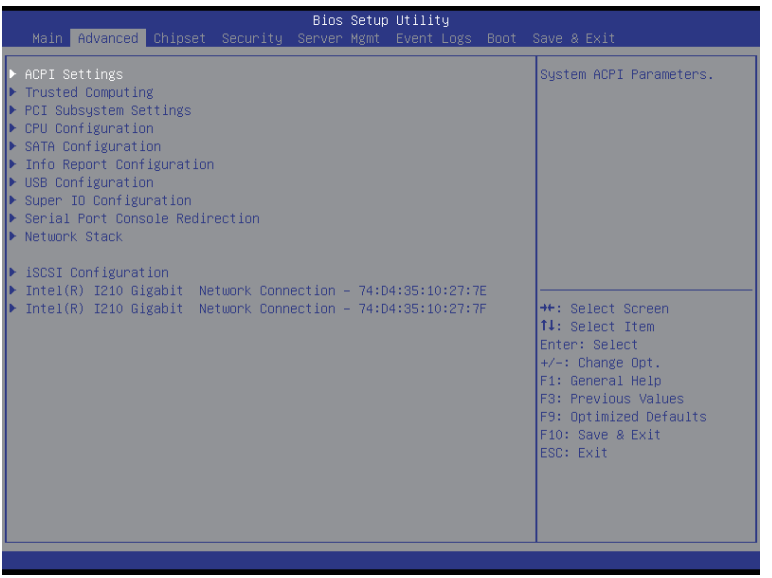
Set the date following the weekday-month-day- year format.

☞ **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.



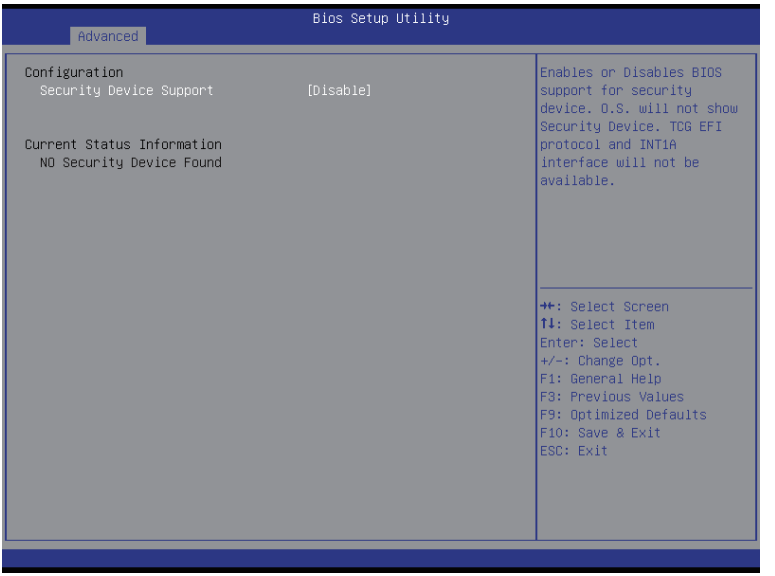
2-2-1 ACPI Configuration

☞ **ACPI Settings**

☞ **ACPI Sleep State**

Select the highest ACPI sleep state the system will enter, when the suspend button is pressed. Options available: Suspend Disabled/S1 only (CPU Stop Clock) for OS to choose from. Default setting is **S1 only (CPU Stop Clock)**.

2-2-2 Trusted Computing (Optional)



☞ **Configuration**

☞ **Security Device Support**

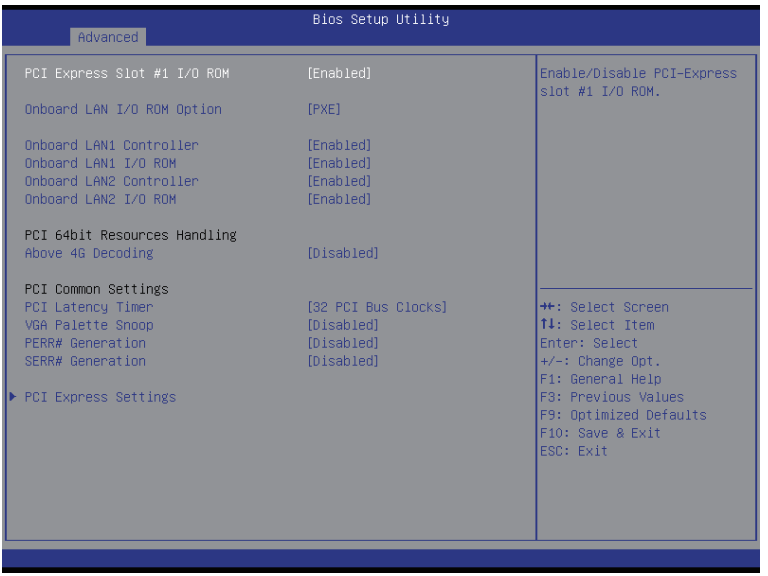
Select Enabled to activate TPM support feature.

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

☞ **Current Status Information**

Display current TPM status information.

2-2-3 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 LAN I/O ROM Option

Configure onboard LAN devices and initialize device expansion ROM.

Options available: PXE/iSCSI. Default setting is **PXE**.

☞ Onboard LAN1/2 I/O ROM

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

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

☞ PCI 64bit Resources Handling

☞ Above 4G Decoding

Enable/Disable Above 4G Decoding.

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

☞ PCI 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 Tegisters Snooping.

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

☞ **PERR Generation**

When this item is set to enabled, PCI bus parity error (PERR) is generated and is routed to NMI.

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

☞ **SERR Generation**

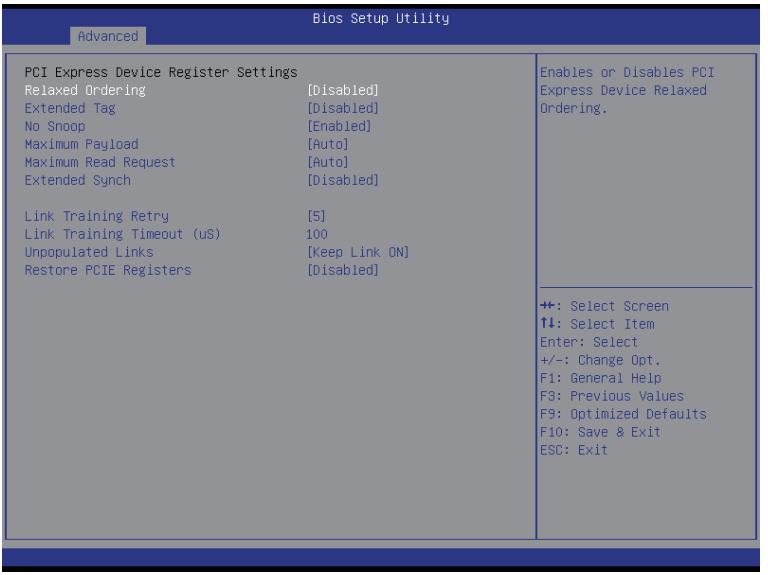
When this item is set to enabled, PCI bus system error (SERR) is generated and is routed to NMI.

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

☞ **PCI Express Settings**

Press [Enter] for configuration of advanced items.

2-2-3-1 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

Wnen 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 Playload

Set maximum playload 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 Reuest 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**.

☞ Extended Synch

Wnen 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 wil 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 rang 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**.

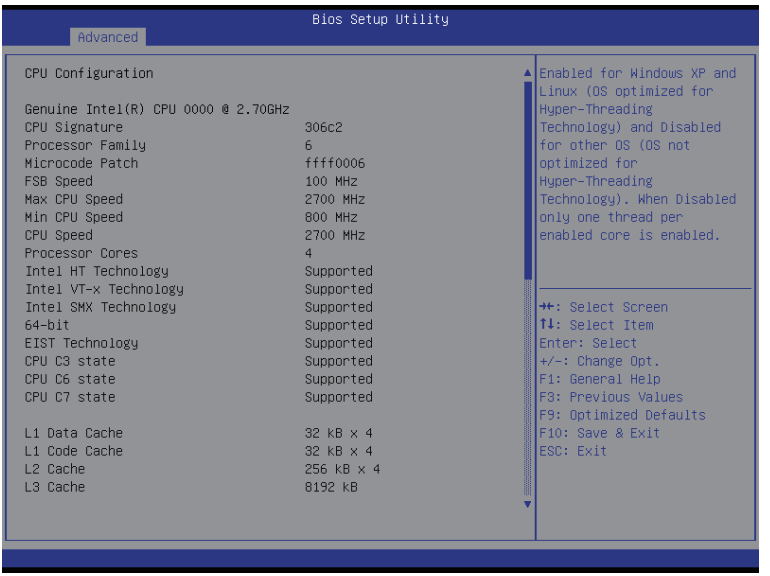
☞ Restore PCIE Registers

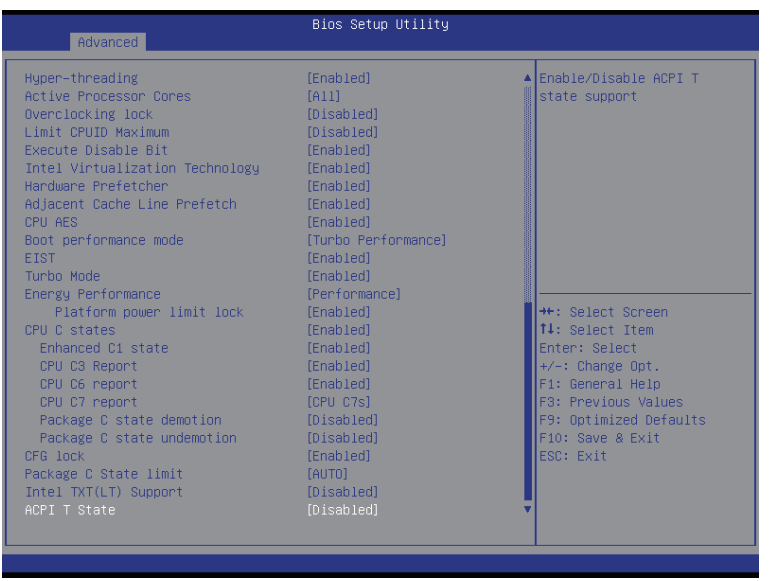
When this item is enabled, the system will restore PCI Express device configuration on S3 resume.

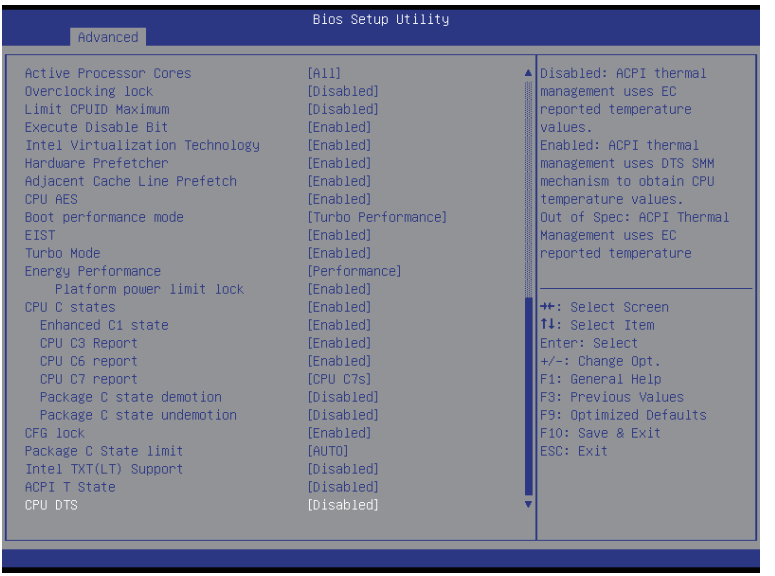
Warning: Enabling this may cause issues with other hardware after S3 resume.

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

2-2-4 CPU Configuration







- **CPU Configuration**
- **CPU Type/Signature/Processor Family/Microcode Patch/FSB Speed/Max CPU Speed/ Min CPU Speed/Processor Cores/Intel HT Technology/Intel VT-x Technology/ Intel SMX Technology**

  Displays the technical specifications for the installed processor.
- **64-bit**

  Display the supported information of installed CPU.
- **EIST Technology**

  Display Intel EIST Technology function support information.
- **CPU C3 state**

  Display the support information of CPU C3 state feature.
- **CPU C6 state**

  Display the support information of CPU C6 state feature.
- **CPU C7 state**

  Display the support information of CPU C7 state feature.
- **Cache Information**
- **L1 Data Cache / L1 Code Cache / L2 Cache / L3 Cache**

  Displays the technical specifications for the installed processor.
- **Hyper-threading**

  The Intel Hyper Threading Technology allows a single processor to execute two or more separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads, thereby improving performance.
  Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Active Processor Cores** (Note)

Allows you to determine whether to enable all CPU cores.

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

☞ **Overclocking lock**

Enable/Disable Overclocking lock.

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

☞ **Limit CPUID Maximum**

When enabled, the processor will limit the maximum COUID input values to 03h when queried, even if the processor suppports 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**.

☞ **Intel Virtualization Technology**

Select whether to enable the Intel Virtualization Technology function. VT allows a single platform to run multiple operating systems in independent partitions.

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

☞ **Hardware Prefetcher**

Select whether to enable the speculative prefetch unit of the processor.

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

☞ **Adjacent Cache Line Prefetch**

When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched.

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

☞ **CPU AES**

Enable/Disable CPU Advanced Encryption Standard instructions.

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

☞ **Boot performance mode**

Configure the Boot performance mode.

Options available: Turbo Performance/Max Non-Turbo Performance/Max bettery/Turbo Performance. Default setting is **Turbo Performance**.

☞ **EIST (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: Enabled/Disabled. Default setting is **Enabled**.

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

☞ Turbo Mode

When this item is enabled, tje 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**.

☞ Energy Performance

Energy Performance Bias is Intel CPU function.

The larger value in MSR_ENERGY_PERFORMANCE_BIAS register,

CPU will save more power but lose more performance.

Note: This register will be changed by OS too if OS support it like Windows 2008 or newer Linux.

Options available:

Performance : Write value 0 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Performance: Write value 7 into MSR_ENERGY_PERFORMANCE_BIAS

Balanced Energy: Write value 11 into MSR_ENERGY_PERFORMANCE_BIAS

Energy Efficient: Write value 15 into MSR_ENERGY_PERFORMANCE_BIAS

Default setting is **Performance**.

☞ Platform power limit lock

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

☞ CPU C State

Enable/Disable CPU C State feature.

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

☞ Enhanced C1 state

Enable/Disable C1E State feature.

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

☞ CPU C3/C6 Report (Note)

Allows you to determine whether to let the CPU enter C3/C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C3/C6 state is a more enhanced power-saving state than C1.

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

☞ CPU C7 Report (Note)

Allows you to enable or disable the CPU C7 (ACPI C3) report.

Options available: Disabled/CPU C7/CPU C7s. Default setting is **CPU C7s**.

☞ Package C state demotion

Configure state for the C-State package demotion.

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

☞ Package C state undemotion

Configure state for the C-State package undemotion.

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

☞ CFG lock

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

☞ **Package C State Limit**

Configure state for the C-State package limit.

Options available: C0/C1/C3/C6/C7/C7s/C8/C9/C10/Auto. Default setting is **Auto**.

☞ **Intel TXT (LT) Support**

Enable/Disable Intel TXT (LT) support.

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

☞ **ACPI T State**

Enable/Disable ACPI T state support.

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

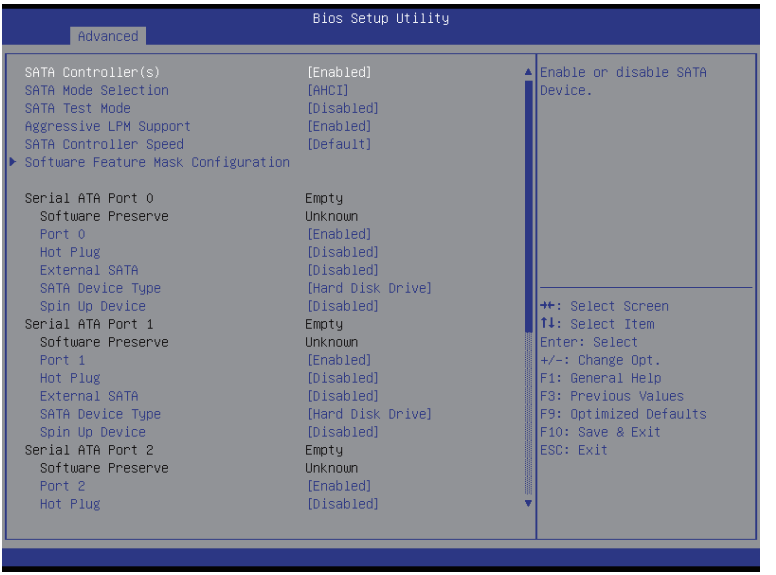
☞ **CPU DTS**

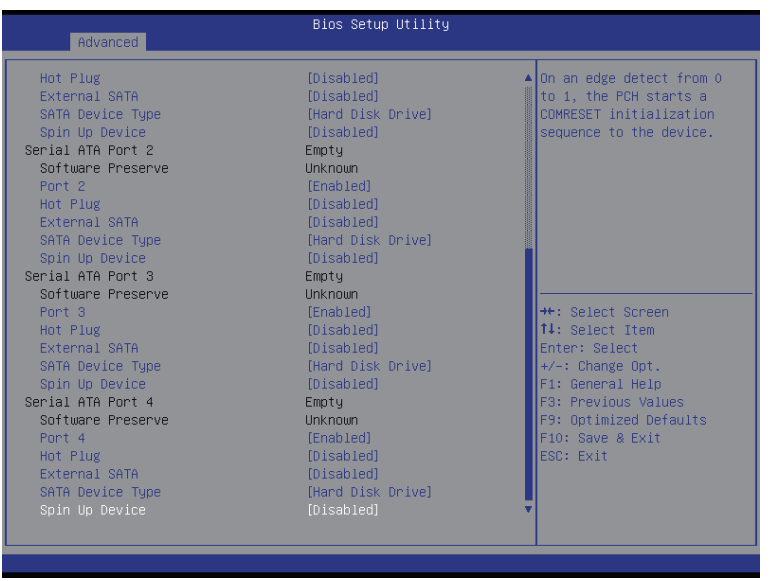
Enable/Disable CPU DTS support.

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

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

2-2-5 SATA Configuration





☞ **SATA Controller(s)**

Enable/Disable the SATA controller.

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

☞ **SATA Mode Selection**

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables its RAID and AHCI functions and runs in the IDE emulation mode. This is not allowed to access RAID setup utility.

RAID Mode: When set to RAID, the SATA controllerenables both its RAID and AHCI functions. You will be allows access the RAID setup utility at boot time.

ACHI Mode: When set to AHCI,the SATA controller enables its AHCI functionality. Then the RAID function is disabled and cannot be access the RAID setup utility at boot time.

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

☞ **SATA Test Mode**

Enable/Disable SATA Test Mode.

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

☞ **Aggressive LPM Support**

Enable PCH to aggressively enter link power state.

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

☞ **SATA Controller Speed**

Indicates the maximum speed that the SATA controller can support.

Options available: Default/Gen1/Gen2/Gen3. Default setting is **Default**.

☞ **Software Feature Mask Configuration**

Press [Enter] for configuration of advanced items.

☞ **Serial Port 0/1/2/3/4/5**

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

System will automatically detect HDD type.

☞ **Port 0/1/2/3/4/5**

Enable/Disable Port 0/1/2/3/4/5.

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

☞ **Hot Plug (for Serial SATA Port 0/1/2/3/4/5)**

Enable/Disable Hot Plug support for Serial ATA Port 0/1/2/3/4/5.

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

☞ **External SATA (for Serial SATA Port 0/1/2/3/4/5)**

Enable/Disable External SATA support for Serial ATA Port 0/1/2/3/4/5.

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

☞ **SATA Device Type (for Serial SATA Port 0/1)**

Define the SATA Device for Serial ATA Port 0/1.

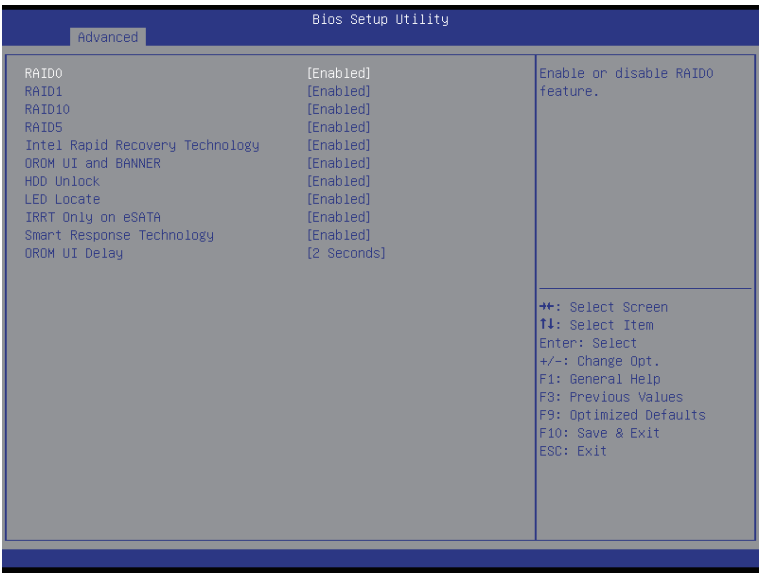
Options available: Hard Disk Drive/Solid State Drive. Default setting is **Disabled**.

☞ **Spin Up Device (for Serial SATA Port 0/1/2/3/4/5)**

On an edge detect from 0 to 1, the PCH starts a COMreset initialization to the device.

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

2-2-5-1 Software Feature Mask Configuration



☞ RAID 0

Enable/Disable RAID 0 feature.

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

☞ RAID 1

Enable/Disable RAID 1 feature.

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

☞ RAID 10

Enable/Disable RAID 10 feature.

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

☞ RAID 5

Enable/Disable RAID 5 feature.

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

☞ Intel Rapid Recovery Technology

Enable/Disable the Intel Rapid Start Technology (IRSTe) funciton. The IRSTe enables your system to get up and running faster from even the deepest sleep, saving time and power consumption.

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

☞ OROM UI and BANNER

Enable/Disable OROM UI and BANNER feature.

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

☞ HDD Unlock

When this item is enabled, the HDD password unlock in the OS is enabled.

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

☞ **LED Locate**

When this item is enabled, the LED/SGPIO hardware is attached and ping to locate feature is enabled on the OS.

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

☞ **IRRT Only on eSATA**

When this item is enabled, only IRRT volumes can span internal and eSATA drives. If disabled, then any RAID volue can span internal and eSATA drives

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

☞ **Smart Response Technlogy**

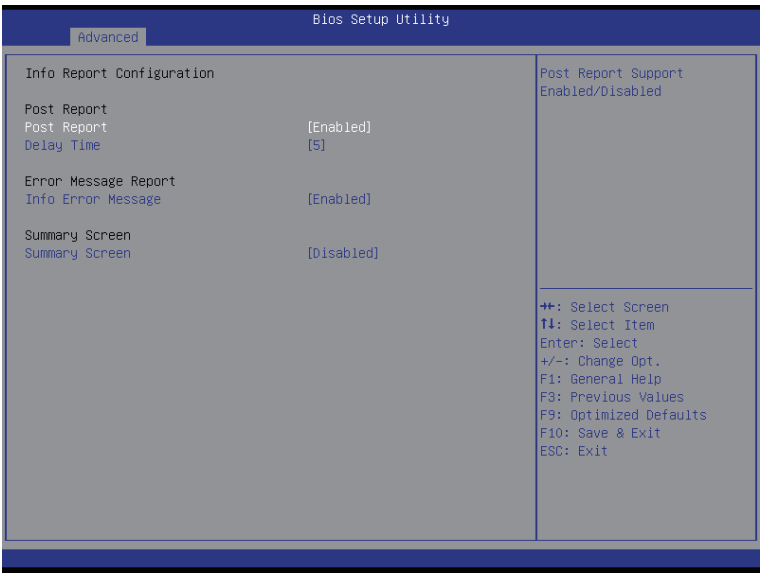
Enable/Disable Intel Smart Response Technlogy.

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

☞ **OROM UI Delay**

Options available: 2 Seconds/4 Seconds/6 Seconds/8 Seconds. Default setting is **2 Seconds**.

2-2-6 Info Report Configuration



☞ **Info Report Configuration**

☞ **Post Report**

Enable/Disable Post Report support.

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

☞ **Delay Time**

Options available: 0/1/2/3/4/5/6/78/9/10/Util Press ESC. Default setting is**Until Press ESC**.

☞ **Error Message Report**

☞ **Info Error Message**

Enable/Disable Info Error Message support.

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

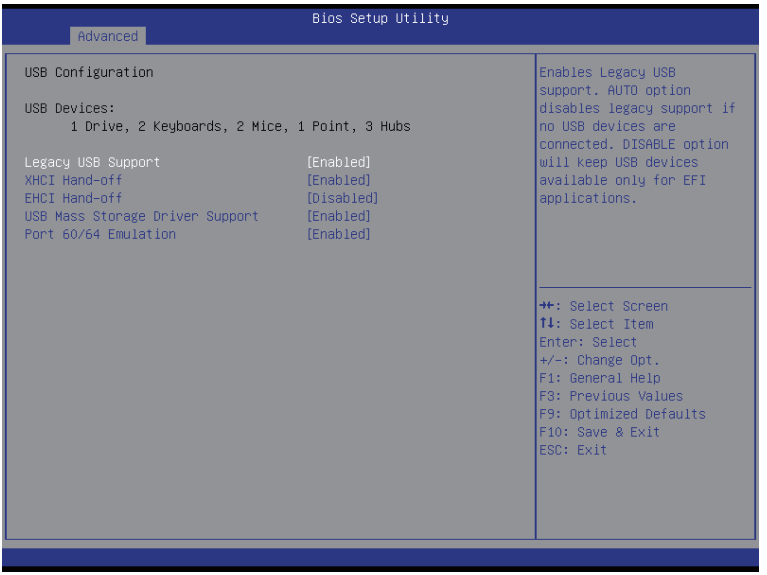
☞ **Summary Screen**

☞ **Summary Screen**

Enable/Disable Summary Screen support.

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

2-2-7 USB Configuration



☞ **Legacy USB Support**

Enables or disables support for legacy USB devices.

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

☞ **XHCI Hand-off**

Enable/Disable XHCI (USB 3.0) Hand-off support.

Options available: 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**.

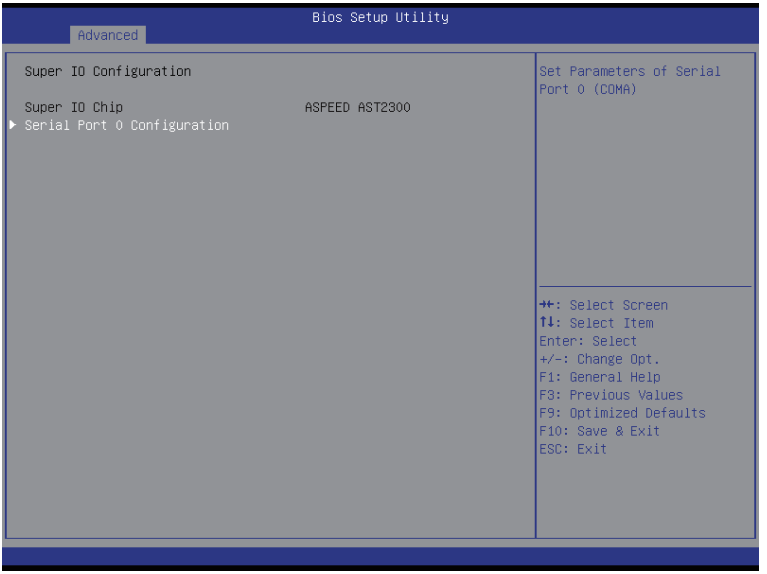
☞ **Port 60/64 Emulation**

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**.

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

2-2-8 Super IO Configuration



☞ **Super IO Chip**

Display the model name of Super IO chip.

☞ **Serial Port 0 Configuration**

☞ **Serial Port 0**

When enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port.

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

☞ **Device Settings**

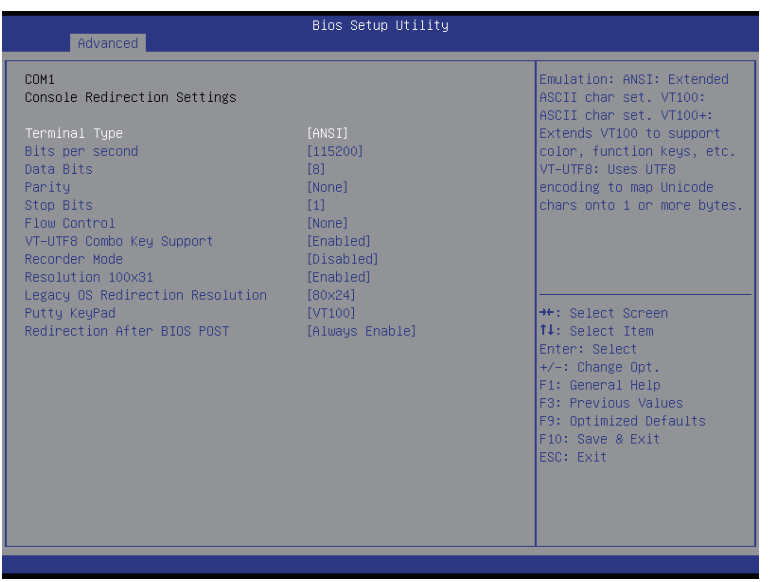
Display the Serial Port 0 base I/O addressand IRQ.

☞ **Change Settings**

Change Serial Port 0 device settings. When set to Auto allows the server's BIOS or OS to select a configuration.

Options available: Auto/IO=3F8; IRQ=4/IO=3F8h; IRQ=3,4,5,6,7,10,11,12/ IO=2F8h; IRQ=3,4,5,6,7,10,11,12 /IO=3E8h; IRQ=3,4,5,6,7,10,11,12/IO=2E8h; IRQ=3,4,5,6,7,10,11,12. Default setting is **Auto**.

2-2-9 Serial Port Console Redirection



☞ **COM1/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.

☞ **Bits per second**

Select the baud rate for console redirection.

Options available: 9600/19200/57600/115200.

☞ **Data Bits**

Select the data bits for console redirection.

Options available: 7/8.

☞ **Parity**

A parity bit can be sent with the data bits to detect some transmission errors.

Even: parity bi is 0 if the num of 1's in the data bits is even.

Odd: parity bit is0if num of 1's the data bits is odd.

Mark: parity bit is always 1. Space: Parity bit is always 0.

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

Mark and Space Parity do not allow for error detection.
Options available: None/Even/Odd/Mark/Space.

☞ **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.

☞ **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.

☞ **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.
Options available: Enabled/Disabled.

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

On Legacy OS, the number of Rows and Columns supported redirection.
Options available: 80x24/80X25.

☞ **Putty KeyPad** (Note)

Select function FunctionKey and KeyPad on Putty.
Options available: VT100/LINUX/XTERMR6/SCO/ESCN/VT400.

☞ **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**

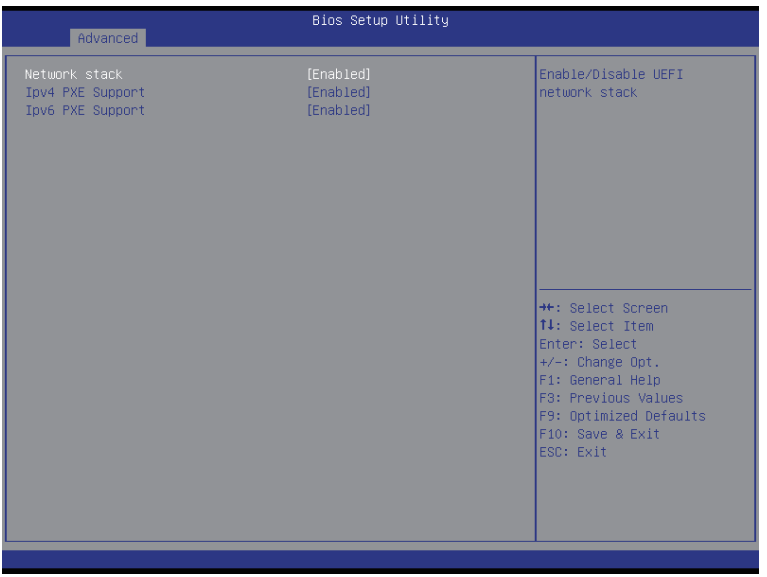
Microsoft Windows Emerency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port.
Options available: COM1/COM2.

☞ **SOL Switch**

When enabled, COM1 Switch to AST2300 SOL UART.
When disabled, COM1 Switch to IT8728 SOL UART.
Options available: Enabled/Disabled. Default setting is **Disabled**.

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

2-2-10 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**.

2-2-11 iSCSI Configuration

☞ **iSCSI Initiator Name**

☞ **Add an Attempts**

Press [Enter] for configuration of advanced items.

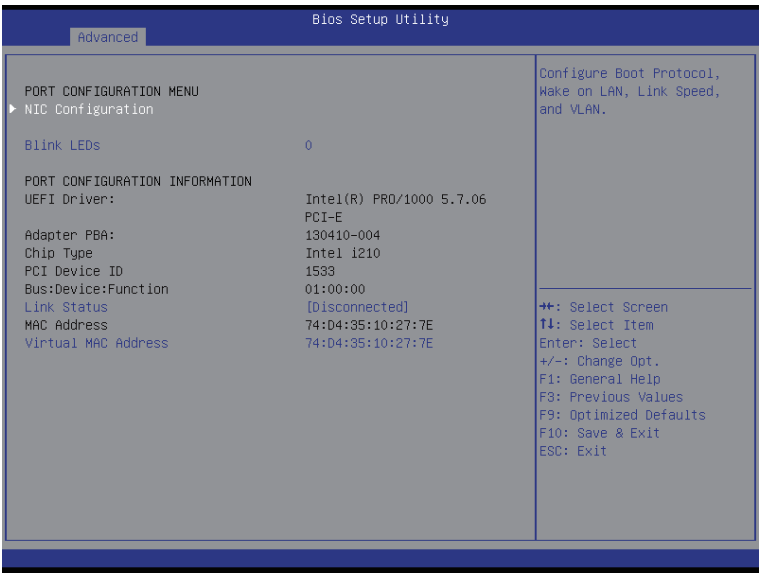
☞ **Delete Attempts**

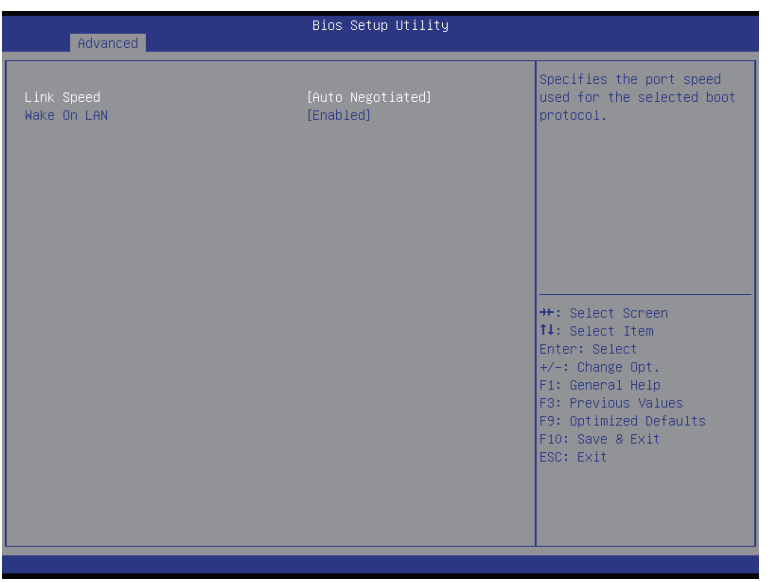
Press [Enter] for configuration of advanced items.

☞ **Change Attempt Order**

Press [Enter] for configuration of advanced items.

2-2-12 Intel (R) I210 Gigabit Network Connection





☞ **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 numberic 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**

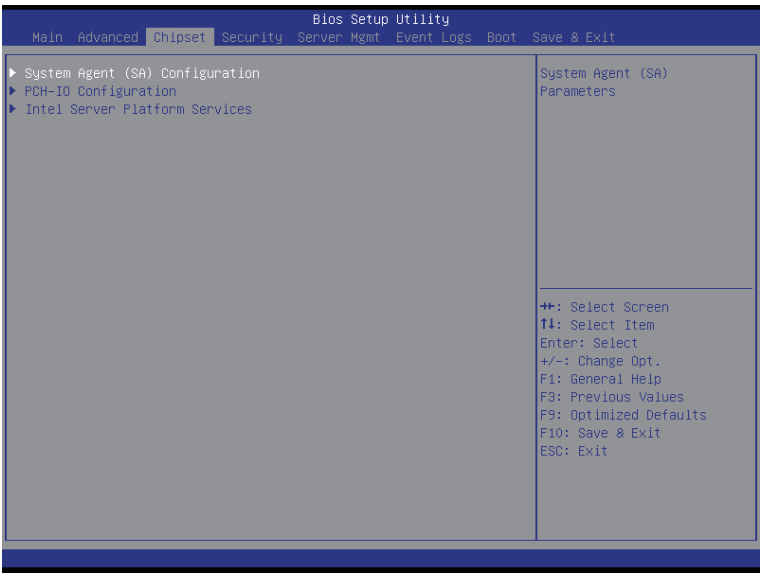
Change link speed duplex for current port.
Options available: Auto Negotiated/10Mbps Half/10Mbps Half/10Mbps Half/100Mbps Full.
Default setting is **Auto Neg0tiated**.

☞ **Wake On LAN**

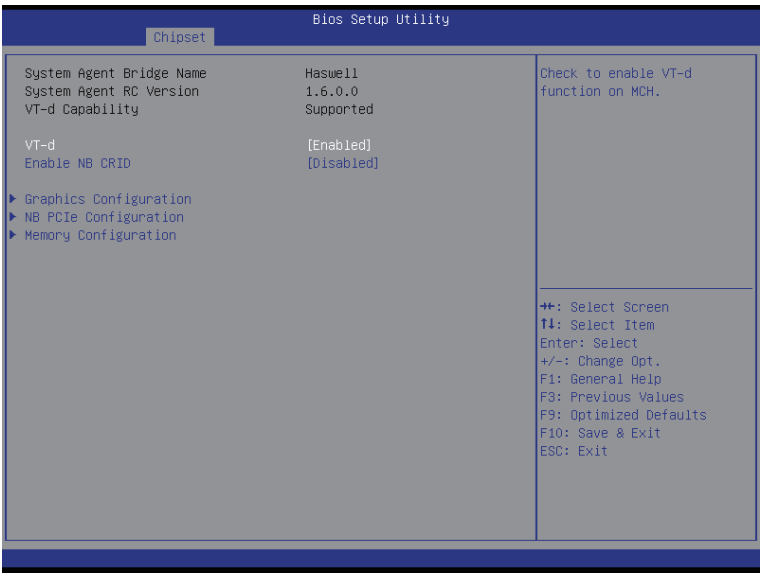
Enable/Disable Wake On LAN feature.
Options available: Enabled/DIsabled. Default setting is **Enabled**.

2-3 Chipset Menu

The Chipset menu display 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.



2-3-1 System Agent (SA)Configuration



☞ System Agent Bridge Name

Display the System Agent (SA) Bridge Name.

☞ System Agent RC Version

Display the version number of System Agent RC.

☞ VT-d Capability

Display the VT-d support information.

☞ VT-d

Enable/Disable Intel Virtualization Technology for Directed I/O (VT-d) feature.

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

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

☞ Enable NB CRID

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

☞ Graphics Configuration

Press [Enter] for configuration of advanced items.

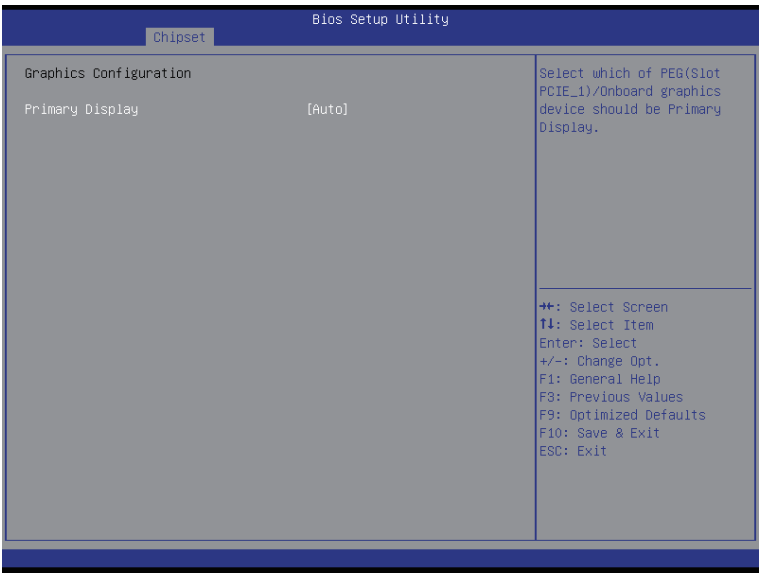
☞ NB PCIe Configuration

Press [Enter] for configuration of advanced items.

☞ Memory Configuration

Press [Enter] for configuration of advanced items.

2-3-1-1 Graphic Configuration



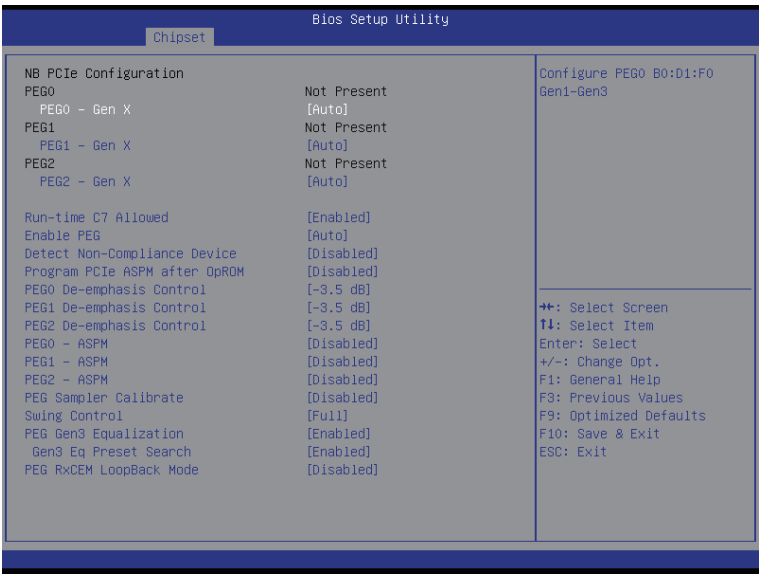
☞ **Graphic Configuration**

☞ **Primary Display Device**

Configure the Primary display device.

Options available: Auto/IGFX(if the CPU support graphic)/PEG/Onboard VGA. Default setting is **Auto**.

2-3-1-2 NB PCIe Configuration



☞ **NB PCIe Configuration**

☞ **PEG0**

Display PEG0 configuration information.

☞ **PEG0 - Gen X**

Configure PEG0 B0:D1:F0 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ **PEG1**

Display PEG1 configuration information.

☞ **PEG1 - Gen X**

Configure PEG1 B0:D1:F1 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ **PEG2**

Display PEG2 configuration information.

☞ **PEG2 - Gen X**

Configure PEG2 B0:D1:F2 Gen1-Gen3.

Options available: Auto/Gen1/Gen2/Gen3. Default setting is **Auto**.

☞ **Run-time C7 Allowed**

Configure Run-time C7 feature.

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

☞ **Enable PEG**

Enable/Disable PEG.

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

☞ Detect Non-Compliance Device

Detect Non-Compliance PCI Express Device in PEG.

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

☞ Program PCIe ASPM after OpROM

Enable/Disable Program PCIe ASPM after OpROM.

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

☞ PEG0 De-emphasis Control

PEG0:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ PEG1 De-emphasis Control

PEG1:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ PEG2 De-emphasis Control

PEG2:Configure the De-emphasis control on PEG.

Options available: Options available: -6 dB/-3.5 dB. Default setting is **-3.5 dB**.

☞ PEG0 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

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

☞ PEG1 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

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

☞ PEG2 - ASPM

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

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

☞ PEG Sampler Calibrate

Enable or disable PEG Sampler Calibrate\nAuto means Disabled for SNB MB/DT, Enabled for IVB A0 B0.

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

☞ Swing Control

Perform PEG Swing Control, on IVB C0 and Later.

Options available: Reduced/Half/Full. Default setting is **Full**.

☞ PEG Gen3 Equalization

Perform PEG Gen3 Equalization steps.

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

☞ Gen3 Eq Preset Search

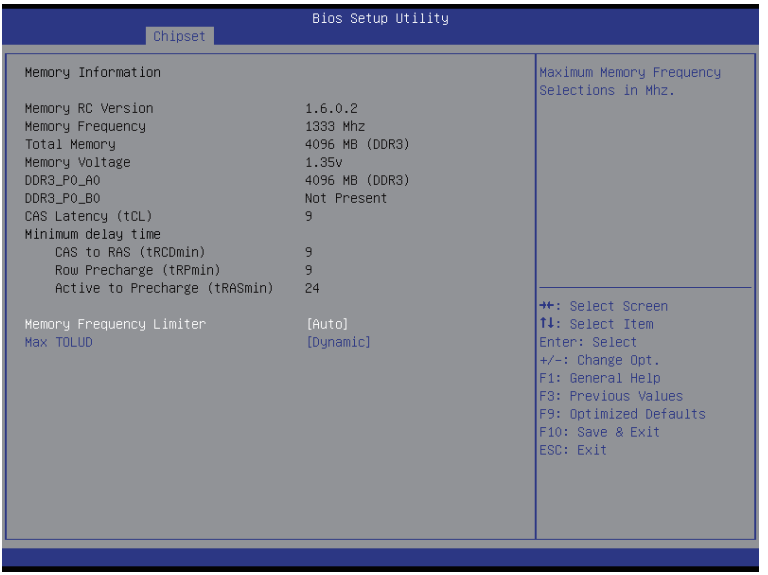
Perform PEG Gen3 Preset Search algorithm, on IVB C0 and Later.

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

☞ PEG RxCEM LoopBack Mode

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

2-3-1-3 Memory Configuration



- **Memory Information**
- **Memory RC Version**

  Display version number of installed memeory.
- **Memory Frequency**

  Display the frequency information of installed memory.
- **Total Memory**

  Determines how much total memory is present during the POST.
- **Memory Voltage**

  Display the voltage information of installed memory.
- **DIMM Information:**
- **DDR3_P0_A0/DDR3_P0_A1/DDR3_P0_B0/DDR3_P0_B1 Status**

  The size of memory installed on each of the DDR3 slots.
- **CAS Latency (tCL)**

  Display the CAS Latency (tCL) information of installed memory.
- **Minimum delay time**
- **CAS to RAS (tRCDmin)**

  Display the CAS to RAS (tRCDmin) information of installed memory.
- **Row Precharge (tRPimin)**

  Display the Row Precharge (tRPimin) information of installed memory.
- **Active to Precharge (tRCDmin)**

  Display the Active to Precharge (tRCDmin) information of installed memory.

☞ Memory Frequency Limiter

Maximum Memory Frequency Selections in Mhz.
Options available: Auto/1067/1333/1600/1867/2133/2400/2667. Default setting is **Auto**.

☞ Max TOLUD

Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.
Options available: Dynamic/3.5 GB/3.25 GB/3 GB/2.75 GB/2.5 GB/2.25 GB/2 GB/1.75 GB/1.5 GB/1.25 GB/1 GB. Default setting is **Dynamic**.

2-3-2 PCH-IO Configuration

☞ Intel PCH RC Version/Intel PCH SKU/Intel PCH Rev ID Information

Displays the RC version, SKU and Reverison ID information of PCH.

☞ PCI Express Configuration

Press [Enter] for configuration of advanced items.

☞ USB Configuration

Press [Enter] for configuration of advanced items.

☞ DeepSx Power Policies

Configure the DeepSx Mode configuration.

Options available: Disabled/Enabled in S5/Enabled in S4-S5. Default setting is **Disabled**.

☞ GP27 Wake From DeepSx

Wake from DeepSx by the assertion of GP27 pin.

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

☞ PCIE Wake From DeepSx

Wake from DeepSx by the assertion of PCIe.

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

☞ Serial IRQ Mode

Configure Serial IRQ Mode.

Options available: Quiet/Continuous. Default setting is **Quiet**.

☞ SB CRID

Enable/Disable SB CRID.

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

☞ SLP_S4 Assertion Width

Select a minimum assertion width of the SLP_S4# signal.

Options available: 1-2 Seconds/2-3 Seconds/3-4 Seconds/4-5 Seconds.

Default setting is **4-5 Seconds**.

☞ Restore AC Power Loss

This option provides user to set the mode of operation if an AC / power loss occurs.

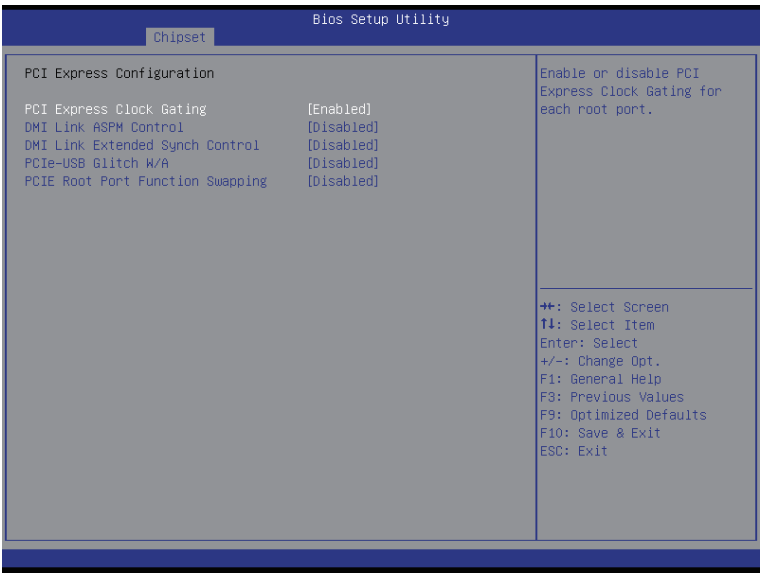
Power On: System power state when AC cord is re-plugged.

Power Off: Do not power on system when AC power is back.

Last State: Set system to the last sate when AC power is removed.

Options available: Power On/Power Off/Last State. Default setting is **Last State**.

2-3-2-1 PCI Express Configuration



☞ PCI Express Clock Gating

Enable/Disable PCI Express Clock Gating for each root port.

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

☞ DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI Link.

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

☞ DMI Link Extended Synch Control

The control of Extended Synch on SB side of the DMI Link.

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

☞ PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG Port.

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

☞ PCIe Root Port Function Swapping

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

2-3-2-2 USB Configuration

☞ **USB Configuration**

☞ **USB Precondition**

Precondition work on USB host controller and root ports for faster enumeration.

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

☞ **XHCI Mode**

Mode of operation of xHCI controller.

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

☞ **BTCG**

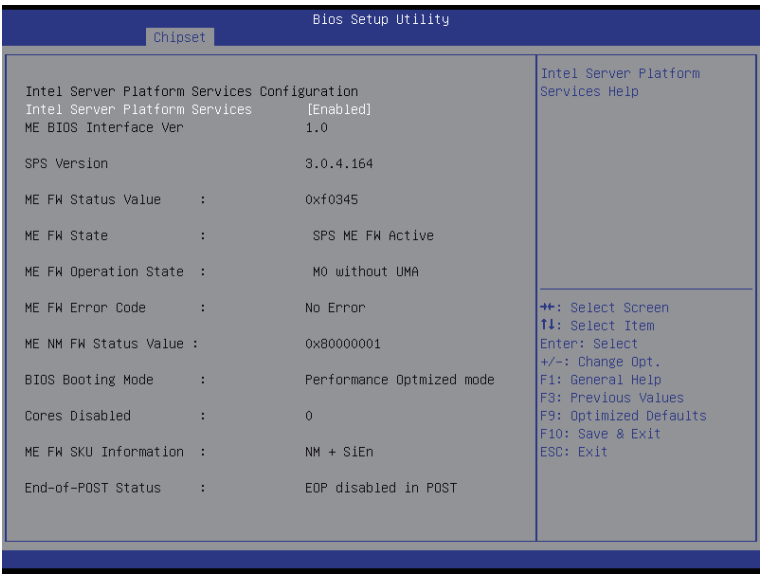
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **USB Ports Per-Port Disable Control**

Control each of the USB ports (0~13) disabling.

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

2-3-3 Intel Server Platform Services



☞ Intel Server Platform Services

Enable/Disable Intel Server Platform Services Help.

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

2-4 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**

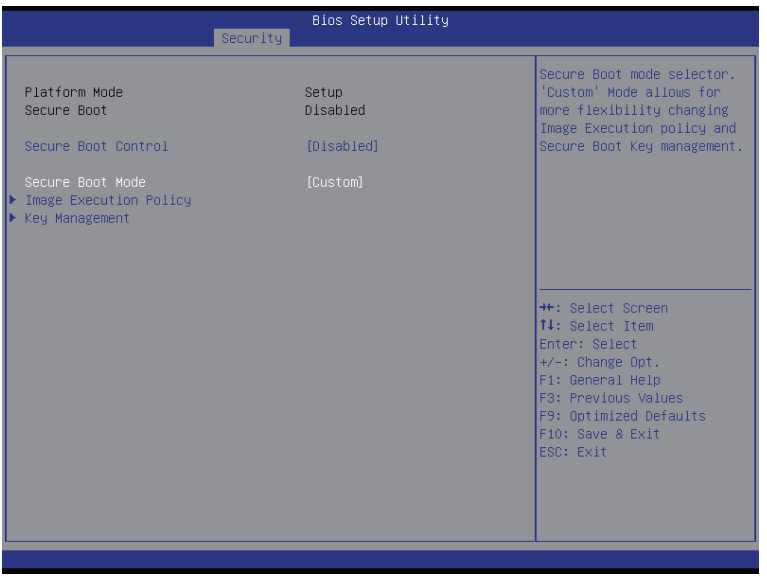
Press Enter to configure the user password.

☞ **Secure Boot menu**

Press [Enter] for configuration of advanced items.

2-4-1 Secure Boot menu

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



☞ **Platform Mode**

Display the System Platform Mode State.

☞ **Secure Boot**

Display the status of Secure Boot.

☞ **Secure Boot Control**

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 form 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**.

☞ **Image Execution Policy**(Note)

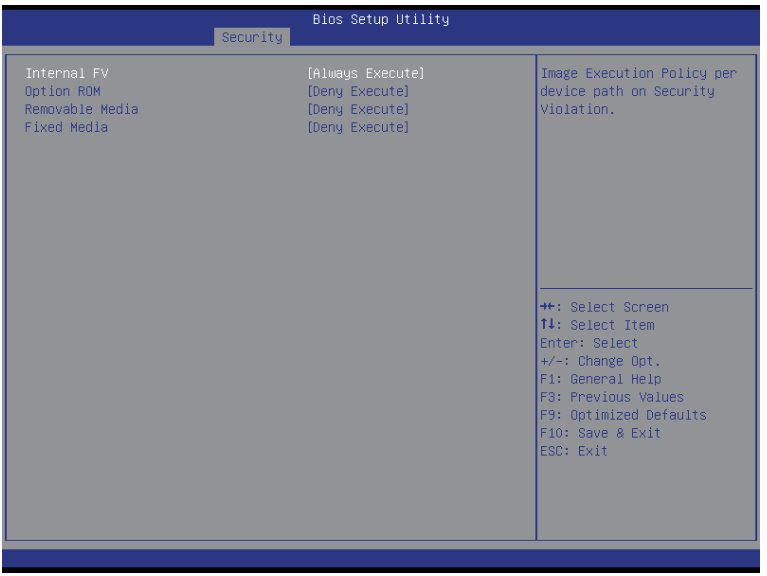
Press [Enter] for configuration of advanced items.

☞ **Key Management**(Note)

Press [Enter] for configuration of advanced items.

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

2-4-1-1 Image Execution Policy



☞ Image Execution policy

☞ Internal FV

Image Execution Policy per device path on Security Violation.

Options available: Always Execute. Default setting is **Always Execute**.

☞ Option ROM

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

☞ Removable Media

Image Execution Policy per device path on Security Violation.

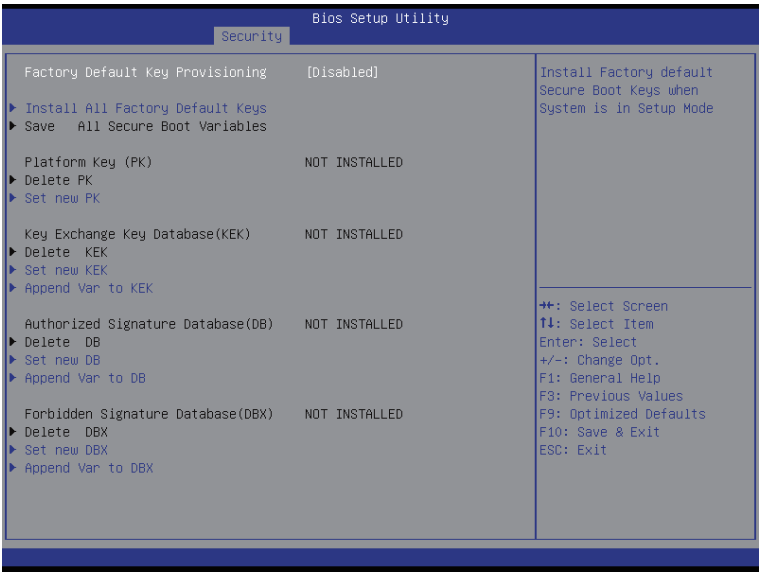
Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

☞ Fixed Media

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

2-4-1-2 Key Management



☞ Key Management

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

☞ Factory 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 Signaures Database (dbx).

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

☞ Install 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.

2-5 Server Management Menu

☞ **BMC LAN Configuration**

BMC LAN Configuration. Press Enter to access the related submenu.

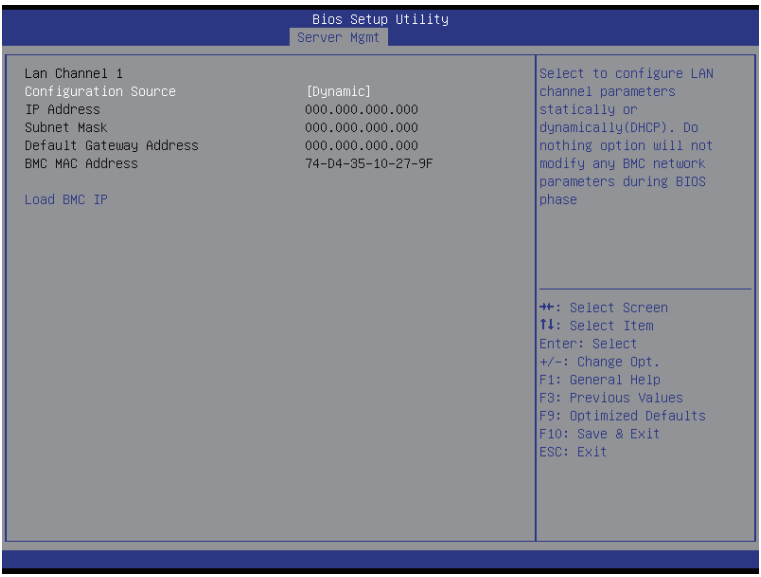
☞ **View FRU information**

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

☞ **System Event Log**

Displays Event Log advanced settings. Press Enter to access the related submenu.

2-5-1 BMC LAN Configuration



☞ **Lan Channel 1**

☞ **Configuration 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.

☞ **IP Address**(Note)

Display IP Address information.

☞ **Subnet Mask**(Note)

Display Subnet Mask information.

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

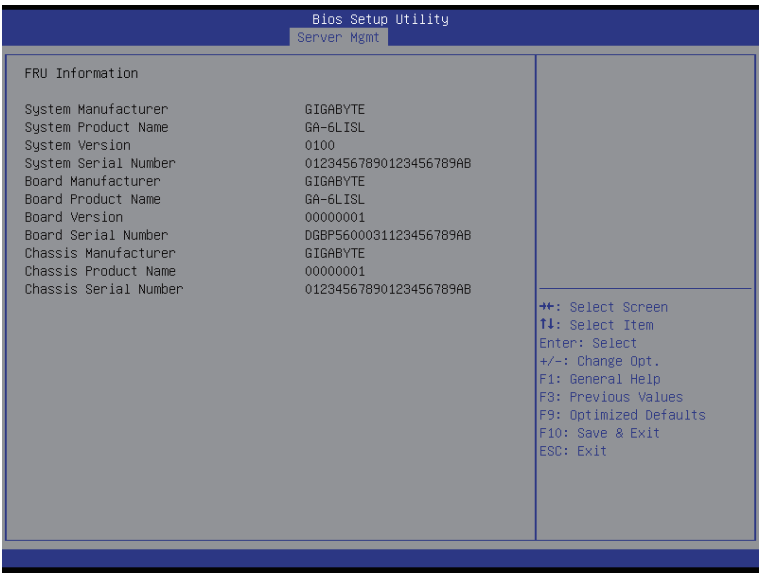
☞ **Default Gateway Address**(Note)

Display Default Gateway Address information.

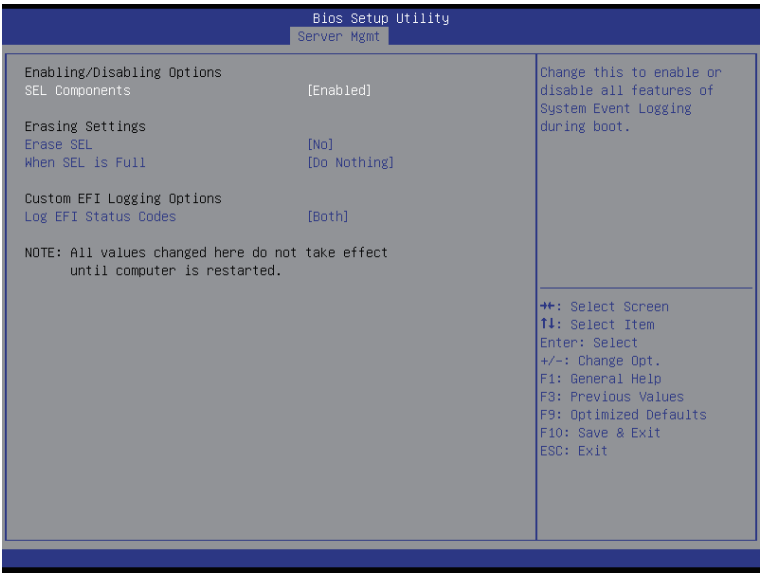
(Note) This item appears when **Configuration Source** is set to **Dynamic**.

2-5-2 View FRU Information

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



2-5-3 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 **Disabled**.

☞ **Erasing Settings**

☞ **Erasing SEL**

Choose options for erasing Smbios Event Log Erasing is done prior to any logging activation during reset.

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 System Event Log.

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**.

2-6 Event Logs Menu

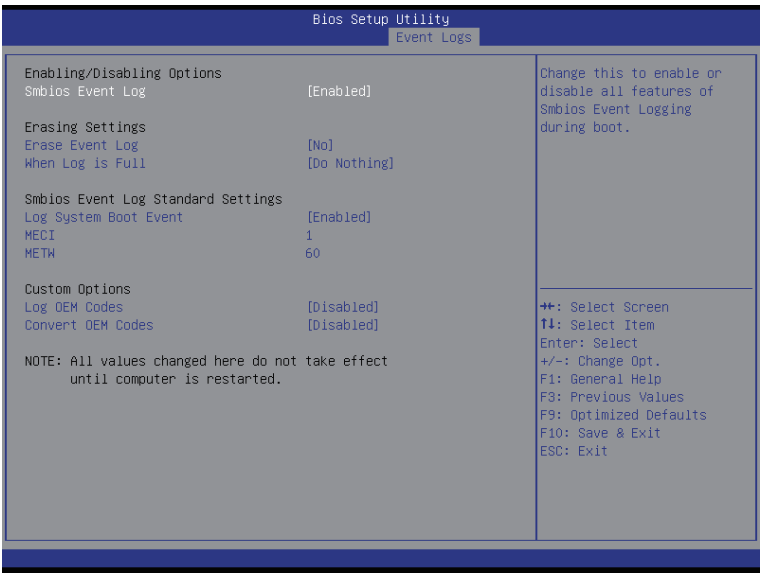
☞ **Change Smbios Event Log Settings**

Press [Enter] for configuration of advanced items.

☞ **View Smbios Event Log**

Press [Enter] to view event logs.

2-6-1 Change Smbios Event Log Settings



☞ **Enabling/Disabling Options**

☞ **Smbios Event Log**

Choose options to Enable/Disable logging of System boot event.

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

☞ **Erasing Settings**

☞ **Erasing Event Log**

Choose options for erasing Smbios Event Log Erasing is done prior to any logging activation during reset.

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

☞ **When Log is Full**

Choose options for reactions to a full Smbios Event Log.

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

☞ **Smbios Event Log Standard Settings**

☞ **Log System Boot Event**

Choose options to Enable/Dsiable logging of System boot event.

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

☞ **MECI**

Multiple Event Count Increment: The number of occurrences of a duplicate event that must paass before the multi-event counter associated with the log entry is updated, specified as numberic value in the range 1 to 33. Press <+> / <-> keys to increase or decrease the desired values.

☞ **METW**

Multiple Event Time Window: The number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes. Press <+> / <-> keys to increase or decrease the desired values.

☞ **Custom Options**

☞ **Log OEM Codes**

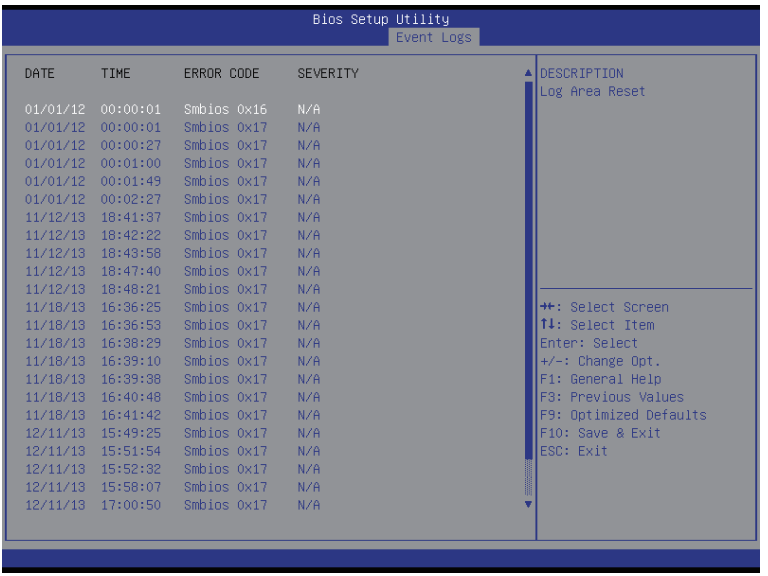
Enable/Disable the logging of EFI Status Codes as OEM Codes.
Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Convert OEM Codes**

Enable/Disable the converting of EFI Status Codes to Standard Smbios Type.
Options available: Enabled/Disabled. Default setting is **Disabled**.

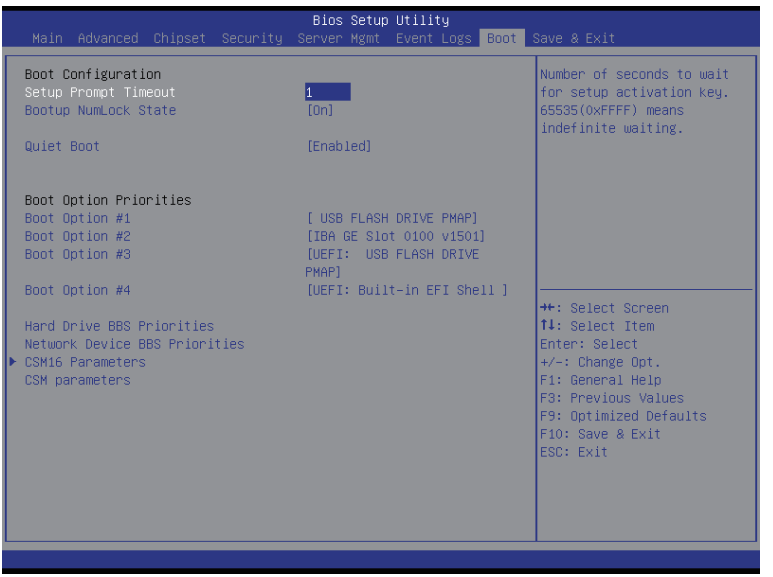
2-6-2 View Smbios Event Log

The Smbios Event Log is a display page of Smbios Event Log information. Items on this window are non-configurable. Press Enter to View Smbios Event Log



2-7 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 numberic 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 secquence:

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

☞ **Hard Drive BBS Priorities**

Press Enter to configure the boot priority.

☞ **Network Device BBS Priorities**

Press Enter to configure the boot priority.

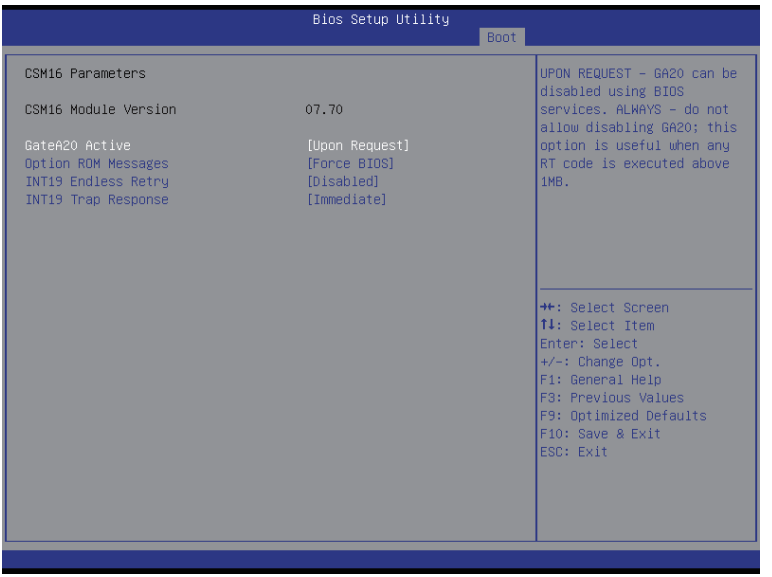
☞ **CSM16 Parameters**

Press [Enter] for configuration of advanced items.

☞ **CSM parameters**

Press [Enter] for configuration of advanced items.

2-7-1 CSM16 Parameters



☞ 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 **Disabled**.

☞ 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**.

2-7-2 CSM Parameters

☞ CSM parameters

Press Enter to configure the advanced items.

☞ Launch CSM (Compatibility Support Module)

Enable/Disable Compatibility Support Module (CSM) launch.

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

- The following five items appears and configurable when the **Launch CSM** is set to **Enabled**.
- If the **Launch CSM** is set to **Disabled,** the following five items will not be able to support Legacy mode.

☞ 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**.

☞ Launch PXE OpROM policy

Determines which devices system will boot to.

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

☞ Launch Storage OpROM policy

Determines which devices system will boot to.

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

☞ Launch Video OpROM policy

Determines which devices system will boot to.

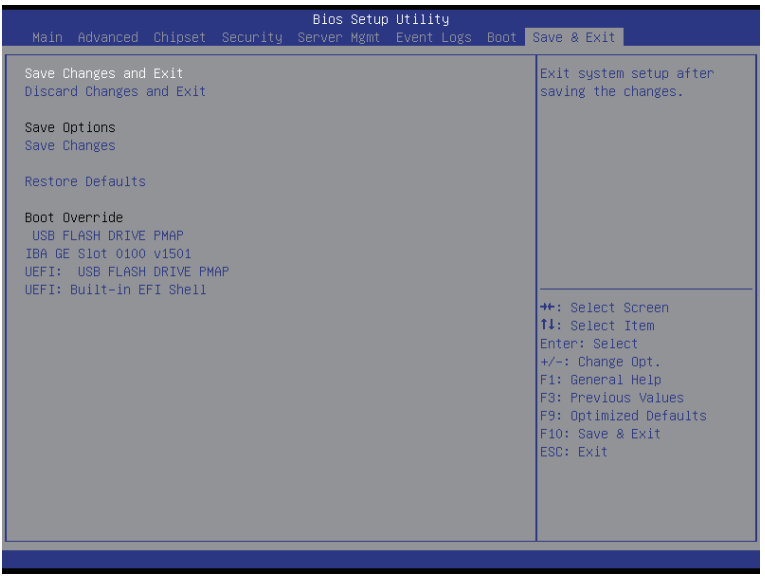
Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy only.**

☞ **Other PCI device ROM priority**

For PCI devices other than Network, Mass storage or Video device, defines which OpROM to launch. Options available: UEFI OpROM/Legacy OpROM. Default setting is **UEFI OpROM.**

2-8 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 EFI Shell**

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

2-9 BIOS Beep Codes

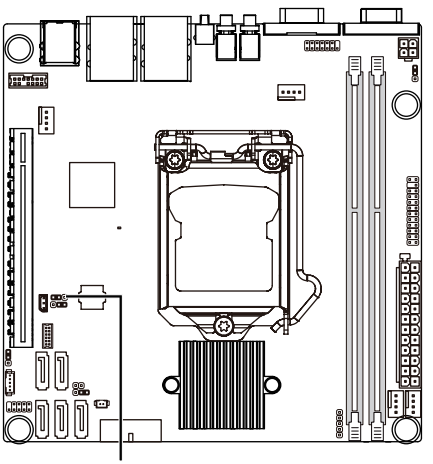
# of Beeps	Description
1	Invalid password
2	Recovery started
4	S3 Resume failed
4	DXEIPL was not found
5	No Console Input/Output Devices are found
6	Flash update is failed

2-10 BIOS Recovery Instruction

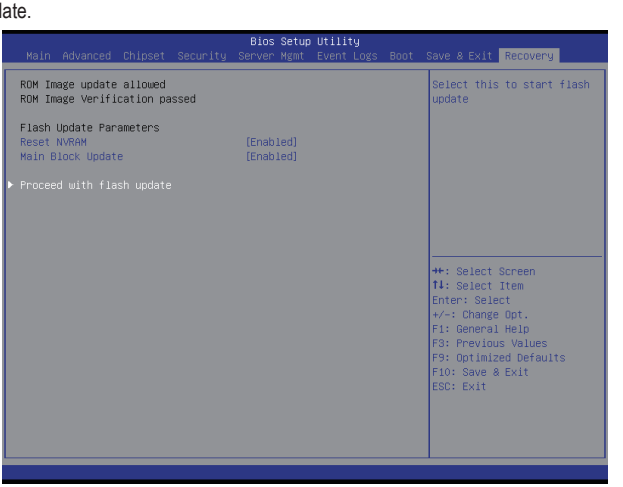
The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

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.



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.